

**UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI**

**DEVELOPING A FRAMEWORK FOR MINIMISING CONFLICTS
BETWEEN SUBCONTRACTORS AND MAIN CONTRACTORS IN THE
CONSTRUCTION INDUSTRY IN SELECTED REGIONS IN GHANA.**



MASTER OF PHILOSOPHY

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**UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI
FACULTY OF TECHNICAL EDUCATION
DEPARTMENT OF CONSTRUCTION AND WOOD TECHNOLOGY**

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**A Dissertation submitted to the Department of CONSTRUCTION AND WOOD
TECHNOLOGY EDUCATION, Faculty of TECHNICAL EDUCATION,
Submitted to the School of Graduate Studies, University of Education, Winneba
in partial fulfilment of the requirements for the award of the Master of
Philosophy (Construction Management) degree.**

JANUARY, 2022

DECLARATION DECLARATION

STUDENT DECLARATION

I **Mohammed Bukari** declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature 

Date 12TH NOVEMBER, 2022



SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis/dissertation/project as laid down by the University of Education, Winneba.

DR. NONGIBA AJKANAM KHENI

Signature 

Date November 12, 2022

DEDICATION

This dissertation is dedicated to my parents (Bukari Ayamba and Salamatu Bukari), my brothers and sisters; Zakari, Ibrahim, late Zaratu, Fati and Ramatu. My wife Sirina. Last but not the least my children Mandeaya, Bachela and Mampasiya for their prayers and support.



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ABSTRACT

Construction industry is one of the largest and complex industry in Ghana which involve multiple Consultants with different interests' areas. Conflict and disputes are almost inevitable in construction industry. The aim of the study was to develop a framework for minimizing conflicts between subcontractors and main contractors in the construction industry in selected regions in Ghana. The study employed a cross sectional survey design and a quantitative strategy. The target population of the study is construction site managers/engineers of main contractors and subcontractors. Stratified random sampling was used to select construction firms registered with the Registrar Generals Office at Tamale and purposive sampling technique used to select the site managers/engineers. The findings of the study suggest that the five key causes of conflicts between main and sub-contractors in the construction industry include; inaccurate design information, delayed in response on the part of the main contractors, lack of effective communication among project consultant and main contractors, incomplete work-drawings or specifications, and inadequate supply of materials. The findings revealed that the main effects of conflicts on projects include; reduces productivity at construction sites, cost overruns, increase in the additional work for the project, diversion of resource in respect of management time allocated to resolving conflict, loss and reduction of quality of work, delays in project completion, and termination of contract. Also, the findings suggest that the role of project Consultants include; help in selection of subcontractors through competitive tendering, make clear understanding of the contract conditions and requirements, project objectives and implementation, the clarity of the contract between main contractors and subcontractors, ensure compliance with regulations by main contractors & subcontractors, and ensure effective communication & coordination of main contractor and subcontractors. The study also revealed that effects of conflicts have a positive and significant effect on Role of Consultants in Minimizing Conflict, given the path coefficient results $\beta = .521$, $t = 8.274$, $p < .01$. A framework was developed for minimizing the causes and mitigating the effects of conflicts in the construction industry.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Construction industry is one of the largest and complex industry in Ghana which involve multiple Consultants with different interests' areas. The project consultant has no specific definition. Most definitions describe management consulting in terms of the tools, roles, responsibilities, and services provided by skills to perform tasks assigned by the client or project owner (Nikumbh & Pimplikar, 2014). The role and responsibilities of project consultants in the construction industry are very broad and depending on their skills and current experiences. Therefore, if the client looks for expert knowledge or advice on certain engineering issues or any issues involving engineering issues, consultation is required (Ismael, 2005). The project consulting team will provide the right help at the right time to help the clients overcome current obstacles or avoid high-level errors in the future, and determine and implement problem solutions faster, thereby saving you time and money. Without an excellent performance of the project consulting team, it is difficult to ensure the success of the project. Besides, to make the project successful, the manager needs effectively and efficiently to complete the work of the team members. This, together with the introduction of project consultants' knowledge brings about project success (Nikumbh & Pimplikar, 2014). The industry is also vibrant towards the attainment of the socio-economic growth such as the provision of shelter, infrastructure and employment (Anaman and Amponsah, 2007). The construction industry in Ghana keeps growing in different project levels from small works, medium works, and large works. It is obviation that the construction industry is doing a lot of developmental projects beside it has its own problems when

it comes to conflict management among the various Consultants due to their different interest and the specialised nature of the industry.

The construction industry is so specialised that no main contractors can provide all the specialisms in the industry, therefore, many small specialist firms known as subcontractors with narrow expertise are brought on board to work to meet the industry's varied and complex demands. According to Kale and Arditi, (2001), the quality of main contractors to subcontractor relationship affects the main contractors' ability to perform on projects, which inevitably has direct consequences on project outcomes. It implies that if there are good relationships between the main contractors and the subcontractors, there is the possibility of improving the effectiveness and performance of the project. On the other hand, if there is no proper relationship between them, then delays and others behaviours come to bare on the project that will definitely affect the project quality, cost and project delivery.

Every contractor is working toward a successful, profitable, and quality project, but sometimes conflict comes in as a result of the differences in the Consultants' views and goals. Following the complexity nature of construction and its adversarial environment, many projects experience disputes and sometimes get out of hand that result in mediation or litigation (Harmon, 2003). It is a common practice in the construction industry for parties who involve in a construction project to enter into a legal and binding agreement called contract. Contractual obligation by any party in any contract will be of questionable state if the understanding of the terms and interpretation of the contents of the contract documents are not fully appreciated. Therefore, it is necessary to have a proper understanding of the contents of the contract documents which leads

to the enhancement of the contractual relation and assurance of the intended deliverance of the product (Mohamad and Madon, 2006). The main purpose of engaging into a contract is to allow the involved parties in the project to have recourse to the law in the event that either of them fails to meet the purpose or main goal of a project. Contract as a legally binding document can be perceived as the ‘glue’ that binds parties from different background into the process of construction project. The terms, which are agreed by parties who are making the contract, express the intentions of both parties whilst privity of contract restricts the scope of the clauses provided in the contract that is only applicable to the parties who signed and had agreed with the contract (Murdoch, Champion & Hughes, 2008). They believed that besides the main parties who are involved in construction contract, there are other parties who have interest towards the end product of the project such as the funder, the developer, the planning authority and not to mention the public at large as the end user. All of this variety of interest and the complexity of the projects appear to be the contributing factors to conflict and disputes in the industry. Conflict and disputes are almost inevitable in construction industry (Fenn *et al.* 2007). It also can cost the parties in disputes their time, money and also jeopardize their good relationship (Fenn 2007). This research seeks to develop a framework for minimizing conflicts between subcontractors and main contractors in the construction industry.

1.2 Problem Statement

Due to the specialized nature of the industry, there are numerous challenges the industry faces when it comes to conflicts on sites, and this always impedes the development of projects in the industry. Subcontractors contribute to the total construction process at a rate of about 80–90% of the total project value (Mohamad and Madon, 2006). Although

there may be other difficulties, the fundamental problem in the construction sector is the conflict between the principal contractors and the subcontractors, which frequently causes delays in project delivery and increases in project costs. On this point, Maturana (2007) proved in his study that disagreements on construction sites arise as a result of discord amongst all parties involved in the project. In a development of Maturana's study, Richard (2016) noted that creating standards for managing Subcontractors within the restrictions of cost and time. However, the cause of these contradictions was not addressed, leaving a vacuum in the literature.

The majority of the research on construction disputes, according to Mitropoulos and Howell (2021), had been concentrating on specific factors, such as contractual language and its judicial interpretation, the technical causes of claims, contractual equity, or parties' relationships, leaving out important aspects like the obvious and long-term effects of conflicts on projects. Additionally, prior study in the construction sector indicates that the emphasis is on collaboration at the pre-contract stage, but that the problem of reducing disputes between primary contractors and subcontractors has not yet received attention. Instead, a lot of research on dispute resolution (Jannadia et al. 2000; Gunawansa, 2008) discusses how to resolve disputes after they have already happened. The importance of project consultants and their function in resolving disputes and extending them seems to have been neglected by the majority of authors. Another gap that has to be filled is this one. The handling of disputes between subcontractors and the primary contractors has received very little investigation despite the significant role that subcontractors play in the industry. The goal of this study is to provide a framework for reducing disputes between subcontractor and primary contractors in the Ghanaian construction sector in order to create a positive working environment between them.

1.3 Aim and Objectives of the study

The aim of the study is to develop a framework for minimizing conflicts between subcontractors and main contractors in the construction industry in Ghana.

The following are the research objectives of the study:

1. To determine the causes of conflicts between subcontractors and main contractors in the construction projects in Ghana.
2. To assess the role of project consultants in minimizing the incidents of conflicts between subcontractors and main contractors in construction projects in Ghana;
3. To determine the effects of conflicts between subcontractors and main contractors in construction projects in Ghana; and,
4. To develop a framework for minimizing the incidents of conflicts between subcontractors and main contractors in construction projects in Ghana

1.4 Research Questions

The following questions are put forward to help the achievement of the purpose of the study set above:

1. What are the causes of conflict between subcontractors and main contractors in the Ghanaian construction industry?
2. What roles do consultants play in minimizing the incidents of conflicts between subcontractors and main contractor in construction projects in Ghana?
3. To what extend do conflicts effects construction projects?
4. What frame work will be put in place to minimizing the incidents of conflicts between subcontractors and main contractors in construction projects in Ghana?

1.5 Significance of the Study

Construction industry is one of the industries which employs many labours and hence often result to be a problem zone (Thomas 2005). The significance of conducting the study is to see how best to resolve conflicts between subcontractors and main contractors in the construction industry. This study therefore will be a benefit to both the main contractors and the subcontractors in the industry. Since the study will indicate some of the causes and offer guidelines on how to solve conflicts on site. The study will give fair idea to project managers to be able to control and manage their construction site well, since one of the responsibilities of project manager is to maintain the project schedules and achieve a return investment. The construction management with these guidelines will also be able to reduce and increase productivity in the project since a good working environment improves productivity. Again, it will help reinforce the contribution of client and their Design and project management teams to all contribute as partners in the management of conflicts issues on construction projects not only in selected construction sites, but Ghana as a whole.

1.6 Limitations of the Study

Difficulties faced in the course of conducting the research at the field survey phase were constraining factors in the execution of this study. It took a lot of persuasion to get the target respondents to agree to be part of the survey and this had an impact on the response rate. Besides, the likelihood of sampling and measurement errors and the effects of these errors on the data collected cannot be underestimated.

1.7 Scope of the Study

This study examines challenges that exist between subcontractors and main contractors, as well as developing the best framework for minimizing conflicts between subcontractors and main contractors. Traditionally, the criteria for measuring success of construction projects are the cost, time and quality parameters. This study however is limited to conflict resolution. This is because, subcontractors and main contractors are considered to be the most vital players in the construction industry and when care is not taken the project may suffer from cost overrun, delays in time and poor-quality work. In order to narrow the scope, the study had limited to only structural projects on construction sites. This is due to the fact that there is wide variability of subcontract works in construction projects than civil engineering projects, the study focuses on conflict management of subcontractors and main contractors in the building development projects only. The reason why civil engineering projects are not considered is that it has limited subcontractors and also less labour intensive.

The extent of this study would be narrowed to Tamale, Bolgatanga, Wa, Damongo and Nalerigu being the cities of the then three regions of the north. This location has been selected due to its proximity and convenience for the researcher. Due to conflict, a female hostel for Bagabaga College of Education is left standing incomplete. Also, the time frame for the thesis was not enough to have cover the whole country. There was no funding for the study, therefore, the researcher could not have carried out the research throughout the whole country alone and that was why the scope was limited to the five regions of the northern part of the country.

1.8 Organisation of the Study

The study is divided into six (6) chapters, namely: Chapter one is captioned General Introduction to the Research. The chapter gives the background to the research and summaries the problem sanctioning the research pursuit. The chapters further provide the research aim, research questions, the research objectives, limitation, the scope and organisation of the study. Chapter two, on the other hand, contains the literature review which extensively cover previous research efforts. Again, the chapter expansively discusses subcontractor management practices and challenges. Chapter three addressed the philosophical stance of the researcher and the methods used; research design, sampling technique and the data collection methods adopted. Chapter four involved data presentation and discussions of the results from the field survey. This chapter also contains the recommended guidelines in the form of flow diagrams and their applications. Chapter five wraps up the entire research endeavour by summarizing the findings from chapter four. The recommendations for policy, future research, for practical application and future research directions have also been outlined.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents the concept of conflict, existing writings on the meaning of conflict, conflict types, conflict management approaches and the impact of conflict on construction projects in the construction industry. It also documented the nature of subcontracting in the construction industry, subcontractors and their categories and finally the conceptual framework of minimizing conflict in the industry.

2.2 The Construction Industry

Construction industry is one of the major sectors that contributes for a considerable percentage of the Gross Domestic Product (GDP) in many countries. Ng et al. (2007) state that 55 largest nations in the world spend approximately \$4 trillion on the construction industry. This confirm that the construction industry is very important in the various countries economy growth. This significance that contributes to the achievement of this industry should try to minimize its losses for the development of the country. All this success achieved by the industry is by human beings who are the principal resource of all construction projects. Construction professionals such as project managers, engineers, architects, consultants, quantity surveyors, etc. are all core participants of each construction project. They are usually assembled or pooled from different firms and companies to form a project team. And each project team is a mini-society with intricate set of interrelationships requiring collaboration and cooperation from commencement to close-out of the project (Ogunbayo, 2013). These people have

their diverse goals and needs, and each expect to make the most of their own interest as far as the project is concern according to Cheung et. al., (2006).

There are three basic segments of the construction industry and are building contractors, also known as general contractors or main contractors, who construct residential, commercial, industrial, and institutional buildings; heavy and civil-engineering contractors, who build roads, highways, bridges, tunnels, and other similar projects; and specialty contractors, more familiarly known as subcontractors, who perform specific trade work such as carpentry, roofing, electrical, plumbing, Heating-Ventilating-Air-Conditioning (HVAC) work, and a host of other tasks, The construction industry is a complex and competitive environment in which participants with different views, talents and levels of knowledge of the construction process work together. In this complex environment, participants from various professions, each has its own goals and each expects to make the most of its own benefits. The increase in the number of participants of different cultural background in the construction value chain means more business interactions and arguments, whether contractual or social, resulting in an increase in the number of construction disputes (Heenkenda and Chandanie, 2016). There is confusion among construction professionals about the differences between conflict and dispute, and these terms have been used interchangeably especially in the construction industry (Acharya et al., 2006). However, according to Fenn et al. (2007) conflict and dispute are two distinct notations. Conflict exists wherever there is incompatibility of interest. Conflict can be managed, possibly to the extent of preventing a dispute resulting from the conflict. On the other hand, disputes are one of the main factors which prevent the successfully

completion of the construction project. Disputes are associated with distinct justiciable issues and require resolution such as mediation, negotiation arbitration, etc.

According to Pohusodo (2015), the project is an effort that mobilizes resources, organized to achieve the objectives, and expectations of particular importance and must be completed within a limited period of time in accordance with the agreement. The series of activities in the construction project begins with the ideas that comes from the need and proceed with a study of the possibility of its creation. Then conducted the preliminary design, detailed design, procurement of resources, construction on the site that has been provided, and maintenance of buildings until the handover of the building to the project owner. Technology in the construction industry has not proceeded at the pace enjoyed by the manufacturing sector. Today there are some robot-driven, software-guided bulldozers, but the full impact of technological advances has not reached down to the average general contractor. Although most contractors have computers with sophisticated scheduling, estimating, and cost-control software programs, they still lay up one brick after another to build a wall and nail studs and sheetrock to construct partitions.

According to Albert and Ada, (2004) the industry is very dynamic in nature; due to that, for the past years, some of the factors within the construction environment have evolved because of increased uncertainties in budget, technology, and development of the processes used. The construction industry has become much more dynamic of now than it was earlier by Müller and Turner (2005) also said complicated things in terms of different activities and parties involved within one particular project, all these aspects characterize the construction industry making it cumbersome in nature.

According to Ward and Chapman (2003) construction projects are entirely dependent on estimates of future occurrences. Quantity surveyors and estimators must work on cost and time-related estimates for a project that is essentially unpredictable and unstable in nature. On that account, it is evidently clear that this industry is also associated with risk, as every project is differing in various aspects, such as the project's location, technology used, and the level of the design (Ashworth 2013).

2.3 The Main contractors

The Main contractors can also be called General Contractor or Prime Contractor in the Institution of Civil Engineering. They are often appointed under a traditional contract to construct a development for which the design is complete. Main contractor generally undertakes construction projects with terms under a main contract, and usually sub-let parts of their work to specialist or trades contractors and others as sub-contractors due to the complex nature of construction industry.

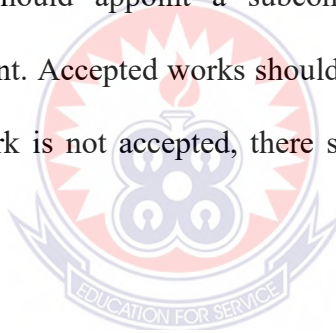
Many construction projects in Ghana, in particular projects executed by small contractors, have underachievement in performance for different reasons, including contractors' poor performance which can cause long delays, breakdowns, conflicts, time and cost overruns as well as poor quality. This is confirmed by the findings of Al-Kharashi and Skitmore (2009) who grouped the reasons behind the underachievement performance of public construction projects into seven categories, of which one is for contractor-related causes. These causes include: contractor inexperience (Assaf, 2015); poor qualification of the contractor's technical staff (Assaf, 2015); contractor difficulty in financing projects; poor site management and supervision by contractors; conflict between contractors with other parties and ineffective scheduling of the project by the

contractor. These are linked to poor scheduling by the contractor and lack of experience. Hence the study of this thesis is focussing on conflicts between subcontractors and the main contractors.

The main contractors in accordance with the agreed upon contract assume some responsibilities and these can be stated as:

- Must provide the readiness of the object for implementation of subcontract works,
- Give to the subcontractor copies of technical documentation and inform him/her about all changes in documentation. Also, the main/general contractor
- Must allow the subcontractors to use utilities at site when necessary.
- Places for office and other premises of the subcontractor should be provided, etc.

The main contractors should appoint a subcontractor whose qualification and credentials are not in daunt. Accepted works should be paid according to the contract agreement and if the work is not accepted, there should be a motivation for this in written form.



2.4 The Subcontracting in the Construction Industry

The construction of modern buildings is an extremely complex process, and the modern construction industry is increasingly characterised by a greater and greater degree of specialisation. It is therefore highly unlikely that any one main contractor will have either the necessary skills or the necessary resources to do all of the work on a project itself, and it is common for sections of the work to be sublet to other specialists. According to Samuel (2009), subcontractors enter into an agreement with principal/main contractors to undertake some specific parts of the main contractors' work. To buttress the point made, Tracy (2014) stated that the subcontractors are specialty contractors who are appointed to carry out specific tasks on a project (as cited

in Enshassi and Shoman, 2008). Subcontractor is defined as one who enters into a subcontract; individual or company that is hired to perform part of the work under main contractors but who have no direct contractual relationship with the client (Fah, 2006). Elazouni and Metwally (2000) also described Subcontracting as the act of main contractors hiring specialty contractors (subcontractors) to help them overcome problems on the jobsite such as the need for special expertise, shortage in resources of the general contractor, and limitation in finances. In addition, Chiang (2009) have also described subcontracting is usually a contractual arrangement in which a main contractors sublets parts of the job to another contractor who may intend sublet it to third party firm. Mbachua (2008) has indicated that Subcontracting is a normal practice on housing and building construction projects than it is the case on engineering and industrial projects. With the above explanation, one can say a subcontractor is a company or an individual whom a main contractor hires to perform a specific task as part of an overall project and normally pays for services provided to the project.

2.5 Categories of Subcontractors

Many companies work on a construction site because sites use many types of subcontractors in construction. A general contractor might perform some of the work themselves; however, most will hire specialty subcontractors in order to ensure that they can successfully complete the project. From Mbachu (2008) has categorized into three different groups. The first category comprises trade subcontractors. They are specialized on specific trades such as paintwork, brickwork, etc. The second category includes specialist subcontractors, which provide specialist services such as electrical, plumbing, insulation etc. The third category is known as labor-only-subcontractors that perform labor-only services (example, skilled artisans). Also, Ng *et al.*, (2008) have

categorized subcontractors into equipment-based subcontractors (who are specialized plant and equipment dealers), and labour-based subcontractors (those who are engaged because of result of their specialized labour resources). Costantino *et al.*, (2001) indicated that the benefit to the main contractors for employing only labour-intensive subcontractor lies in the fact that it reduces the cost of mobilization and material purchase. Besides, by avoiding the mark-up of full subcontracting, the general contractor obtains an economic advantage. However, because of the possibility of quality problems and claims in obtaining the supply of material when labour-only subcontractor is used, some general contractors are in favour of full subcontracting to shift risk and liability.

According to Enshassi and Medoukh (2007), there are two types of subcontracting as specialist subcontracting and volume subcontracting. They have explained that specialist subcontractor is used when the main contractors is not able to execute the work himself. This may be because he/she is not a specialist in the work at hand and so he obtains goods or services, and makes a contract with subcontractor. Volume subcontracting is used when an enterprise appoints a subcontractor because, while technically able to carry out the work, it is overloaded and has to obtain additional capacity from another source or contractors.

According to, Yik *et al.*, (2006) have classified subcontractors as domestic subcontractors and nominated subcontractors. Similarly, Masrom and Asrul (2007) when on to classify Subcontractors as nominated, named and domestic subcontractor depending on the contractual arrangement made in a construction project. Here, the client and his consultant appoint a nominated subcontractor whiles the main contractors

appoint the domestic subcontractor. Even though the client appoints Named Subcontractor, the main contractors have oversight responsibility over the named contractor's work and payments. Nominated subcontractors are referred to as named subcontractors whose main activity is to execute part of the main contractors' work, supply or fix any materials or goods (Yik *et al.*, 2006; Samuel, 2009). Also, the Associated General Contractors of America (AGCA) have described domestic subcontractor as the independent contractors who execute the works, normally for a portion of the works described in the contract document. With the above subcontracting categorization, this study is focusing itself based on Mbachu, (2008) categorization of subcontractors which are as follows;

2.5.1 Masonry, Stonework, Tile Setting, and Plastering

Ameer (2006) classifies these four types of subcontractors in construction under one umbrella. However, it does divide further down in order to be more manageable. It can include masonry, stone setting, plastering, drywall, insulation, and even more. Plastering, drywall, and insulation are important to most building types since most buildings have a layer between the exterior walls of the building and internal sections. These types of subcontractors in construction build a lot of the projects from foundations to finishing touches.

2.5.2 Concrete Work

Concrete contracting is one of the large types of subcontractors in construction, they can work on a variety of projects (Amoako, 2011). Some will be concrete finishers, work primarily with foundations, or work primarily in asphalt. All of these types of concrete specialists fall into the concrete work subcategory (Ameer, 2005). According

to the Bureau of Labour Statistics, it's a fairly popular field with an opportunity for growth.

2.5.3 Carpentry and Floor Work

Carpentry and floor work are crucial types of subcontractors in construction, they can build and install cabinets, but they also work in joinery, garage doors, framing, and doors (Ameer, 2006). Often times they will be responsible for all trim and finishes in the project. Since flooring is always important in every project, these subcontractors will be seen on most sites. Knowing that the flooring is correctly installed and the project's needs taken into account make flooring subcontractors so important.

2.5.4 Electrical Work

Electrical subcontractors are a broad type of subcontractors in construction. There is a lot that an electrical subcontractor could work on. Electrical subcontractors are those that work on electrical work at a site rather than in a repair shop or similar. Electrical subcontractors might be fire alarm installers, work in telecommunications equipment and installation, or even what most people would think of for electrical work (Baiden, 2006).

2.5.5 Roofing, Siding, and Sheet Metal Work

Roofing, siding, and sheet metal work specialty contractors are important types of subcontractors in construction. These subcontractors can hold a variety of jobs, from working with architectural metal to skylight installation. They're responsible for the roofing, gutter installation, possibly ductwork installation or fabrication. Roofing, siding, and sheet metal also sometimes will fabricate the pieces themselves. With more

industrial spaces and changes in design, roofing, siding and sheet metal work will be busy fields of subcontracting (Maturana, Alarcon, Gazmuri & Vrsalovic, 2007).

2.5.6 Plumbing, Heating, and Air-Conditioning

One of the types of subcontractors in construction is plumbing, heating, and air-conditioning. These subcontractors or specialty contractors are also known as mechanical contractors when they can do work on all three. Contractors sometimes choose to specialize even further in plumbing or heating and air conditioning or cooling. Specialty contractors that specialize in heating and air conditioning are known as HVAC contractors. Plumbing, heating, and air-conditioning is an important subcontracting type in construction (Vorster & Groton, 2010).

2.5.7 Painting and Paper Hanging

Another type of subcontractors in construction is painting and paper hanging. Painting and paper hanging are a type of specialty trade that primarily engages in painting and paper hanging. So, they might paint bridges, electrostatic, and more. Businesses that are classified as painting and paper hanging don't engage in roof painting. Roof painting is a separate trade from painting and paper hanging. As a whole, the industry is of great value to every project (Tran & Carmichael, 2012).

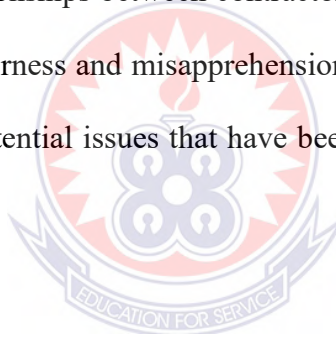
2.5.8 Special Trade Contractors

This field rather left wide, but it encompasses many types of subcontractors in construction. Glass and glazing work, excavation, demolition, steel erection, and more are lumped into special trade contractors. Ironworkers, excavators, and the like are also experiencing growth like other fields in the construction industry. Some of the special

trade contractors make more and have greater growth at this moment over others; however, with the construction boom, many of the fields are growing larger (Ameer, 2006).

2.6 Challenges Associated with Subcontracting in the Constructing Industry

Subcontractors play an important role in the industry in helping the main contractors to achieve his /her goals yet there are a lot of problems like conflicts associated to them and the main contractors. According to Mohamed and Terek (2014), the main contractors and the subcontractor have not always had good rapport between them. To emphasize this point, Proctor (1996) noted that frequent occurrence of disputes on projects have made relationships between contractors and subcontractors increasingly strained due to lack of fairness and misapprehension of one another's opinion. Nur *et al.*, (2015), shows the potential issues that have been considered to be categorized as subcontractor bullying.



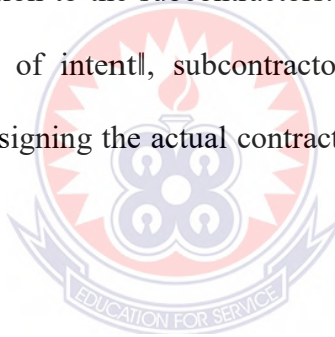
2.6.1 Payment

Payment is the transfer of money or goods and services in exchange for a product or service. *Payments* are typically made after the terms have been agreed upon by all parties involved. Bartle (2009) have noted that the main contractors usually suppress and uses unacceptable tactics to delay payment due the subcontractor for work well executed, until the subcontractor appears due to the lack of funds. There is usually delayed payment of work done by subcontractor and this leaves the subcontractor with insufficient money to carry on work. According to Fah (2006), usually main contractors employ this strategy to improve their cash flow when payments from the clients are not forthcoming and incomplete. However, some unscrupulous main contractors may exploit smaller subcontractor by delaying payment to them and making unreasonable

deductions without regard earlier agreements (Fah, 2006). According to Arditi and Chotibhongs (2005), it is common for small subcontractors to lament about the depressing practices of main contractors and how it possesses as a threat to their survival.

2.6.2 Troublesome clause in contract

According to Uher and Brand (2008), troublesome clause in subcontracting contract come in the form of payment clause, no damage for delay clauses, flow through clauses, indemnity clauses, additional insured, termination clauses and partial lien waive clauses. These clauses are usually employed by main contractors to strategically relieve themselves of any obligation to the subcontractors. What happens in practice is that, with just a mere -letter of intent, subcontractor will often directly proceed to commence work prior to signing the actual contract with the main contractors (Uher, and Brand, 2008).



2.6.3 Total imbalance of power

It has been alleged that main contractors have abused their dominant position in the contractual chain to withhold monies due to the sub-contractors by way of spurious abatements, set-offs and counter-claims, with the sole purpose of increasing their own profit margins (Uher, and Brand, 2008). This is largely been attributed to biased clauses in the construction contract. For example, clauses in subcontracts that empower the main contractors to pay the subcontractor only when paid by the client, leaves the subcontractors to adhere strictly to the clauses stipulated in the contract or risk losing next available job.

2.6.4 Getting blame for unfortunate events

According to Hurley (2012), the main contractors blame subcontractors in the event of any unfortunate event on site. Thomas (2014) explains further that, this is likely due to the notion that, subcontractors are responsible to maintaining the safety of their construction sites. However, it must be noted that both the main contractors and the subcontractor are jointly accountable. The main contractors are normally the head of the project on site, consequently putting them at the premier authority in maintaining the safety entire construction sites for their works. It has been proposed that main contractors should help nurture subcontractor on a positive self-consideration as regards the imperatives for a safe construction site (Steven, 2016).

2.6.5 Excessive workloads

It is common practice in the construction industry to subject workers to working extra-long hours (Cooke, 1996). According to Ghanw et al., (2014), disproportionate workload leads to pressure and nervousness due to the rigorous working within the time constraints. Furthermore, Cooke noted that construction employees suffer undue stress when they are exposure to unrealistic demands from clients, working with impracticable deadlines, juggling between multiple projects and conflicts within the organization. Alinaitwe *et al.*, (2007) noted for instance that, on both private and public sectors projects in the United Kingdom (UK), the client is always exerting excessive pressure on construction teams to deliver projects on time, to quality the stipulated and at the lowest cost.

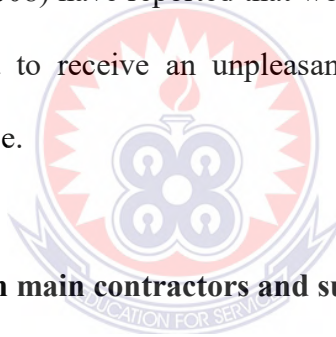
2.6.6 Ambiguities

The problem in construction project is aggravated by the presence of ambiguities such as unclear scoping and under-defined task objectives. Most construction projects are

interrupted due to incomplete specification of the drawing (Huang et al., 2008). Problem between the subcontractor and the contractor may be triggered due to unclear drawings provided by the main contractors (Assaf, 2015). The subcontractors may also develop bitter feeling towards the main contractors under this circumstance (Bagilhole et al., 2000).

2.6.7 Hostile environment

According to Alterman *et al.*, (2008), the prevalence of workplace bullying is high due to its hostile environment. Bagilhole *et al.*, (2000) have also noted that the construction industry is also tagged with a macho culture characterized by arguments, conflict, and crisis. (Alterman *et al.*, 2008) have reported that workers or employees in this kind of environment are deemed to receive an unpleasant name-calling, constant yelling, threatening or verbal abuse.



2.7 Relationship between main contractors and subcontractors

Relationship is when two or more people or things are connected, or the state of being connected. Construction industry should be the one whose working relationship must be very important since one company or individual cannot accomplish a construction project, and will need others assistance to carry out the work. It is on this note the main contractors are responsible for the construction of projects, but they rely on subcontractors and/or specialist contractors and suppliers to execute the works Clarke and Herrmann, (2004). According to Arditi and Chotibhongs (2005), the main contractors do this to reduce their overhead and operating costs, improve efficiency, and achieve a more economic delivery of projects. However, for them to achieve this,

the main contractors have to develop enduring relationships with key suppliers and specialist contractors Hook (2012).

According to Dainty et al. (2001), studies shows that the main contractors in traditional construction procurement are primarily concerned with maximising their profit at the expense of the subcontractor. One main reason for the selection of subcontractors is basis on lowest price and leaving the best value, this end up forcing the subcontractor struggle to survive, considering this behaviour, according to Coase cited in Kale and Arditi (2001), the main contractors fail to realise that price is not an effective mechanism to sustain business transactions, and this always result to bad relationship between them and their work suffers the progression that is needed.

Also, another bad attitude shown by main contractors which affect effective collaboration in construction procurement projects is the use of harsh contract terms/clauses in subcontract agreements. These clauses to terminate and not to pay damages for delays or otherwise is also contribute to bad relationship, there is a popular saying “paid when paid”. According to Thomas and Flynn (2011), these clauses have become regular inclusions to standard subcontracts. Studies shown by Dainty et al. (2001), the clauses are used in such a way that if care is not taken long standing relationships can be terminated the moment there is a failure by the subcontractor.

In addition, their tendency to transfer enormous project risks to subcontractors, who are typically small and medium size enterprises with little or no capacity to bear such risks; as well as their reluctance to call on subcontractors’ expertise in resolving issues on site Dainty et al. (2001). With this information available, it shows clearly that the main contractors are not interested in developing cooperative relationships Eriksson et al

(2007). This is why subcontractors do not believe in main contractors when it comes to good relationship.

According to Johansen and Porter (2003), the main contractors complain that subcontractors have a habit of bringing inadequate workmen to site, a practice which hampers the works and fuel conflicts. The main contractors complain of managing different job sites so they always want the subcontractors to do their work fast but the subcontractors adopt bad attitudes. For that matter they the main contractors always struggle to meet the schedule of work which normally results in delays. In contrary the subcontractors also have to adopt a way they will not always be running out of workmen, so they do the work as and when it is appropriate to them and this also always results to delays in the projects delivery.

Dainty et al. (2001) talks about time and resources wasted during these periods of delays usually have financial implications, which they are often not able to claim again therefore prompting their cautious approach. Normally the main contractors and subcontractors although working under the same construction procurement arrangement do not plan and develop the project programme together and this is where most of the problems start. Johansen and Porter (2003) also agree that this failure to work together unfortunately leads to incorrect and guessed duration of critical activities because sufficient and broad view information was not gathered. Adding to this the project may suffer delays and cost overrun which leads to conflicts. The counter accusation between main contractors and subcontractors as project participants on construction projects are sources of conflicts. Relationships soon degenerate once it is perceived that potential profits may be eroded, and without recourse to the long-

standing relationships between them, such relationships break up Dainty et al. (2001). The culture between main contractors and subcontractors is also a source of a problem that bring mistrust in relationship. Trust is very important in any relationship and people are more likely to work better and freely with those they believe share their values McDermott et al. (2004). Kadefors (2004) find out that when trust is well embedded at any work, the parties will enjoy benefit of it and the projects schedule of work will not also be disrupted.

Ankrah et al. (2009) have discovered one important thing that is affecting openness and collaboration on construction projects. They noticed that groupings exist within projects or in project organisations in the form of professional stereotypes or allegiances. Members of a particular professional group separate themselves from others, within the same work environment, who they perceive do not share their professional orientations. These behavioural stereotypes and structural (contractual) frameworks are apparent in the main contractors and subcontractor work setting and form barriers between them, thus making effective collaboration difficult Johansen and Porter (2003). Mignot (2011) counsels that project participants have to change their culture stereotypes/ideologies and do away with their professional delineations to be able to implicitly trust one another. Cox et al. (2006) are however of the opinion that these problems are not necessarily due to the fact that project participants are “malicious or ignorant”, but that there is a consequence of individuals or group of participants are pursuing their respective economic self-interests instead of the whole group.

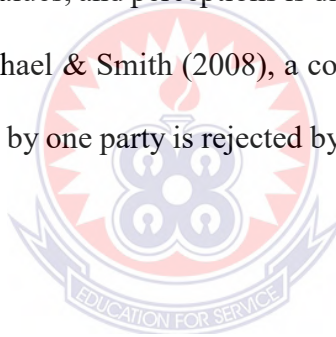
The construction industry however is actually best delivered by working collaboratively. To buttress this point, Franz and Leicht (2012) stress that adopting relational attitudes will deliver high performing building projects because it creates a collaborative system. Understanding the distribution of project risks is another way to ensure trust between main contractors and subcontractors in the construction industry. Kadefors (2004) affirms, fairness is fundamental to trust. If people are made known to risk and its implication then, they will see projects risk as a collective responsibility thus will strengthen the chances of improving project outcomes. Dainty et al. (2001) also identify that there is poor level of information sharing between main contractors and subcontractors. They reveal subcontractors' unhappiness with main contractors' insensitivity to their need for prompt and correct information. Therefore, expectedly, subcontractors are worried that the approach to construction procurement hinders effective knowledge exchange amongst participating companies. A system that ensures a prompt and sustained sharing of information must thus be developed. There is a saying that "problem shared problem solved". So, the main contractors and subcontractors must realise that if information flow is effective or knowledge sharing is effective McDermott et al. (2004), and this will go a long way to develop trust between them.

Good relationship as stated by Kadefors (2004), maintains that there are occasions when project participants jointly resolve problems that arise in the course of the works, but these are often spontaneous and unplanned. In this case there should be constant effort to resolve conflicts and other disputes between main contractors and subcontractors. Also, the resolution processes should try to develop and establish a continuous way for improving and innovative resolution of problems. There should be an established system to seek continuous improvements that will help contracting organisations

develop an organisational capability to informed, experienced, and organised. Mignot (2011), this may further help to achieve lasting solutions, and lessons learned that can be transferred unto future experience interactions to help minimize conflicts in the industry.

2.8 Concept of Conflict in Construction Projects

According Suharto (2001), the conflict can be defined as dispute between elements or the opposite thoughts in the project. Conflicts can be interpreted as disagreement between two or more members of organisations or groups within the organisations that arise because they have to use scarce resources jointly, or carry out activities together, or have the status, goals, values, and perceptions is different Ranupandoyo and Husnan (1995). According to Michael & Smith (2008), a conflict can be said to exist when a claim or assertion is made by one party is rejected by the other party and that rejection is not accepted.



Considering Thompson et al, (2010), a dispute is defined as an argument about an issue concerning project operations, usually resulting from a debate over differences in two or more parties' understanding of situation. This shows that conflict is more likely occur when the conflicting parties shows an action or arguments to a controversy. Most of previous research defines conflict and disputes shares the same definition that is generally involves disagreement regarding interests or ideas and that was adopted for this research. The important issue is both of the terms has historically been viewed as undesirable, something to be avoided (Cohen, 2011). With the above explanations and definition of conflict, one can say conflict is a serious disagreement of argument, typically a protracted one.

2.8.1 Conflict in the Construction Industry.

Conflict seems to be very synonym with construction projects and giving the impressions of problems includes in increasing project cost, project delays, reduce productivity, loss of profit or damage in business relationship. The main goal of this research is to develop a framework for minimising conflict in construction industry.

2.8.2 Conflict Types:

Conflict can be group by so many ways depending on the how one look at its nature and how it happens. Mba (2013) observed that there are two sides to conflicts, one is destructive and unhealthy, and the other has a problem-solving base where those involved are willing to sublimate personality differences, to listen to other's views and to be open as well as candid to each other, and to be supportive and helpful whereas the former defeats cooperation. Gorse (2003) equally postulates that conflict can be natural, functional and constructive or unnatural, dysfunctional, destructive, and unproductive. Functional conflict (Gorse, 2003) results from challenges, disagreements and arguments relating to task, roles, processes and functions, this type of conflict often involves detailed discussions of relevant issues. The categorization of conflict by a plethora of literature has been offered semantically diverse by individual writers though, their meaning and description are compatible and convergent. Conflict (Atreyi et al., 2007) can be issue base or interpersonal; affective and cognitive conflict (Uline et al., 2003); functional or dysfunctional.

Smith (1992) is of the view that functional conflict is fundamentally a construction community problem, when it is an inescapable consequence of the relationship in construction industry whereas dysfunctional conflict may have arisen if the actions of

the parties have gone beyond what is recognized as functional conflict. According to Capper et al., (2009), functional conflict is assumed to be positive and productive whilst dysfunctional is seen as negative and slow down the progress of the work. According to Atreyi et al. (2007) issue-based conflict can be attributed to task and explicate that it happens as variances in views allied to the group's duty. They describe subject centred conflict as usually conspicuous with intense arguments and individual excitement, bereft of upset and adverse sentiments similar to relational conflict. An interpersonal conflict conversely, is defined as relational centered and are categorized by agitation, aggravation and infuriation amongst group participants (Atreyi et al., 2007).

Per availability of Literature on subject-based conflict is useful and advantageous to group achievement; it permits for a crucial evaluation of other options and expand the answerability of team participants. Per Atreyi et al., (2005) the nonexistence of subject-based conflict may precede to an adverse outcome for instance groupthink. Task based or Issue-based conflict has repeatedly been referred to as productive conflict, for the reason that it aids escape dominance and lack of progress, pursues answers for queries, and stimulates inventive thinking (Carte and Chidambarum, 2004). Emmitt and Gorse (2003) in agreement with above position affirms that functional conflict more often than not is beneficial, helping to expose problems, reduce risks, integrate ideas, produce a range of solutions, develop understanding, evaluate alternative and improve solution.

Also, Darling and Walker (2001) insist that conflict which supports the objectives of the team and encourages team achievement is categorized as useful conflict or disagreement. Constructive conflict desires unbiased dialogue of divergent views or positions. And with the purpose of safeguard and an advantage from differing views, a

team forerunner is anticipated to uphold reciprocal respect even though disagreeing (Oaks, 2017). On the contrary, Atreyi et al. (2007) relational disagreement includes shared abhorrence and persona clanks. It is understood as characteristically harmful to group achievement. Conflicts which are difficult to discover the reason or the rationale behind are mostly unnatural conflict or dysfunctional conflict. Dysfunctional conflict according to (Gorse, 2003) occurs when one participant enters into an encounter with the sole aim of destructing and disabling the other. Personal insults, criticism that boost self-ego and comments that lacked regard for others feelings are often described as dysfunctional.

Carte and Chidambarum (2004) also referred to interpersonal conflict as “destructive conflict; affective (Uline et al., 2003); As an affective or socio-emotive it consists of an alleged peril to one’s individual or team character, standards, and ideals; it happens in the method of persona clanks, resistance, and thwarting” (Vliert, 2019). Vliert insists that relational conflict in total situations capitalize on personality clanks and lessens shared knowledge crucial for work accomplishment. Affective or Emotional conflict may end in unproductive, inferior judgement quality and approval. Based on the above debate, it may be understood that conflict may normally be labelled as helpful or harmful. Daniels and Brown (2015) study produced answers like ruin, resentment, disparity, anger, hostilities, apprehension, strain, isolation, viciousness, rivalry, peril, despondency, agony, and desperateness. According to Scofield (2012), have the assertion that conflict is unwanted and of necessity should be shunned. Steven (2016) conversely illustrates helpful conflict as accepted, worthy, essential and factual variances. They highlight on the controlling of conflict and never the conflict per se. Teams can undergo the two types of conflict within a group or working atmosphere,

however the way it is handled makes the difference and that can be productive or unproductive.

Some authors also have different views about conflicts grouping concerning building construction. They do not agree that conflict in a building sector ought not to be merely termed as dysfunctional or functional (Leung et al., 2005). Somewhat they are with the view that rational stages of conflict may advance contentment in a work environment up until a stage where conflict worsens and reduces satisfaction (Gardener and Simmons, 1995). Oaks (2017) also says that, conflict may offer incentive for employing intra-group disagreements; an expert regulatory of these in-house conflicts, notwithstanding the transient distraction, strengthens relations between group participants. Sportsman and Hemilton (2007) explained conflict as a positive driver for social change or positive response to change. In support Dahrendorf (2007) postulates that conflict is the driving force for man's progress even though conflict may be seen as a bad thing but in reality, conflicts sometimes are good to go.

2.9 Causes of Conflict in the Construction Industry

In order to prevent something bad happening, the first thing to do is to trace the origins of it. Many researchers have studied on conflict that raises huge numbers of variables regarding the sources or causes of it in the construction industry. The study has revealed the sources and causes of conflicts to be very important to addressing the problem (e.g., Michael, 2007; Cheung and Yiu, 2006). Notably, the findings from such studies are similar in nature to those that have attempted to determine the causes of claims Girard, (2008), rework, delays and cost and schedule overruns (Smith, 2003). Jameson (2013) believes that construction conflicts have their instinct nature and characteristics, and

thus the sources of conflicts will vary from one project site to another. In his study, five primary sources of construction disputes were listed that includes existence of errors, defects or omissions in the contract documents, failure of someone to count the cost of an undertaking at the beginning, changed condition, consumer reaction and people involved.

Hartman (2014) reported that the most common causes of claims that normally lead to disputes are scope changes, weather, and restricted site access. Eisenhardt et al, (2019) reported several studies have shown that multicultural teams are inclined to generate more conflict. Michael (2007) has summarized 20 common causes of construction disputes, including speed of construction, cost and quality control, technological advances, stringent building regulations and economic difficulties that becomes basics for many studies later regarding conflict and disputes in construction industry. Fenn et al. (2007) identified causes of construction disputes caused by clients includes failure to respond in timely manner, poor communications amongst members of the team, inadequate tracing mechanisms for request of information, deficient management, supervision and coordination efforts on the part of the project, lowest price mentality in engagement of contractors and designers, the absence of team spirit among the participants, reluctant to check for constructability, clarity and completeness, failure to appoint a project manager and also discrepancies or ambiguities in contract documents. Michael & Smith (2008) indicated in their study that the sources of construction disputes are mainly related to contractual matters, including variation, extension of time, payment, quality of technical specifications, availability of information, administration and management, unrealistic client expectation and determination.

Carmicheal (2002) identified causes of construction disputes caused by contractors which include inadequate contractor's management, supervision and coordination, delay or suspension of works, failure to plan and execute the changes of works, failure to understand and correctly bid or price the works, lack of understanding and agreement in contract procurement, reluctance to seek clarification and inadequate critical path method (CPM) scheduling and update requirements.

According to Chua & Song (2003) project schedules developed by various project players often reveal conflicts when they are merged together. This is due to the main challenge of communication among the constructor's lies in the implicit interfacial dependencies between the project activities. Another study by Kathleen (2003) describes destructive conflicts develop as a result of limited resources, e.g., not enough time, money, labour, materials and or equipment.

In a larger scope of study in Sino-Foreign Joint Venture construction projects, Edwin & Henry, (2005) identified 20 sources of disputes includes payment, variation, extension of time, quality of work, unfamiliar with local condition, project scope definition, risk allocation, difference in ways of doing things, technical specification, poor communication, administration or management, unrealistic client expectation, availability of information, adversarial approach in handling disputes, lack of knowledge of local legal system, conflict of laws, jurisdictional problems, unclear contractual terms, lack of team spirit and previous working relationships. A study by Cheung et al., (2006) describes that the inclusion of special conditions in contract, changes in construction plans and specifications, and the resulting contradictory and error of information in the mass of documents can all contribute to construction

conflicts. Cheung & Yiu (2006) conducted a study on mediation in resolving conflicts identified valuable variables on causes of conflicts. They divided conflicts sources in two different category that is construction related and human behaviour related. Sources of conflict related to construction factors are acceleration cost, the assessment of liquidated and ascertained damages against main contractors, clients fail to pay for variation claims, late giving of possession from client, clients take over the site and deny access to main contractors, errors substantial changes in bills of quantities, argument on the prolongation costs, architect/engineer dissatisfies the work progress of main contractors, argument on the measurement and valuation of the contracted work, late instructions from the architect and engineer, main contractors fails to proceed in a competent manner, delay interim payment from client and late release of retention monies to main contractors. It also includes argument on the time extension costs claimed by sub-contractor, changes of scope due to extra work, inadequate site and/or site investigation report, delay works due to utility services organization, non-payment to sub-contractor by main contractors, main contractors ceases work on site, argument on the time extension costs claimed by main contractors, main contractors denies access of the site for the sub-contractor, subcontractor works delay due to main contractors, consequences of opening for inspection and sub-contractor ceases work on site.

Sambasivan & Soon, (2007) stated in their study that factors such as delay in the payments for completed work, frequent owner interference, changing requirements, lack of communication between the various parties, problems with neighbours, and unforeseen site conditions could rise to disputes between the various parties involves. The causes of conflict as reported in the previous studies describe different variables reflecting to their study. Even though most of the study shares the same variables, the

causes still seem too large to be understandable or to be focus on. The categorization or root of causes identified by Williams, (2009) will be based on for this study. Conflict causes identified by the researchers are summarized into three (3) categories that are causes due to behavioural, contractual and technical problems.

2.9.1 Conflicts due to Behavioural Problems

Behavioural is the upbringing of a person or in other words the life style of a person. Behavioural problems include human interaction, personality, cultures and professional background among project team. Other issues in human behaviour such as individual ambition, frustration, dissatisfaction, desire for growth, communication and level of power, fraud and faith are also causes of conflicts, Thompson et al, (2010). “It was noted earlier that construction is not a science, it is an art. Construction is really people, and the successful contract administrator, or disputant to a contract interpretation or unfortunate occurrence on a project, is well served to know a little about people involved (Jameson, 2013). The herding instinct is very strong in the industry’s people. All seek and need that sense of acceptance or approval. They have a need to emulate the leaders or their concept of the leaders of the profession. Words like belonging, imitation, loyalty, recognition, superiority, status are descriptive of the human elements of gregariousness. Try to make the other party feel as if he belongs to the pack. Find out the group the other party feels important. Show him how resolution of the conflict will help him achieve or strengthen his membership in the group” Carmicheal (2002). “It is one thing to lose money in a contract problem, but it is a lot to lose face. All people have an idea of themselves which they feel must be defined” McMahon (2014). Conflicts can often be more easily minimize when all the egos are considered, but not only people who want to protect their selfish interest, they all want to extend the

position they currently hold or claim is theirs. Thus, any message couched in terms of few acquisitions, promotion, saving money, or being protected will be heard and every often receive action. Everyone wants space, a better future, and the chance to increase the recognition of one's self-worth. Appeals to ambitions, goal realization, and increase of power help resolve conflicts.

Looking into the main problem, Carmicheal (2002) considered construction conflicts and confrontations arise because the people involved have needs. Viewing from the contractor's side the needs the people usually want money, care or profit related. The designer on the other hand has the ideas, his building or design which might be his monument to himself, his reputation, his artistic temperament, his money, his insurance premium, and similar needs. The owners also have needs as well; political careers, corporate careers, the need to have the space for a certain day. When something unanticipated or not properly recognized interferes with the fulfilment process, goals and security are jeopardized, communications become strained, and strains seem always to be followed by demands, refusals, other more intense strains, hard, then harder positions, and money losses. These problems arise when there is lack of team spirit and poor communication among the project teams. People are a prime cause of construction conflicts, and the only solution to these conflicts as well.

2.9.2 Conflicts due to contractual problems

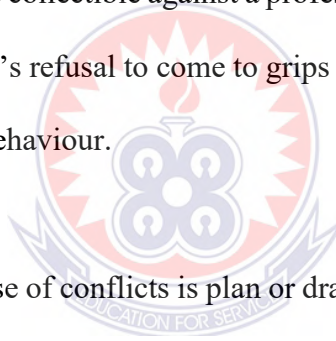
This research is to examine contractual problems which regularly arises in construction projects and provides a detailed explanation of their solutions. The participation of different parties in a project is governed by a contract which defines the exchange of construction materials and services for money. "A contract is a promise or the set of

promises for the breach of which the law gives a remedy or the performance of which the law in some way recognizes as a duty,” Contractual conflicts include definition, interpretation and clarification of the contract. Contractual issues cause a significant portion of conflicts in many projects Girard (2008). Michael & Smith (2008) indicated in their study that the sources of construction conflicts are mainly related to contractual matters, including variation, extension of time, payment, quality of technical specifications, availability of information, administration and management, unrealistic client expectation and determination. In any type of work/operation, are participants or people responsible for the work, which the construction industry is not exemption.

Standard contract documents should be provided to guide every industry. This way of a standard contract documents to guides operations toward standard practices in the construction industry will go a long way to avoid or minimize conflicts. The standard contract documents provide enough common ground for contractual definitions, clarifications in construction operations and specific project requirements. “Owners, contractors, designers, and everyone involved in construction readily recognize and are quick to admit publicly the very obvious fact that a perfect set of contract documents simply does not exist (Jameson, 2013). All drawings in the contract documents somewhere have mechanical drafting errors or lack a needed dimension or detail. Some of the drawings have inadequate or even wrong dimensions which is a contributing factor of conflict by the designer and the draftsman.

There are also human errors being part of the problem, but changes always occurring as projects undergo the design and construction process. There are changes in space usage to accommodate revised owner’s needs, something unforeseen occurs, the documents and work scopes must be adjusted. The more complex the project, the more

ramifications a change has. When the time allocated for the design is not enough then a lot of changes and errors are likely to occur. There is the need to note down certain details to avoid unnecessary errors in the design which may end up appearing on the project implementation stage causing a problem between the parties. “The larger the project, the more the people, the drawings, the thoughts, and the ideas consequently, the larger the project the more errors there are” Hall (2000). Contract documents are one major origin of disputes. Errors from documents can become the fault of the designer when the judgment of its peers and the custom of the industry the errors are gross and inexcusable. Document errors become liabilities when someone who has a right to rely on the professional is severely hurt or damaged. Punitive damages are starting to be considered as collectible against a professional when the hearer of the facts finds that the professional’s refusal to come to grips with its duties are offensive to any reasonable standards of behaviour.



The other contractual cause of conflicts is plan or drawings. A major source of disputes in the design deficiencies is that categorized as defective plans (Manchester, 2012). Most people involved with plans have a working idea of the definition of this phrase, but in reality, no standard exists locally or nationally that precisely describes how to measure the plans for defects. Everyone who has worked with plans know that no set of drawings is complete or without error. Somewhere dimensions are missing, wrong scales, and a detail is missing, elevations or grades are in error and many others. Not only are these types of errors common, but all who work with plans know that drawings can always be refined and upgraded. Plans can always be made better and can be improved but conflict will always come between it. Thus, all plans are to some extent defective and everyone involved in building uses defective plans every day.

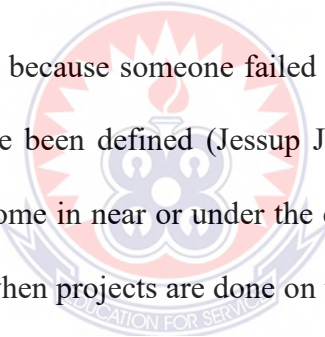
The question in plan deficiency disputes is when the plans become defective to the point at which undue costs are generated from their use. The usual legal definition is that plans are to be prepared with the normal standard of care found in the profession, but no precise standard exist. The designer has the advantage of its subjective knowledge of the intent of the plans. In some cases, pressures from the client will be exerted for degree of performance in excess of the objective intent of the plans. This, plus poorly drawn plans, poorly drawn details, poorly prepared notes on drawings, and poor specifications may reach a point where in the opinion of one's peers, a level of acceptable performance has not been achieved. In the case of errors of omission from a set of plans, the decision of adequacy on the part of the professional is much easier to make than those which bear on methods or performance levels to be met upon completion. The solution generally comes from the people genuinely willing to confront such situations daily and work out the answer. The method is a good one but it does not work all the time and is completed by the lack of practice measurement. The liability, however, can be far in excess of the omission. The ancillary costs of a construction problem almost always exceed the direct costs. The owner and the contractor have the right to expect the designer to produce a set of drawing plans which will allow the project to be built. The law says the owner warrants to its contractor that the plans, if followed, will produce the desire results and the project is constructible. Thus, if the error by the designer prevents the contractor from reaching its ends, the question of ability and assessment of consequential costs exists. All these errors numerated always bring conflicts between the main contractors and subcontractors.

2.9.3 Conflicts due to technical problems

One-way conflicts can happen in the construction site is technical problems which could be term as technical difficulties, which are unforeseen equipment problem such as hardware failures or software bugs that make it difficult or impossible to perform a desired action. Technical problems due to uncertainty are considered as the most common issues in project operations. According to Galbraith (1973), uncertainty is the difference between the amount of information required to do the task and the amount of information already processed by the organization. The amount of information needed depends on the task complexity that is the number of different factors that have to be coordinated or performance requirements such as time or budget constraints. The amount of information processed depends on the effectiveness of planning that is the collection and interpretation of information before the task Mitropoulos & Howell (2001). The uncertainty may lead to unrealistic client expectation such as unrealistic contract duration, late instructions or information from architect or engineer, overdesign, inadequate site or soil investigation report, error and incomplete technical specifications and many others.

Technical problems also include engineering clarification which is a part of engineering decision making processes. That is request for information is considered an effective vehicle to clarify differences in understanding during project operations. With the used of request for information, most unclarified issues are resolved on site before they develop as a technical problem and solve the problem of inadequate tracing mechanisms for request of information. These problems can be solved by project personnel with the appropriate expertise. The engineering decision making process is fairly straightforward and reasonably justifiable for each participant. If technical

problems are unresolved, there are ways of resolving those problems in project management unlike the resolution of contractual conflicts during project operations. The design deficiency which leads to a major conflict is generally beyond an error of omission. To be significant the design error usually must alter the means, methods, environment, duration, or the conditions of the construction process. Any number of factors can influence this. The most common place in which design errors are made are in the foundations, in the construction of the frame and the enclosure, in the utilization of spaces such as method and materials and the required end result are specified, in project duration, and in connection with related performance by others on which the project in question must at some point rely.



Conflict continually arises because someone failed to count the cost at the beginning when the cost should have been defined (Jessup Jnr., 2013). Few contractors bring claim on projects which come in near or under the construction budgets. Few owners seek liquidated damages when projects are done on time or close to it. If designers are waterproof and the products the designer specified fulfil the sales representative's claims, conflicts are few and far between. Contrary to the opinion of most owners, few contractors are deliberately claim's conscious. Most supervisory projects personnel who work for the parties on the project have little real knowledge of conflicts or what is involved in litigation and arbitration, most of those involved in getting a job done have solved complex problems on a daily basis of face-to-face confrontation for such a long period of time that they come to believe they know it all. Thus, they prefer to argue among themselves and write what they believe are clever letters to establish a record, and most distribute and resent the lawyers. Contractors who have made money on a job usually do not invent claims or pursue spurious claims. Most often, a contractor who is

clearly entitled to valid contract adjustment via a claim will ignore the situation if the job has come out well enough to live with.

Contractors like to get the job done and get over with. They fancy themselves builders; claims take long to hold their interest. According to Essex (1996) conflicts arise when the job does not come out well, and too often the reason for this is the failure initially to figure the cost accurately. The failure to count the cost initially is not confined to just the contractor only it applies to the owner who set out unrealistically to build a building, as well as the designer who sets out the design it for less than it will really cost either in design or construction. It is common that someone fails to count something, and end up with a price that is too low. What is worse is that most of those in the industry simply do not have the money to pay for their errors. The one with the best intentions cannot pay for his error and those with the money to pay for their errors lack the degree of intention needed to dig deep enough to square the account totally. The hardest part is that the dollar has to be collected after all the delays and difficulties involved in retain age, back charges, punch lists, and the like are resolved. Thus, to the contractor boxed in with retain-age and other cash flow problems there is no room to absorb cost overruns. Construction pricing methods frequently are not to take into account the erection process that will be ultimately required in sufficient detail Nowich (2008). The modern designer does not want to tell how a job should be done or prescribe or reveal any sequential restrictions not strength related. Thus, millions of funds of work are priced under severe time pressure using established unit price calculated from the estimator's experience and which to some extent many have been proven in ongoing or recent projects. The failure of a contractor to understand and / or correctly bid or price the work initially is a major reason for disputes. It is compounded by the ever-present

confident overbearing optimism inherent in all contractors that they somehow are charismatic and can overcome the dilemma of an obvious bid.

2.10 Conflicts between Subcontractors and Main contractors

Anytime Construction workers meet at site there are possibility that argument upon argument will rise between these individuals or organisation as the project progresses which is normal but these arguments can be productive or distractive depending on the way it goes. Sometimes its result to conflicts which is the distractive aspect of it. This study is focusing on the conflict between the main contractors and the subcontractors in the construction industry. Clients also are not left out when it comes to conflict on projects where they often quarrelling and questioning their consultants in respect of incomplete design, omissions in scope brief, low aesthetic appeal, and budget overruns (Shapiro, 2005). Conflict again is relatively common between the client and the main contractors usually related to late payment, construction failures, disagreement over the payment for extra works and change orders. Conflicts do occur between client and main contractors through over design, construction failure, owner's financial limit, useful requirement, etc.

Again, Consultants and contractors more often accuse one another, over material quality, design and workmanship errors. Another area of conflict commonly identified is between the main contractors and sub-contractors (Stones, 2011), and is often about late payment of interim certificates, disagreement over the payment for extra works, and schedules. And these conflicts can be rancorous but these are usually solved by the dominance of the main contractors or by legal means allowed or permitted by the contract. Conflict between domestic sub-contractors often present an interesting

challenge because of their relative equal stature, and do not directly have any relation between them but owe their submission to the main contractors. This kind of conflict frequently occurs between the Finishes sub-contractor and the Service sub-contractor. Role uncertainty in construction leads to conflict as well. A major source of conflict between contractors or between sub-contractors is at the boundaries of their work packages. Sometimes it is the gap between the packages that causes the uncertainty, when it becomes apparent that, due to an oversight by the consultant or the construction manager or the management contractor, vital work is left unattended to because it was not specifically assigned to anyone or included in any of the packages.

Additional factors that cause conflicts to arise between the teams include a poorly defined scope, poor communications among team members, mismatch of interests, uncertainty and unrealistic expectation (Yu and Cheung, 2007; Shapiro, 2005). A poorly defined scope generates hostility between the client and the contractor (as the contractor demand payment the “creep”), and between the client and the design team (for excluding client specific items from his/her brief). The design team as part of their responsibility are oblige to outline and design the project scope which meets the client’s wish in respect of the usage, safety, aesthetics, life cycle cost, time and quality project criteria. And when the designed project flops in meeting these requirements, the client becomes disappointed and acrimonious communication ensues between the parties. Much the same way, when the scope is ambiguous and tentative it may result also in an unfriendly and bitter relation between the client and the contractor. Communication is basic to all working environment, communication in fact is the central spine of every organisation, construction organisations not excluded.

Communication failure is likewise seen as ubiquitous cause of conflict among the project team members (Cheung and Yu, 2006). One of the problems facing the subcontractors and the main contractors is communication. This often arises as a follow up to a condescending behaviour, lack of respect, perception incongruence and defective listening. Communication breakdowns result in incorrect interpretation of drawings; misconstrued change orders, increased and wrong lead times for crucial material delivery to site; incorrect execution of instructions (Ogunbayo, 2013; Tipili et al., 2014). In some cases, a word or two can solve a lot of problems but it is not said than the expectation is defiantly be conflicts.

Mismatch and unrealistic expectations according to Li et al. (2012) can also generate conflict between subcontractors and main contractors of a construction site, especially when the parties' hopes are raised and dashed or are not met as expected. This could happen when the project is running out of time and planned schedule, also the budget for the project and workmanship do not correspond to what was envisaged to be of a higher quality construction. In this case, both the main contractors and subcontractors will be demanding a lot from each other and this is where if care is not taken the parties will resolved to conflict.

Anderson Jr. and Polkinghorn (2008) come out with circumstances that could cause conflicts in construction sites as; designers contest blame for errors and mistakes, subcontractors bring claims against the main contractors; with this the client feels short - changed in term of decision making. The works may face environmental challenges that the designers didn't think of in their design, or neighbouring residents may rise and oppose the project only after it takes off. All these situations can lead to delays, safety

issues, cost overruns, inconvenience to the public, and timewasting lawsuit and finally conflicts and disputes.

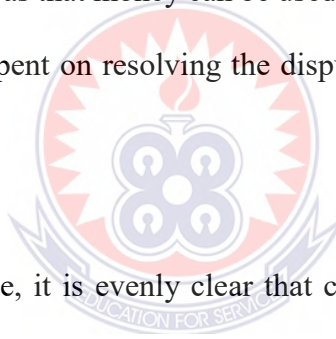
2.11 Impacts of Conflicts on Construction projects

Due to the multidisciplinary of the project participants, conflict becomes unavoidable issue in the construction industries. Internal conflict can break the relationship among the participants, affect the work quality and productivity, and may lead to project failure if it is not managed well. As the name suggest conflict is not a good thing in any aspect of life. In the construction industry conflicts reduces the speed of work by increasing the cost and schedule of work. Conflicts and disputes in any construction project are always viewed as negative events which occur in the different stages of a project's development cycle. In most cases, conflicts and disputes have negative impacts on the project's completion, cost, and performance (Ashworth, 2012). Conflicts are inherent within the construction industry; therefore, they are always expected during the course of the construction project. Conflicts cause a delay in completing the project on time and within budget (Fenn, 2007). Moreover, conflicts consume more time, cost more money than the estimated cost, and also lead to the ruining of relations which may have taken numerous years to establish (Ashworth, 2012).

According to Gebken (2006), to avoid conflicts from becoming formal claims, it is important to solve conflicts as soon as they emerge in the workplace, without the intervention of a third party. This builds relationship among the parties involved in the construction work. It also results in less stress and lower costs for all parties. Also, these results in productivity, fewer court claims in employment, lower costs of human resource and better job relations Gibbons (2007). In other words, conflicts always lead

to failure and destruction of relationships when not managed well. The public construction industry involves mass construction projects throughout the entire nation and these are strongly supported by the government. However, the project process is associated with more complexity as a result of the enormous size and number of projects in the sector (Ashworth 2013).

Contrary, conflicts in construction may seem like a waste of resources as well as time. The resources which are used in solving conflicts can be better used to make construction work more authentic or to improve the quality of management in the project (Fenn, 2007). In other words, conflicts on a construction project only add to the costs of the project, whereas that money can be used to build bigger and better projects by diverting the money spent on resolving the dispute into the budget for the project (Sabri & Torp, 2022).



With the discussing above, it is evenly clear that conflicts in a construction site can cause much harm to all consultants in the construction industry. Thus, it is wise to avoid conflicts rather than resolving them when they have already occurred. According to Lise (2014), the best solution for reducing the adversarial nature of the construction industry is to avoid conflicts. Furthermore, Müller and Turner (2005) added that the first step in dealing with conflicts is to avoid the occurrence of problems on the project site to the furthest extent possible. However, for an organization to be able to avoid conflicts in the workplace, it is important that they recognize the causes of conflicts in a construction project (Fenn, 2007). The knowledge and awareness of these causes will help the various managements of organizations to avoid or mitigate conflicts between subcontractors and main contractor in future projects. Therefore, the management must

conduct a detailed examination of the causal factors of conflicts where feasible. Thus, the main contractors and subcontractors will also get to understand their mistakes and take steps to prevent future occurrence.

2.12 Conflicts avoidance and resolution

Conflicts are part of human and it will be very difficult to stop it from happening but it can be minimised by creating the right environment which would enhance the bonding of the project over its members to express their ideas and listening is one of the ways of preventing conflict in the construction industry. Effective communication skills should be employed to make sure all views are heard from all the workers who have something in their minds and should not be gag. Effective communication has a positive impact on the formation of both the structural and cognitive aspects of social capital socialites and shared vision (Jungwoo et al. 2015) and project success is strongly linked to communication and cooperation between Consultants (Diallo and Thuiller 2005). It has been established in literature that frequent communication improves stakeholder satisfaction (Shao and Müller, 2011), project member collaboration and trust (Müller, 2003) and agent reduce the mistrust and conflict of interest between them (Müller and Turner (2005). Effective leadership should pursue clear and simple goals it wants to achieve in the absence of specific goals for the workers to avoid confusion arising from it. Kolawole et al, (2004), talks about behaviour in contrast to “results – oriented” behaviour. The former results in unclear purpose, waste of energy in reacting to problems, to crises after another, inconsistency of decisions narrow focus of activity. The later promotes clear goals, cooperation, proper priorities, consistency in decisions, and accomplishment of goals. In order to minimise conflicts in the construction site management on site should include the following into their strategy plans:

- Regularly conferring with subordinates on expectations, including standards of performance;
- Regularly informing them specifically how they are not meeting standards and how they can improve their performances;
- Listening to their suggestions, and using as many of them as possible;
- Recognizing that each person is unique and needs recognition.

The principal aim of this dissertation is to propose a strategy to avoid conflicts by minimizing and avoiding the causes of conflicts before they happen, and to evaluate strategies for appropriately handling or minimizing the impacts of conflicts when they happen. This implies proposing proactive measures by recommending a consistent framework that entails processes and strategies to reduce conflicts by initiating and implementing Alternative Dispute Resolution (ADR) approaches for the construction industry in the Kingdom of Bahrain. The basis behind focusing on ADR in this section is that most conflicts studies have been dedicated to establishing innovative processes and techniques to resolve conflicts before legal action is taken. Consequently, this will minimize the costs associated with a conflict. By becoming familiar with the approaches of conflicts minimizing and enhancements in ADR, it is important to suggest a solution for avoiding disputes. Even though conflicts resolution and conflicts prevention are two different fields, they are connected to each other.

2.13 Alternative conflicts Resolution between Subcontractors and Main contractors.

Anything that will bring peace and good working relationship between subcontractor and main contractors is welcome to avoid waste of time, cost overrun, etc. In the

construction industry, different academic institutions proposed various methods for conflicts resolution. Even though the formal, binding conventional methods have been the customary means of conflicts resolution within the construction industry, informal, non-binding methods like negotiation or arbitration are gaining ground (Jannadia et al. 2000).

According to Philips (2014), Alternative Dispute Resolution (ADR) could be described as any approach used to resolve disputes and conflict without undergoing the litigation process. Fenn et al. (1997), also use ADR entails binding and non-binding techniques and this classification can be used to deal with conflicts and resolve disputes, with the players involved in the project deciding the most effective technique to resolve the conflicts. The DRA model is designed on the conviction that conflicts must be dealt with within the shortest possible time and that the project contributors must, in the first instance, attempt to handle these conflicts internally at site level before they run out of control and eventually impact the parties' working relationship (Overton & Lowry, 2013). A number of researchers have proposed that when remedy is implemented sooner rather than later and when this remedy is comparatively non-confrontational, the probability of avoiding litigation is high. According to Cheung and Allis, (2000) ADR methods range from negotiation, mediation/conciliation, neutral evaluation, conflicts board, and arbitration. Conflicts resolution methods that maintain control of the conflicts dealt with by the parties in disagreements can apparently incur less cost during the resolution process and reduce the effect of hostility.

2.14 Managing Construction conflict

Notwithstanding the causes of conflict in the industry, maximum productivity and utilization of innovative ideas always occur to resolve it whenever conflicts surface itself. According to Thomas (2014), conflict may result in hurt feelings, but a general atmosphere of teamwork and willingness to discuss problems reduces resentment and friction that occur when conflict is either suppressed or glossed over. Tenkasi (2016), says conflict management is an overall process which comprises planning for, prevention of and resolution of dysfunctional conflict; together with the creation of constructive conflict, to assist the achievement of organizational objectives. It is a shared belief that the construction industry's culture is "adversarial" and prone to conflict in its negative sense (Lathan, 1994). Tomaka (2011) confirms that construction conflict is dysfunctional and something undesirable to be shunned, because it produces ineffectiveness in firms and injurious to organisations. Lathan (1994) by reference to the construction industry's "culture of conflict" portrays construction conflict as undesirable, perhaps because it is conflated with confrontation, mistrust and disputes. In consonance with the above position is Smith, (2006), who regarded conflict as a self-evidently "a bad thing", one of construction's main problem; misunderstanding, abortive work, delays, confusion and errors. And the focus has always been on avoidance, and elimination.

According to Bonoma (2009), Organisational conflict must not necessarily be reduced, suppressed or eliminated, but managed to enhance individual, group and organisational effectiveness. This is to show that conflict management should be seeing practicing by any organization to avoid its occurrence. For example, communication, fragmentations, improper coordination and short-termism have indeed focused some minds on escaping

the potentially adverse effects of conflict, instead of maximising the potential benefits that may accrue from the conflict. Research conducted by Mary Parker Follett (1940) saw conflict as inescapable (rather than a failure of a system), and performing positive functions if properly managed. She further surmised that “all polishing is done by friction”. Nonetheless, the use of the conflict management models is conditional on a particular circumstance, that is, a particular style may be more apropos than the other subject to the situation (Lee, 2008). According to Follett (1940), conflict can be conceptualised under five methods namely; avoidance, suppression, domination, integration and compromise. Other writers have different conflict management style. The common one here includes the “Two-Factor Theory” by Rahim and Bonoma (1979); the Single-Dimension Model by Deutsch (1973) and the Thomas-Kilmann Mode Instrument (2010).

Rahim and Bonoma (1979) define the Two Dimension Model as concern for self and concern for others, but Blake and Ziman (2014) describes it as self-oriented and other-oriented concern. Conversely, the Single Dimension Model does not consider concerns of both parties, but measures only the level of selfishness or competition. The five different conflict management styles by Rahim and Bonoma (1979) are avoiding, dominating, obliging, integrating and compromising. The dimension thus explains the

level to which an individual is willing or would be willing to satisfy the other person's concern in (Fig. 2.1).

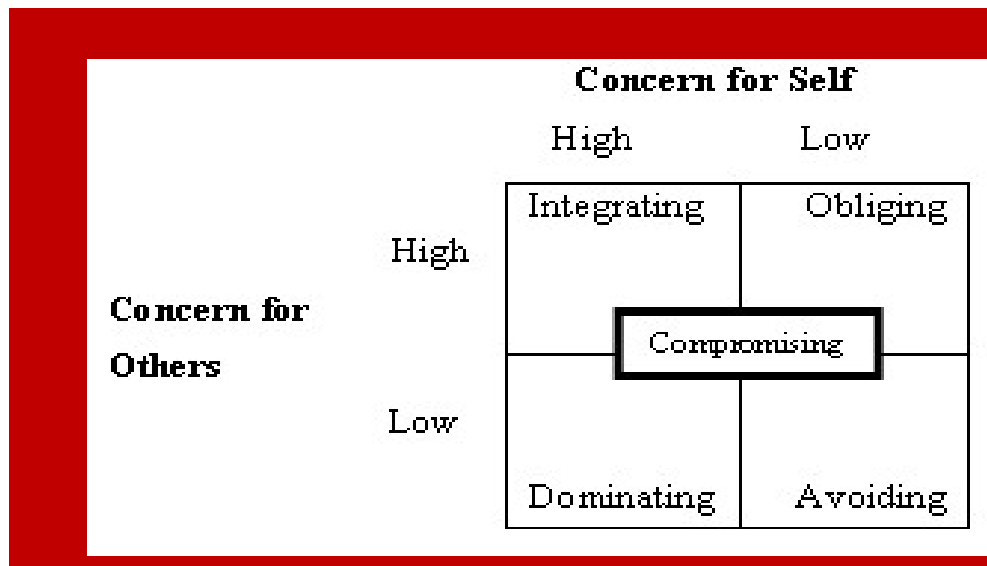


Figure 2.1: Conflict Management Model (Concern for self and Concern for others)

Source: Rahim and Bonoma (1979).

Furthermore, Thomas and Kilmann (2010) offers five (5) modes conflict management namely: compromising, competing, collaborating, accommodating and avoiding. The Thomas- Kilmann Conflict Management Mode Instrument (TKI) “measures a person’s attitude in conflict situations, that is, in situation where the concerns of two individuals are incompatible”. The (TKI) try to describe individual’s behaviour in two basic dimensions; assertiveness and cooperativeness. Assertiveness measures the extent to which the individual attempts to satisfy his/her own concerns, while Cooperativeness refers to an individual’s willingness to satisfy the other person’s concerns (Figure. 2.2). Studying from Rahim and Thomas-Kilmann’s description of the two-dimension model, it can be concluded that the two perspectives are congruent and converges in fact. As a result, the study chooses the two-dimensional model as an ideal style in managing

construction conflicts. Conflict management suggested by Thomas and Kilmann is employed

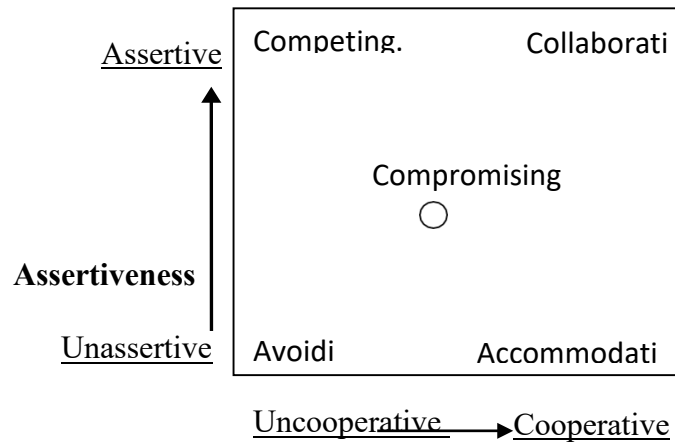


Figure 2.2: Conflict Management Model (assertiveness and cooperativeness)

Source: Thomas and Kilmann, 1974.

2.14.1 Negotiation

Negotiation is usually the primary and the closing step essential to deal with disputes, in the environment of construction industry. It is normally only when negotiation fails or fails repetitively, that an issue becomes a full-blown dispute. According to Mays (2003), negotiation is mostly perceived as a low-cost, cooperative effort, and preferred over more costly and challenging processes. Negotiation is a process which is not commonly successful irrespective of its established merits. Barns (2009) has found that negotiation can fail as a result of deliberate miscalculations. The strengths of this procedure lie in its confidentiality and the privacy it offers, together with its flexibility and the opportunities it gives to parties to air their own settlement terms at a low cost. However, its consensual scenery remains its weakness and power simultaneously.

Negotiation can be used to solve a dispute throughout the life span of a project even if another mechanism of resolution is being used. Nevertheless, a willing party and one which is ready to negotiate cannot coerce another party that is not ready for negotiation.

Disputes are most likely to arise in the construction industry due to disagreements between the client or his representative and the contractor. Such claims can be solved via negotiations (Peter et al., 2010). Most of the activities which are conducted depend on the readiness of the parties concerned; for example, cost reduction, speed and efficiency all rely on the parties' preparation and willingness of negotiation (Blake et al., 2014). On the other hand, if the issues involved are multifaceted, whether legal or technical, then there is the likelihood that the result may not be successful.

2.14.2 Mediation and Conciliation

If parties feel that negotiations cannot help them solve their differences, they are advised to seek help from another neutral party, should they envisage, that negotiating may be impossible. The neutral party will help them arrive at a settlement and mediation is definitely one of the available procedures that would involve a third neutral party in dispute resolution. In this case, the two parties own the procedures which lead to a decision and the result itself. The mediator is expected to be unbiased, neutral, and very independent. The parties expect that the mediator will help them through this confidential and private procedure with the aim of arriving at an acceptable solution which is mutual and which is not biased (Lopman et al., 2006). The mediator plays the role of creating an environment and opportunity for the parties involved to come together and discuss their dispute. In addition, mediators ensure that both parties table their cases, explore their real needs, learn the perspectives of each group and place more emphasis on the issues which are at stake (Stitt, 2004). However, mediation has its own demerits along with the method of conciliation. Some of the demerits include dependence on a party's willingness to participate, lack of compulsion, and issues which are related with enforcement outcomes. There are other factors which are openly

considered as weaknesses of mediation. They include the discernment that the party promoter for mediation does not have a strong case, there is worry that one party might unveil their strong aspects to an opposing party, and there is also the fear that mediation itself may lead to a delay in negotiation and commencement of proceedings (Blake & Zima, 2014).

2.14.3 Early Neutral Evaluation

This is a neutral third-party process which is non-bonding. Early neutral evaluation involves a procedure where the parties involved ask for a neutral method to help evaluate various matters which are involved in a dispute on the basis of law to determine the advantages of the cases of the parties. This will be the beginning of using other processes of resolution (Gaitskell, 2006). This process is considered very private and confidential. The parties decide on who will bear the responsibility of conducting the evaluation. The parties also decide the timing and extent of valuation. However, just like mediation, this non-binding process has its own weaknesses. It depends on the information which is made available to the parties engaged, either before or during the employment of other processes of dispute resolution for it to be a strong, consensual method.

2.14.4 Dispute Boards (DB)

Another resolution method is Dispute Boards (DB), which entails the use of neutral dispute resolution methods and might comprise one or three self-governing, highly-skilled professionals who are jointly selected by the parties to a project at the commencement and before a probable dispute emerges (Harmon, Binkovitz & Binkovitz 2008). The team remains in position all through the project's lifespan.

According to Thompson et al. (2000), the team's principal role is to tackle disputes as they occur or indeed prevent disputes before they turn into complicated disputes. To effectively carry out its function, the DB team should have excellent knowledge of the project location and its development. Hence, the DB should have access to the documents related to the project and must pay frequent visits to project locations where representatives of the parties are met with and the development of the project is discussed and any awaiting issues are taken care of (Gerber, 2000; Harmon, 2003; McMillan and Rubin, 2005). Anytime a dispute occurs and the parties are incapable of dealing with it through negotiations, it is passed on to the DB. Therefore, a decision is reached after informal guidelines that are agreed upon by the parties are followed and the issue at hand investigated. The nature of the decision concluded relies on the variant of DB that is used (Matyas & Pelling, 2014; Ndekugri et al., 2013).

2.14.5 Arbitration

Arbitration is one of (if not) the commonest dispute resolution mechanisms among parties involved in the construction industry. According to Bernstein et al., (2003), like all the other dispute resolution mechanisms discussed above, arbitration is based on an agreement among parties to refer a dispute or a difference to a third party neutral or an arbitrator, who is clothed with authority by virtue of his instructions to make a binding award.

2.14.6 The Dispute Resolution Advisor (DRA)

Another method of preventing disputes is the Dispute Resolution Advisor (DRA), as clarified by Cheung and Yeung (1998). Unlike other options of dispute resolution methods, where a neutral party is chosen by the parties when a dispute occurs, the DRA

system necessitates the appointment of a DRA at the beginning of the project. The participation of the DRA is not restricted to conducting meetings only if a dispute occurs. Instead, the employer and the contractor, either individually or jointly, attempts to resolve issues that occur before they grow into major disputes and predict issues that may occur in the future. The DRA is also necessitated by contract to meet regularly with the contractor and the employer. Figure 2.5 below illustrates the working framework of the DRA in conjunction with the project.

2.15 Conceptual Framework

This section provides the conceptual framework for the study, depicting the direct and indirect relationship between the study's variables. The framework sees a relationship between Project consultants, conflict prevention and its consequent outcomes. Project consultant directly relates with conflict prevention since consultants play a mediatory role between the other stakeholders in the construction industry. Again, project consultants have a direct relationship with the positive outcomes of a project. Conflict prevention has a direct relationship with positive outcomes of a construction projects. The variables in this construct, as well as their relationships will be tested and either validated or debunked.

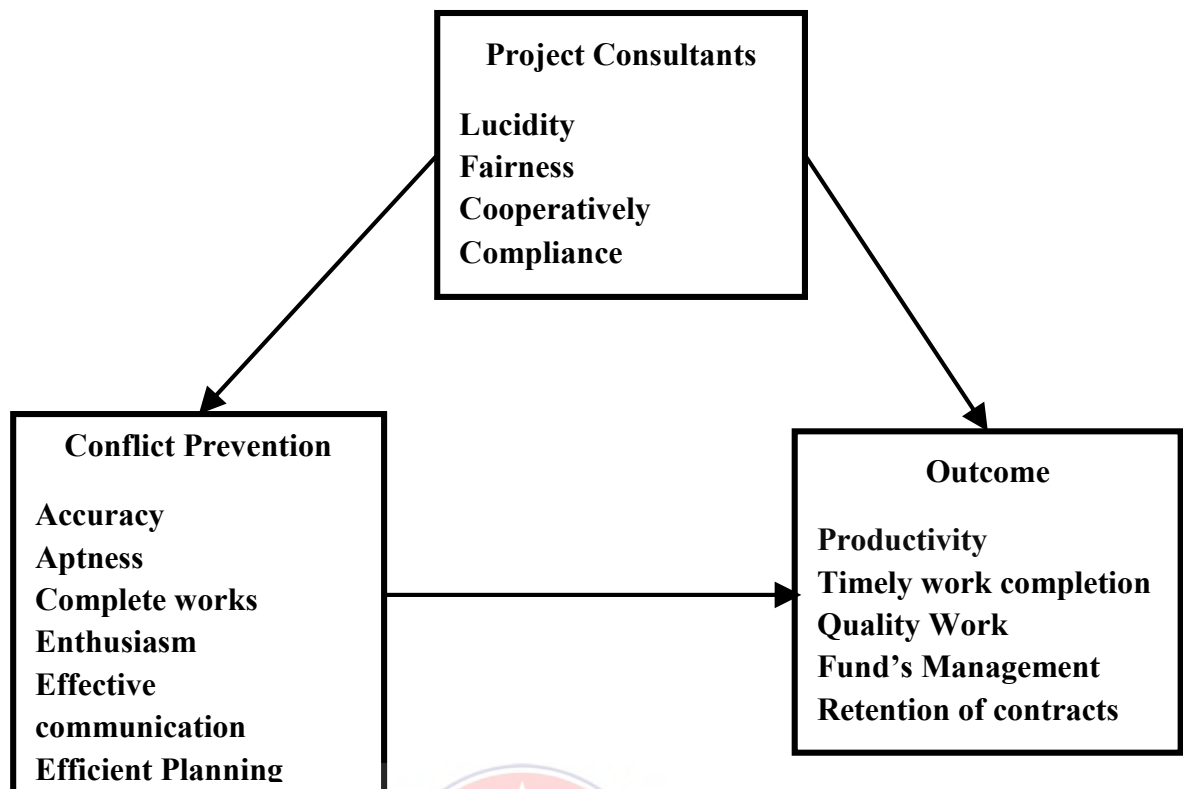


Figure 2.3: Conceptual Framework

Source: Researcher's Constructs (2021)

2.16 Summary of Literature Review

This paper significantly overviews the factors of conflict in the construction industry which is hoped to give clearer scenario to all project teams. Mainly, this paper grouped the conflict factors into three main factors which are conflict factors due to behavioural problems, contractual problems and technical problems. Conflict would arise due to behavioural problems such as poor communication among project. The study also looks at a few types of subcontractors in the construction industry, and depending on the type of project they will use certain subcontractors. Various projects will require certain subcontractors. This allows people to have interest in specialty contracting to enter a field that they are good at as well as enjoy. The conceptual Framework for the study was considered to get a better solution to the situation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology and the process employed to gather information for this study to achieve its aim and objectives. The methodology shapes the overall approach to the research linked to the paradigm or theoretical framework, including the methods employed. Hence, this section specifically presents the following in details: paradigm, research design, research strategy, approach, as well as the target population of the study, sample techniques, study, research instruments, data collection and data analysis techniques.

3.2 Philosophical Assumptions of the Study

A research paradigm is a set of commonly held beliefs and assumptions within a research community about ontological, epistemological, and methodological concerns. Pollack (2007) said that the research phenomenon under study and its corresponding research questions dictates the type of philosophical stance to be adopted. Due to this, the study adopted at the ontological level was positivism. Ontology leads the researcher to view the nature of reality. In this context, the reality is conflicts in the construction industry. This research seeks to understand the nature of conflicts in the construction industry therefore, it adopts the positivism philosophy which suggests that reality is real and apprehensible. The research questions posed in Chapter one, lend themselves with measurement and therefore in order to allow for objective measurements, it makes sense to adopt positivism stance for the phenomenon being studied, that is to say, the extent to which subcontracting is used and challenges inherent in conflict management.

Adopting positivism, the causes of conflict and the extent to which conflict affect performance in the construction industry can be viewed as a “reality” which can then be observed and assessed objectively. As explained earlier, positivism depends on precise and objective measure and it is usually characterized by quantitative data collection and also positivists assume an objective reality which is single and concrete. Conflict between Subcontractors and main contractors related issues exist in reality and beyond the reach of influence of the researcher. These issues could be viewed as complex and not constructions of the researcher. Hence, the study adopted a multiple world view made up of both positivists.

3.3 Research Strategy

Research strategy gives specific approaches and techniques for collecting and analysing data. Research strategy principally fall under two headings, namely, quantitative and qualitative methods. However, the two can be combined in some circumstances, and this is termed the mixed method approach, sometimes also referred to as triangulation (Jick, 1979). Both quantitative and qualitative methods are characterised by ontological orientations that inform the world view of their actors. However, one major difference between the two is their theoretical orientation in relation to research. In simplistic terms, the quantitative method is deductive; it tests theory and, hence, the research originates in theory. Conversely, qualitative methods generate theory and, thus, theory is derived from the outcome of research (Bryman and Bell, 2008). In addition, quantitative methods employ logical positivism and experimental approaches, that is, applying quantitative measures to test hypothetical generalisations and seek to establish causal relationships between variables (Denzin and Lincoln, 2008; Golafshani, 2003; Hoepfl, 1997). Qualitative research, however, refers to any research findings that are

obtained without the use of statistical procedures or other means of quantification (Strauss and Corbin, 1990). The research strategy employed for the study is quantitative strategy. This allows a description of the key variables of the study as well as to explore relationships between the variables. Creswell (2013) explains that a quantitative strategy allows quantitative data to be gathered in order to gain a wider knowledge of the subject matter at hand. Additionally, adopting a quantitative strategy is in line with positivist paradigm as stated in the earlier section.

3.4 Research Design

According to Cresswell, (2009) research design is an aesthetically ordered of how information required is provided by the most suitable answers towards the achievement of the research objectives and questions in a study, including the procedures for data collection and analysis. In addition, the selection of appropriate research design and methodology, draws boundaries for the study and also presents a consistent process to fulfilling the research objectives and questions (Kwofie, 2015). The research design also influences the choice of an appropriate and suitable data collection and analysis instrument, on the way to responding to the research questions (Yin, 2009).

According to Bryman, (2004), there are five main types of research design usually employed in research. They include experimental, cross-sectional case study and comparative designs. In relation to research methods in the construction industry, Fellows and Liu, (2008), identified four types of research design as explanatory, exploratory, descriptive and predictive. For this research, quantitative was employed in analysing the data. A research design sets out guidelines that linkup the elements of methodology adopted for a study namely; relating the paradigm to the research strategy

and then the strategy to methods for collecting empirical data (Denzin and Lincoln, 2000). It also includes practical procedures adopted for accessing the subjects of the research. This method made use of primary data sources as questionnaires being the main data collection instrument.

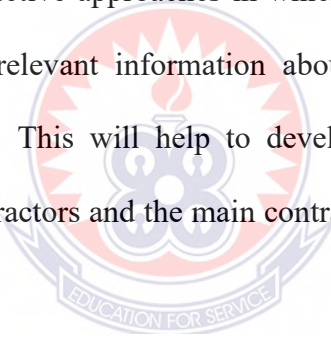
According to Saunders, (2012), a research design is a conclusive plan used by the researcher to show how he/she will go about answering research questions. In contrast, Remenyi et al. (2003) defines research design as the direction in which the research study is conducted. Saunders, (2012) states that a suitable research strategy should be chosen depending on research objectives and questions. Depending on the amount of time and resources available, the magnitude of the knowledge about the question should be researched extensively. Then, the research strategy to be used should be chosen based on three criteria: the control the researcher has over real behavioural events, the nature of the research question, and the extent of focus on existing or historical events (Yin, 2014). The research employed a cross sectional survey design and a quantitative strategy. This allows generalisations to be drawn from the findings of the study. The research procedure or process that will be followed throughout this research is simplified below.

3.5 Research Approach

They are three main research approaches and are; the deductive, inductive and abductive approach. A deductive approach to research is the one that people typically associate with scientific investigation. The researcher studies what others have done, reads existing theories of whatever phenomenon he or she is studying, and then answer the study questions that emerge from those theories. Inductive approach, also known in

inductive reasoning, starts with the observations and theories are proposed towards the end of the research process as a result of observations. In abductive approach, the research process starts with surprising facts or puzzles and the research process is devoted their explanation. Surprising facts or puzzles may emerge when a researcher encounters with an empirical phenomenon that cannot be explained by the existing range of theories.

According to Eghan et al., (2014), research approach can be described as the method in which the research objectives can be interrogated. The purpose of the study, the type and the extent of availability of information being sought (Biggam et al., 2008). The research will use the deductive approaches in which the research questions posed in chapter one will obtain relevant information about the subject from professional construction practitioners. This will help to develop the framework for minimize conflicts between subcontractors and the main contractors in the construction industry in Ghana.



3.6 Description of the Study Area

The study area covers the then three (3) Northern Regions now five (5) being; Damongo the capital of Savanna Region which shares boundaries with Bono Region and Bono-East Region to the south, Northern region, North-East Region and Upper-West Region to the North and Cote D' Ivore to the West. Tamale the capital city of the Northern Region which share boundaries with North- East Region to the North, Savana Region to the South, Oti Region to the South-East, Upper-West Region to the North-West. Nalerigu is the capital city of North-East Region which share boundaries with Upper-East Region to the North, Northern and Savanna Regions to the South, Togo to the East

and Upper-West Region to the West. Bolgatanga is the capital city of Upper-East Region which share boundaries with Burkina Faso to the North, North-East Region to the South, Togo to the East and Upper-West Region to the West. Wa is the capital city of Upper-West Region which share boundaries with Burkina Faso to the North, Savanna Region to the South, Upper-East and North-East Regions to the East and Cote D' Ivore to the West. The people in the peripheral communities in these regions are mostly farmers whereas only a small proportion of the people in the city are engaged in farming activities. Figure 3.1 show the map of the five regions of northern Ghana.



Figure. 3.1: Map of the five region of northern Ghana)

Source google.com

3.7 Population of the study

The target population of the study consists of site engineers/managers of the construction companies in the five regions of the north who are registered with the Metropolitan, Municipal and District Assemblies (MMDs) in the various regions. The choice of this study area was made based on the researcher's first-hand experience on the subject. He has worked around these areas and have experienced escalating conflicts among contractors (main and sub-contractors). Based on the subject of the research and the need for diverse views across the construction industry the study used (D1K1, D2K2, D3K3 & D4K4, for which D4K4 representing the least in grade to D1K1 also representing the highest in grade of building and civil contractors. The focus of the study is on the main contractor site engineers/managers and the subcontractor site engineers who carry out project specifically in five regions of the north. Even though these Consultants are dispersed nationwide, the research is limited to five regions at the north. The selected participants for the research were construction firms which had registered with the Tamale Metropolitan Assembly, Bolgatanga Municipal Assembly, Wa Municipal Assembly, Nalerigu Municipal Assembly and the Damongo Municipal Assembly. The total number obtained from the Assemblies revealed that there were two hundred and sixty-nine (269) construction firms that have accordingly registered with the assemblies (Registrar General, Tamale). The table below illustrates the population of the study;

Table 3.1 Study Population

Item	Grade of Contractors	Number of contractors
1	D1K1	5
2	D2K2	11
3	D3K3	103
4	D4K4	150
Total		269

Source: Registrar General, Tamale

3.8 Sample Size Determination and Sampling Technique

3.8.1 Sample Size

Since it would be problematic using the total population for the study, a sample size was used for the research, considering the various methods of sampling to come out with more appropriate one to determine the sample size for the study. According to Chander (2017), these methods include applying censuring when dealing with relatively smaller population, adoption of statistical formulae, by means of well-recognized tables for determining sample tables and the application of a sample size of studies which have similar characteristics to what is being studied. The sample size should constitute a true representation of the target population. A list of registered contractors available to the researcher indicated that there were two hundred and sixty-nine (269) of D1K1, D2K2, D3K3 and D4K4 contractors, who were actively in operation and in good standing in the five regions of the north Registrar General, Tamale). The Kish formula (Kish, 1965) was used to determine the minimum acceptable sample size for this study.

$$\text{Sample size; } n = \frac{n_1}{\left(1 + \frac{n_1}{N}\right)} \quad (\text{Kish, 1965})$$

Where;

n = Sample Size

$$n_1 = S^2 / V^2$$

S = Maximum standard deviation in the population element (Total error = 0.1 at a confidence level of 95%)

V = Standard error of sampling distribution = 0.05

P = The proportion of the population elements that belong to the defined class

$$S^2 = P(1-P) = 0.5(1-0.5) = 0.25$$

$$V^2 = 0.05^2 = 0.0025$$

N = Population size

$$n_1 = \frac{0.25}{0.0025} = 100$$

$$n = \frac{100}{1 + \left(\frac{100}{269}\right)}$$

$$n = 73$$

The sample size formula provides the minimum number of responses to be sampled. According to Israel (1992), usually added 10% and 30% respectively to the sample size to make up for unreachable respondents and for non-response. The sample size for the D1K1, D2K2, D3K3 and D4K4 contractors was therefore increased by 30% accordingly as follows:

$$n = \frac{130}{100} \times 73 = 95.$$

With sample size of 95 contractors, the researcher considered the entire grade D1K1 and D2K2 in the sampling which have five (5) and eleven (11) contractors respectively. However, D3K3 and D4K4 were sampled using percentage since they form the majority of the contractors.

$$\text{From the sample size } 95 - (5 + 11) = 79$$

$$D3K3 + D4K4 = 103 + 150 = 253$$

$$D3K3 = \frac{103}{253} \times 100 = 40.71$$

$$= \frac{40.71}{100} \times 79 = 32.1609 \quad = \underline{\underline{32}}$$

$$D4K4 = \frac{150}{253} \times 100 = 59.28$$

$$= \frac{59.28}{100} \times 79 = 46.8312 \quad = \underline{\underline{47}}$$

The table 3.1 shown the registered contractors with the various MMDAs in the five regions of the north and their sample size selected.

Table 3.2: Grouping contractors according to their grades and the sample size

Item	Grade of Contractors	Number of contractors	Remarks
1	D1K1	5	5
2	D2K2	11	11
3	D3K3	103	32
4	D4K4	150	47
Total		269	95

Source: Registrar General, Tamale

The study was limited to six (6) categories of sub-contractors namely; masons, carpenters, electricians, plumbers, steel benders and painters. This limitation was done with convenience sampling, this is to say, this group of subcontractors are easy to find because they work closely with the main contractors. Therefore, a total number of ninety-five (95) contractors (main and sub) were sampled.

3.8.2 Sample Technique

In the process of carrying out this research work, the researcher employed stratified random sampling techniques. According to McKenzie et al., (2011), random sampling technique (probability sampling) as a means of selecting participants and assures that each person in the study population has an equal chance of being selected. With regards to probability sampling, the researcher employed the non-proportional stratified where the population is divided into subgroups based on key characteristics (strata), and the subjects are selected from the subgroups at random to ensure representation of the characteristic (Cottrell & McKenzie, 2011). This study covered D1K1, D2K2, D3K3 and D4K4 construction firms in the five regions of the north in Ghana, who are registered members of the Association of Building and Civil Engineering Contractors in Ghana and Subcontractors who worked under them. Purposive sampling was used to select the site engineers/managers. The criteria used was to select the site managers/engineers who possessed three or more years of managing construction sites.

The focus was to get one responder (main contractor's site engineer/manager and subcontractor's site engineer/foreman) each from the ninety-five (95) sampled. Out of the 95 sampled contractors some were not having subcontractor that made the researcher to get a sample of one hundred and sixty-nine (169) instead of getting one hundred and ninety 190 responders. In all the site engineers/managers sample were one hundred and sixty-nine (169) out of the ninety-five (95) categories contractors in the Registrar General, Tamale for the five regions of the North.

3.9 Data Collection

Data collection can be seen as the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions and evaluate outcomes. The study makes use of both primary and secondary data. Primary data are data collected using questionnaires, interviews, observations, etc. designed in line with the research objectives to gather data from the field and the secondary data are data gained from existing writings like conference papers, journal articles, and web sites of professional bodies, databases and books. Leedy and Ormrod, (2005) noted that the viability of a research depends largely on the availability of sufficient data to support it.

Therefore, this study was acquired basically from existing literature (secondary source) and the field (primary source). The present literatures were all consulted for indebt information on sources/causes of conflict, its effects and their management. The primary data on the other hand was gathered from the field using the data gathering tools like structured questionnaire survey from which the key findings and results emanated.

3.9.1 Questionnaire Development

Close-ended questionnaire were used to gathering information from people in a less threatening manner. The questions were aligned in accordance to the objectives of the study and designed such that, respondents only had to tick the description which they thought was appropriate state their responds. The first section of the questions solicited information on the respondents' demographic data. The second section questionnaire focused on the predictor variable, Causes of Conflicts in the construction industry. Constructs from this section were developed from literature of Jameson, 2013; Eisenhardt et al, 2019; Michael, 2007; Fenn et al., 2007; Carmicheal, 2002. The third section focused on the role of consultants in minimizing conflicts, the mediator variable. Contracts mainly emerged from literature of (Moura, 2018). The last section focused on effects of conflicts in the construction industry, the outcome variable. Question elements of the various sections were established from reviews and theories discussed in the second chapter of this research.

3.9.2 Questionnaire Piloting

Questions were piloted on trial of the questionnaire to ten (10) fellow graduate students after developing them by the researcher to check the precision, consistency and relevance of the questions asked. These students have backgrounds in the construction industry as they have worked with main and sub-contractors. Following this, the necessary corrections were made to fit and much the objectives of the study prior to the formal questionnaire administration. According to Dawson, (2009) a pilot study is a test of the questionnaires in order to identify any probable amendments prior to the start of the main study, and is usually carried-out on people who will be taking part in the main study.

3.9.3 Questionnaire Administration

Softcopy of the questionnaire was developed to reach out to Eighty-seven (87) respondents made of some (D1K1, D2K2, D3K3 and D4K4 categories). Since it is the easier way of responding and is also give feedback immediately the answers are submitted. It also reduces cost and risk of travelling from one firm to another to administer the questionnaire personally.

Also self-administered questionnaire of Eighty-two (82) questions were hand delivered to some respondents (D1K1, D2K2, D3K3 and D4K4 categories) and retrieved personally by the researcher. This ensured that the questionnaires got to the intended recipients and aided in improving the response rate. The questionnaires were self-administered by respondents such as Main contractor's Site Managers/Engineer and Subcontractor's Site Engineer/Foreman of the sampled construction firms. Some of the respondents completed and returned the questionnaires instantly while the rest of the questionnaires were collected later.

3.10 Data Analysis

Data analysis is the process of converting raw data into structured format that are more appropriate for understanding. Tasks in this stage will include data editing, data coding and data entry. The questionnaires returned were first cleaned and checked for completeness. They were then coded and fed into Statistical Package for Social Science (SPSS) version 26. The SPSS was used to perform Spearman correlation analysis while relative importance indices were performed using Microsoft Excel including the charts that are generated to depict findings. The package was applied in generating descriptive statistics and Spearman correlation analysis. And a Microsoft Excel was also applied in

generating relative important indices and chart to back findings. Mean values derived from the measurement of the items and the relationship between the variables are established.

3.11 Reliability and Validity Test

Joppe, (2000) claimed that reliability and validity are critical factors to consider while collecting data for research. The degree to which a research instrument produces consistent results after repeated use is called its reliability (Cronbach, 1953). Cronbach's Alpha was utilized to determine the internal consistency of the data collected. According to Creswell, (2003), the validity of research is defined as the instrument's capacity to ascertain the critical factor addressed in the study. Exploratory Factor Analysis was used to test the study's data for validity.

3.12 Ethical Consideration

A good Rampur was established to obtain permission from management of the various construction firms to conduct the study on them and the other employees in their companies. The purpose and objectives of the study were explained to both management and participants before they accepted to participate. It was made clearly to managements their firms that the research was solely for academic purpose and no disclosure will be made to any kind of organization or to the general public.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

This section contains discussions on the findings of the study. The findings are analysed in line with the stated objectives of the study. In all, a total number of ninety-five (95) questionnaires were administered to the targeted contractors. Twenty-two (22) of the questionnaires were not properly filled and therefore did not form part of the analysis. Seventy-three (73) questionnaires were used for the data analysis. These valid questionnaires used for the analysis yielded 77% of response rate. The questionnaire for survey and evaluation was developed based on extensive literature on conflicts between subcontractors and main contractors in the construction industry. Also included were some demographic questions of the respondents relating to the age, gender, educational level, type of company, experience in the industry.

4.2 Background Information of Respondents

4.2.1 Institution of Respondents

The findings of the study indicated that a greater proportion of the respondents worked for private sectors as compared to those that worked with the public sector. Thus, the findings of the study reflect more of the views of those working for private than public sector. Figure 4.1 represents pictorially the findings of the institutions of respondents.

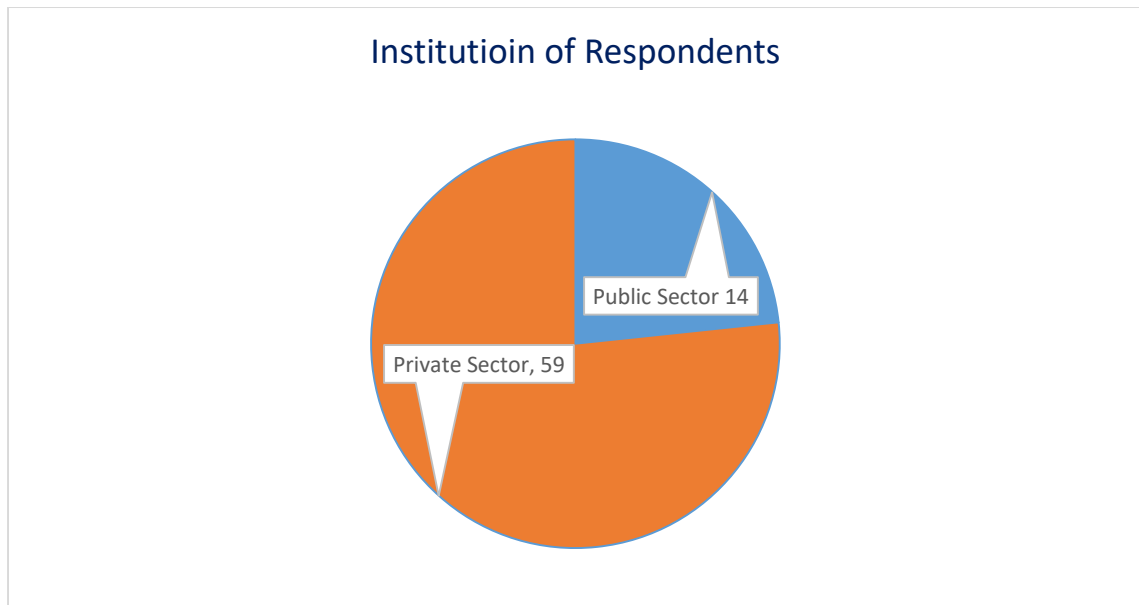


Figure 4.1: Institution of Respondents

4.2.2 Academic Qualification of Respondents

Fig. 4.2 shows the academic qualification of respondents. 25 respondents had master's degree, 43 had bachelor's degree and 5 had HND. This depicts that the results of the research could be relied upon particularly looking at the category of contractors who responded.



Figure 4.2: Qualification of Respondents

4.2.3 Age of Respondents

The figure below shows the age range of the respondents. It shows that a greater proportion of the respondents were aged above twenty-one (21) indicating some level of maturity in their responses.

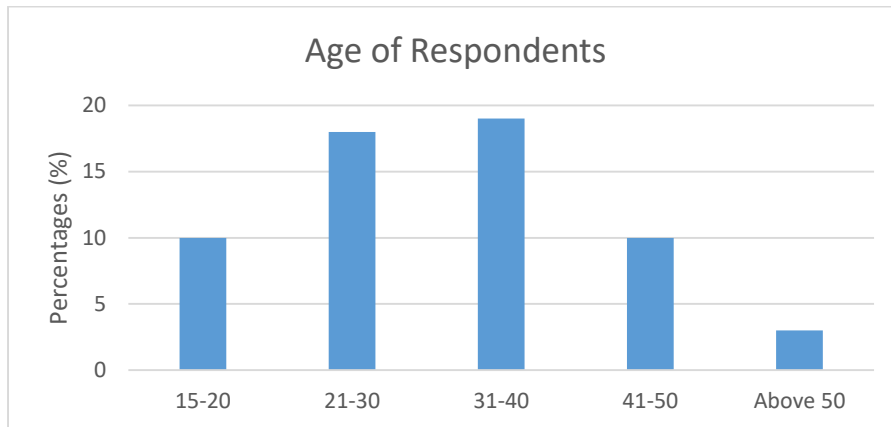


Figure 4.3: Age of Respondents

4.2.4 Gender of Respondents

In the study, males and females in the construction projects were sampled and used for the study. The results revealed that all of the 73 respondents were males, no female participated in the study. The results showed that majority of the respondents used in the study were males as shown in the figure 4.4.

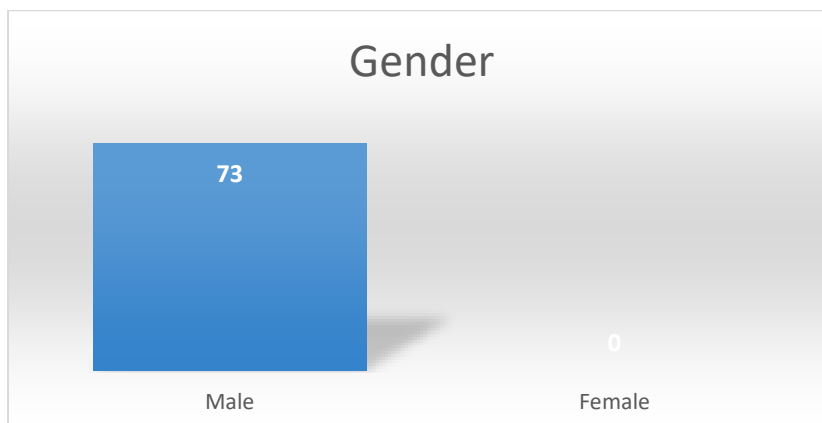


Figure 4.4: Gender

4.2.5 Years of Experience of the respondents

Given the figure below, the survey conducted indicated that most of the respondents had worked in the construction industry between the periods of 5 – 30 years. 32 people representing 43.84% of the total sample size had worked under 5 years, 13 people representing 17.81% have been working between a period of 5 – 10 years. 7 people representing 9.59% have worked between periods of 11 – 15 years, same result applies to people who have worked between periods of 16 – 20 years and 1 person (1.37%) have worked between periods of 20 to 30 years. Majority of the respondents had extensive working experience hence gives the findings more reliability which implies that they are capable, experienced and good at giving captivating insights.

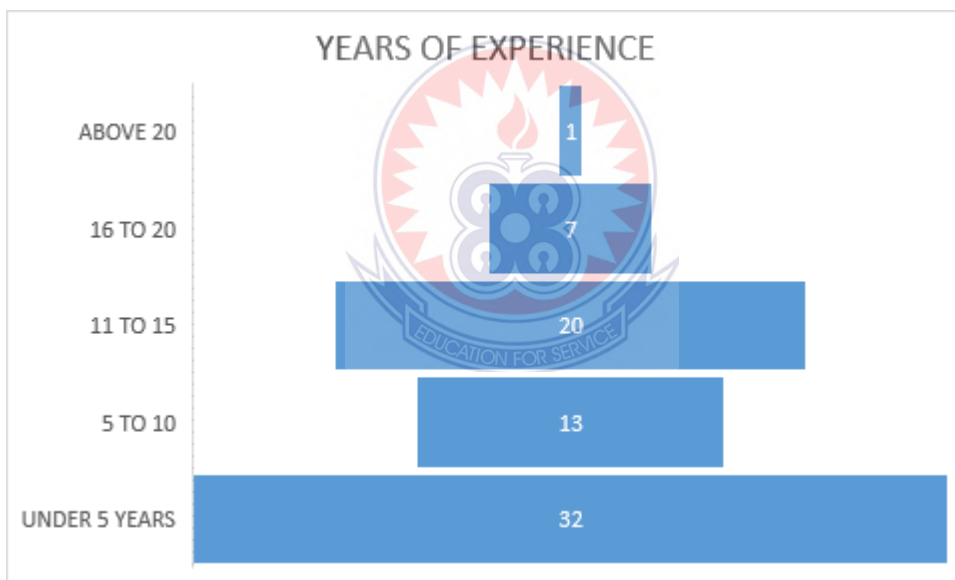


Figure 4.5: Respondent's years of Experience in the construction projects

4.2.6 Respondent's area of specialization

In order to establish the source of our case, the research questions were administered to respondents to know their specialties areas within the selected sample construction firms. The figure below reveals that majority of the respondents had insightful comments to give when it comes to construction projects.

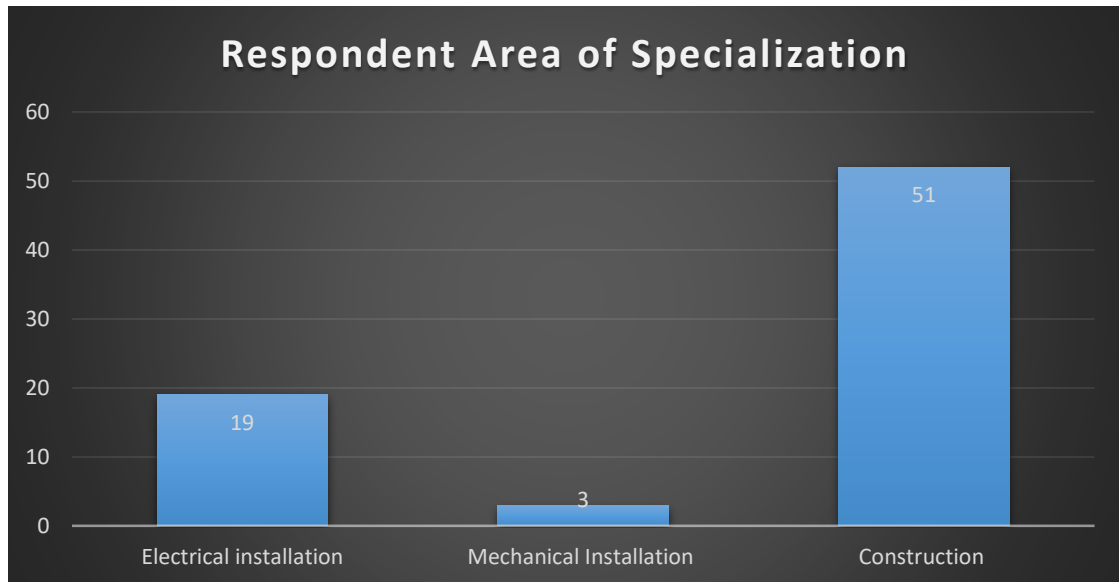


Figure 4.6: Respondents Area of Specialization

4.3 Development of Relative Important Index

Respondents were given the chance to rank causes of conflicts between main and subcontractors in the construction projects based on their personal experiences in the field. The rating involved the respondents deciding on how the causes leads to conflicts and had the choice of choosing from 'strongly disagree, disagree, not sure, agree and strongly agree'.

4.4 Descriptive Analysis

4.4.1 Descriptive Analysis on the Causes of Conflicts in the Construction Projects

This section gave the respondents the opportunity to highlight on some of the causes of conflicts in the construction of projects was measured on 38 items with dichotomous variables strongly not significant, not significant, Average, Significant and very Significant, and were coded on 1, 2, 3, 4 and 5 respectively. These categorical (nominal) variables were descriptively analysed using frequency table as shown in Table 4.1. The study includes mode (the most frequently occurring value in a data set) in Table 4.1.

This is on the basis of Jaggi's (2003) recommendation that, in a categorical data, the mean makes sense.

Table 4.1: Descriptive Statistics: Causes of Conflict on Projects.

Fields	N	Minimum	Maximum	Mean	Rank
Ambiguous and contradicting instructions	73	2.00	5.00	4.8732	1
Different perception of work quality	73	2.00	5.00	4.8630	2
Delayed in response on the part of the main contractor	73	2.00	5.00	4.8219	3
Inaccurate design information	73	2.00	5.00	4.6986	4
Delays in payments	73	2.00	5.00	4.6849	5
Changes of contract due to site and environmental condition	73	2.00	5.00	4.6829	6
Lack of proper communication among project teams	73	2.00	5.00	4.6712	7
Non-adherence to safety rules	73	2.00	5.00	4.6321	8
The use of substandard materials for construction	73	2.00	5.00	4.6301	9
Amendments	73	2.00	5.00	4.6027	10
Contractor's financial challenges	73	1.00	5.00	4.3018	11
Site coordination challenges	73	1.00	5.00	4.3014	12
Incomplete work-drawings or specifications	73	1.00	5.00	4.0822	13
Unrealistic time targets and durations	73	1.00	5.00	3.0822	14
Inadequate supply of materials	73	1.00	5.00	3.0685	15
Non-adherence to the construction schedule	73	1.00	5.00	3.0385	16
Valid N (listwise)	73				

Source: Field study (2021)

It is concluded from Table 4.1 that all the 16 indicators are cause conflicts amongst contractors. From the range of values of 1 to 5 scale where 1 indicates Strongly disagree and 5 indicates Strongly Agree, lie between 3.0385 and 4.8732 inclusive. Relatively, the mean scores are higher than average. Constructs such as “non-adherence to the construction schedule”, “Unrealistic time targets and durations” and “Inadequate supply of materials” were met with responses being on the verge of average indicating that these constructs may have occurred but rarely. The remaining 13 constructs were

met with means above 4.0 which indicates that they are sure Causes of conflicts among contractors. The extent of variability, as measured by standard deviation, is relatively low.

4.4.2 Descriptive Analysis of the Role of Consultants in Minimizing Conflicts

Table numerically summarizes the location (mean) of the responses for items inquiring the role of consultants in minimizing conflict. The results displayed in the table indicate the extent to which the firms considered the various indicators to be important in preventing and resolving conflict by consultants.

Table 4.2: Descriptive Statistics: Role of Consultants in Minimizing Conflicts

Indicators	N	Minimum	Maximum	Mean	Rank
Assisting the main contractors in pricing the tender by the subcontractors	73	2.00	5.00	4.8611	1
Regular and effective communication & coordination of main contractor and subcontractors by the project manager	73	2.00	5.00	4.7840	2
Help in selection of subcontractors through competitive tendering.	73	2.00	5.00	4.6849	3
Make payment method to the main contractor by the client available.	73	2.00	5.00	4.0301	4
Compliance with regulations by the contractors & Subcontractors	73	2.00	5.00	2.8630	5
The clarity of the contract between main contractors and subcontractors	73	2.00	5.00	2.6301	6
Adherence to subcontract requirements	73	2.00	5.00	2.6009	7
Make clear understanding of the contract conditions and requirements, project objectives and implementation	73	2.00	5.00	2.5809	8
Valid N (listwise)	73				

Source: Field study (2021)

From table 4.2, the mean scores, from the range of values of 1 to 5 scale, lie between 4.8611 and 2.6009. Constructs in this field were met with mixed responses, some were met with positive responses while others were met with negative responses indicating that

consultants fall short in some areas. Areas such as “Make clear understanding of the contract conditions and requirements, project objectives and implementation”, “The clarity of the contract between main contractors and subcontractors”, “Compliance with regulations by the contractors & Subcontractors” and “Adherence to subcontract requirements” were met with means lower than average, 3.0, implying that consultants’ shortfall in these areas. The remaining four constructs of this field saw positive responses.

4.4.3 Descriptive analysis of the effects of conflicts on projects

The descriptive statistics of effects of conflicts on projects focusses on location, measured by the mean and the variability, measured by the standard deviation. Ten (10) items are used to elicit data from the respondents. Each item is assessed on a scale of 1 to 5. The results are displayed in table 4.3.

Table 4.3: Descriptive Statistics: Effects of conflict on projects

	N	Minimum	Maximum	Mean	Rank
Long standing litigation in court	73	2.00	5.00	4.7828	1
Diversion of resource in respect of management time allocated to resolving conflict	73	2.00	5.00	4.7818	2
Reduces productivity at site	73	2.00	5.00	4.7808	3
Waste funds on incomplete project	73	2.00	5.00	4.7397	4
Leads to cost overrun	73	2.00	5.00	4.7307	5
Loss and reduction of quality of work	73	2.00	5.00	4.7260	6
Termination of contract	73	2.00	5.00	4.5890	7
Increase the additional work for the project from the limit set in the contract	73	2.00	5.00	4.5479	8
Delays in project completion	73	2.00	5.00	4.5342	9
Delays and inefficiencies in construction projects	73	2.00	5.00	4.5068	10
Valid N (listwise)	73				

Source: Field study (2021)

Table 4.3 indicates that relatively, the range of value of the mean scores (4.51 to 4.78) are high. All of the determinants of Effect of Conflicts on projects yielded positive responses and low variance, indicating that individual responses were very close related to the means of each construct.

4.5 True Reliability values of Causes of Conflicts on Projects, Role of Consultants in Mining Conflicts and Effects of Conflicts on Projects

This section tests the study's data for reliability using Cronbach Alpha and Exploratory factor analysis, respectively.

Table 4.4: Reliability Test –Cronbach Alpha

Constructs	Number of items	Alpha values
Causes of Conflicts on Projects	16	0.916
Role of Consultants in Minimizing Conflicts	8	0.871
Effects of Conflicts on a Project	10	0.913

Source: Field study (2021)

The reliability results in Table 4.4 show that all three variables for the study, Causes of Conflicts, Consultants' role in minimizing conflicts and Effects of Conflicts; exhibit high internal consistency given their Alpha values 0.916, 0.871 and 0.913, respectively score above 0.70. The gathered data are therefore reliable.

Table 4.5: Validity Test - Exploratory Factor Analysis (EFA) Causes of Conflict on Projects

Measures	Variables Causes of Conflict on Projects
Inaccurate design information	0.635
Delayed in response on the part of the main contractor	0.677
Lack of proper communication among project teams	0.638
Amendments	0.724
Incomplete work-drawings or specifications	0.671
Inadequate supply of materials	0.697
Site coordination challenges	0.701
Unrealistic time targets and durations	0.683
Non-adherence to the construction schedule	0.593
Contractor's financial challenges	0.553
Ambiguous and contradicting instructions	0.624
Delays in payments	0.713
The use of substandard materials for construction	0.610
Different perceptions of work quality	0.630
Changes of contract due to site and environmental condition	0.543
Non-adherence to safety rules	0.591

Source: Field study (2021)

Table 4.6: Validity Test - Exploratory Factor Analysis (EFA) Role of Consultants in Minimizing Conflict

Measures	Variables Role of Consultants in Minimizing Conflict
Help in selection of subcontractors through competitive tendering	0.767
Assisting the main contractors in pricing the tender by the subcontractors	0.725
Make clear understanding of the contract conditions and requirements, project objectives and implementation	0.647
The clarity of the contract between main contractors and subcontractors	0.822
Compliance with regulations by the contractors & Subcontractors	0.744
Adherence to subcontract requirements	0.785
Make payment method to the main contractor by the client available	0.681
Regular and effective communication & coordination of main contractor and subcontractors by the project manager	0.762

Source: Field study (2021)

Table 4.7: Validity Test - Exploratory Factor Analysis (EFA) Effect of Conflicts on Projects

Measures	Variables Effect of Conflicts on Projects
Reduces productivity at site	0.794
Leads to cost overrun	0.778
Increase the additional work for the project from the limit set in the contract	0.788
Diversion of resource in respect of management time allocated to resolving conflict	0.741
Loss and reduction of quality of work	0.632
Delays in project completion	0.745
Termination of contract	0.767
Delays and inefficiencies in construction projects	0.781
Long standing litigation in court	0.721
Waste funds on incomplete project	0.752

Source: Field study (2021)

Validity results in Table 4.5, 4.6 and 4.7 show that all thirty-four (34) items that determines the Causes of Conflict in Projects, Role of Consultants in Minimizing Conflicts and Effects of Conflicts on Projects respectively, loaded above 0.50. According to Kaiser (1974), EFA values are deemed recommended when they load higher than 0.5, values below 0.5 are unacceptable and values between 0.6 – 0.8 are deemed superb. This implies that all the items measured the variables they intended to measure and were valid.

4.6 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

The KMO seeks to test the adequacy of the sample size for the study.

Table 4.8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	2259.145
	Df	325
	Sig.	.000

Source: Field study (2021)

The KMO and Bartlett's Test results in Table 4.8 indicates the sample size of seventy-three was suitable for the study, given a KMO value of 0.903. The Bartlett's Test of Sphericity was approximately 2295.145; df 325; $p < 0.01$, indicating sufficient correlation within the data gathered.

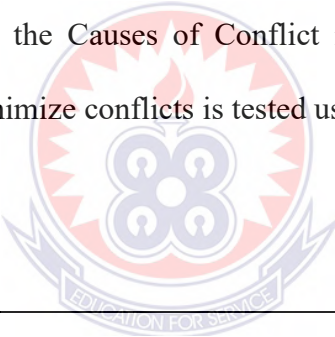
4.7 Inferential Statistics

This section presents correlation analysis, linear regression, and mediated regression. The correlation analysis was used to test the relationship between the variables. The linear and mediated regression were used to test the study's objectives.

4.7.1 Correlation Analysis

The relationship between the Causes of Conflict in projects, Effect of conflict in projects and Efforts to minimize conflicts is tested using Pearsons Correlation.

Table 4.9: Correlations



Correlations		CCP	RCMC	ECP
CCP	Pearson Correlation	1	.695**	.661**
	Sig. (2-tailed)		.000	.000
	N	73	100	100
RCMC	Pearson Correlation	.695**	1	.677**
	Sig. (2-tailed)	.000		.000
	N	73	100	100
ECP	Pearson Correlation	.661**	.667**	1
	Sig. (2-tailed)	.000	.000	
	N	73	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field study (2021)

Table 4.9 presents the results of the Pearson correlation. The table shows that Causes of conflicts have a strong positive relationship with the Role of Consultants in

minimizing conflicts (.695, $p < 0.01$). Causes of conflicts also correlates positively with Effects of Conflicts (.661, $p < 0.01$). Effects of Conflicts also correlates positively with the Role of Consultants in Minimizing Conflicts (.677, $p < 0.01$). The correlation results indicate that a change in one variable causes the other variable to change.

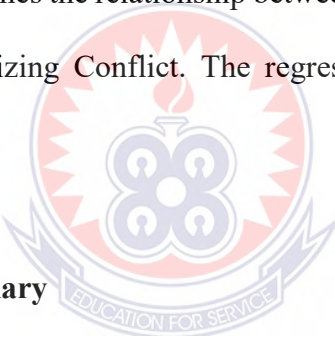
4.7.2 Regression Analysis

Objective one, two, three and four of the study are tested in this section using linear regression and mediated regression.

4.7.2.1 Causes of Conflict and Role of Consultants in Minimizing Conflict

The first Objectives examines the relationship between the Causes of Conflict and Role of Consultants in Minimizing Conflict. The regression results for Objective 1 are discussed below.

Table 4.10: Model summary



Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.661 ^a	.437	.431	.65156

a. Predictors: (Constant), Causes of Conflict in Projects

Source: Field study (2021)

According to Table 4.10, an R^2 of 0.437 indicates that Causes of Conflicts account for 43.7% of the variation in the Role of Consultants in minimizing conflicts in projects. Also, an adjusted R^2 of .431 indicates that Causes of Conflicts account for an additional 43.1% of the variation in the Role of Consultants in minimizing conflicts in projects.

Table 4.11: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	26.744	1	26.744	62.995	.000
	Residual	34.387	71	.425		
	Total	61.131	72			
a. Dependent Variable: Role of Consultants in Minimizing Conflicts in Projects						
b. Predictors: (Constant), Causes of Conflicts in Projects						

Source: Field study (2021)

Table 4.11 shows that The Causes of Conflicts could accurately explain the variation in Role of Consultants in Minimizing Conflicts in Projects considering $p < 0.01$. In other words, Table 4.9 highlights that the variations in Role of Consultants in Minimizing Conflicts is a direct result of the Causes of Conflicts.

Table 4.12: Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.826	.382		7.401	.000
	CCP	.554	.070	.661	7.937	.000
a. Dependent Variable: Role of Consultants in Minimizing Conflicts						

Source: Field study (2021)

According to Table 4.12, for every unit of Causes of Conflict increase, there is a 0.554 increase in the Role of Consultants in Minimizing Conflicts. The path coefficient results $\beta = .554$, $t = 7.937$, $p < .01$. lends significant support for O1, which stated the Causes of Conflict in Projects have a positive and significant effect on The Role of Consultants in Minimizing Conflict in Projects.

4.7.2.2 Effects of Conflicts on Projects and the Role of Consultants in Minimizing Conflict in Projects

Table 4.13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.667 ^a	.458	.451	.63953

a. Predictors: (Constant), Effects of Conflicts

Source: Field study (2021)

According to Table 4.13, an R^2 of 0.458 indicates that 45.8% of the variation in the Role of Consultants in minimizing conflict is accounted for by the Effects of Conflicts in Projects. Also, an adjusted R^2 of .458 indicates that Effects of Conflicts in Projects accounts for an additional 45.8% of the variation in the Role of Consultants in Minimizing Conflict in Projects.

Table 4.14: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.002	1	28.002	68.465	.000
	Residual	33.129	71	.409		
	Total	61.131	72			

a. Dependent Variable: Role of Consultants in Minimizing Conflict

b. Predictors: (Constant), Effects of Conflicts in Projects

Source: Field study (2021)

Table 4.14 shows that Effects of Conflict in Projects could accurately explain the variation in the role of consultants in minimizing conflict considering $p < 0.01$.

Table 4.15: Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.258	.316		10.321	.000
	ECP	.521	.063	.667	8.274	.000

a. Dependent Variable: Role of Consultants in Minimizing Conflict

Source: Field study (2021)

According to Table 4.15, there is a 0.521 increase in the Role of Consultants in Minimizing conflict for every unit of Effects of conflict increase. The path coefficient results $\beta = .521$, $t = 8.274$, $p < .01$.

4.7.2.3 Causes of conflict

Table 4.16: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.695 ^a	.483	.477	.81160

a. Predictors: (Constant), Causes of Conflict in Projects

Source: Field study (2021)

According to Table 4.16, an R^2 of 0.483 indicates that Causes of conflict account for 48.3% of the variation in Effects of Conflicts. Also, an adjusted R^2 of .477 indicates that Causes of Conflicts account for an additional 47.7% of the variation in Effects of Conflicts in Projects.

Table 4.17: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.925	1	49.925	75.749	.000
	Residual	53.354	81	.659		
	Total	103.279	82			

a. Dependent Variable: Effects of Conflicts in Projects

b. Predictors: (Constant), Causes of Conflicts in Projects

Source: Field study (2021)

Table 4.17 shows that Causes of Conflict could accurately explain the variation in effect of conflicts in projects considering $p < 0.01$. In other words, Table 4.15 highlights that the variations in effects of conflict are a direct result of causes of conflicts.

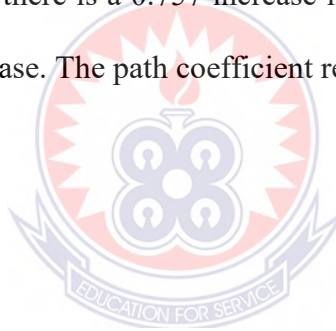
Table 4.18: Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.822	.476		1.728	.000
	CCP	.757	.087	.695	8.706	.000

a. Dependent Variable: Effects of Conflict in Projects

Source: Field study (2021)

According to Table 4.18, there is a 0.757 increase in effects of conflict for every unit of causes of conflict increase. The path coefficient results $\beta = .757$, $t = 8.706$, $p < .01$.



CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

The results of empirical data analysis were presented in the previous chapter. This chapter discusses the findings as reported in the previous chapter. The discussion of the findings is structured according to the stated research objectives in Chapter One. The chapter begins with the highlight of the research objectives. This is followed by the discussion of the findings relating to each research objective in sequential order. The research objectives were guided by a set of research questions which were tested to answer each research objective. This chapter ends the discussion of results with a chapter summary.

5.2 Highlights of Study Objectives

This study is designed to achieve the following objectives;

- i. To determine the causes of conflict between subcontractors and main contractors in the construction projects in Ghana.
- ii. To assess the role of project Consultants in minimizing the incidents of conflicts between subcontractors and main contractors in construction projects in Ghana.
- iii. To determine the effects of conflicts between subcontractors and main contractors in construction projects in Ghana.

5.3 The Causes of Conflicts between Subcontractors and Main contractors in Construction Projects

One of the major research gaps was to determine the root cause of conflicts between subcontractors and main contractors in the construction industry in Ghana. This led to

the formulation of a research question that sought to probe into what the causes of conflicts are in the construction industry. In attempt to find answers to this question, a study questionnaire was developed and a section containing 16 questions was dedicated to finding answers to this question. These questions were developed from discussions and views from various authors (Jameson, 2013; Eisenhardt et al, 2019; Michael, 2007; Fenn et al., 2007; Carmicheal, 2002) in the literature review. All 16 constructs in this section received responses of high frequencies, above 3.0, affirming findings made by (Jameson, 2007; Eisenhardt et al, 2019; Michael, 2007; Fenn et al., 2007; Carmicheal, 2002) as discussed in the literature review. Jameson, (2007) believes that construction conflicts have their instinct nature and characteristics, and thus the sources of conflicts will vary from one project site to another. In his study, five primary sources of construction disputes were listed that includes existence of errors, defects or omissions in the contract documents, failure of someone to count the cost of an undertaking at the beginning, changed condition, consumer reaction and people involved. These findings back claims from prior researches discussed in the literature review. Hartman, (2014) reported that the most common causes of claims that normally lead to disputes are scope changes, weather, and restricted site access. Michael, (2007) has summarized 20 common causes of construction disputes, including speed of construction, cost and quality control, technological advances, stringent building regulations and economic difficulties that becomes basics for many studies later regarding conflict and disputes in construction industry. Fenn et al. (2007) identified causes of construction disputes caused by clients includes failure to respond in timely manner, poor communications amongst members of the team, inadequate tracing mechanisms for request of information, deficient management, supervision and coordination efforts on the part of the project, lowest price mentality in engagement of contractors and designers, the

absence of team spirit among the participants, reluctant to check for constructability, clarity and completeness, failure to appoint a project manager and also discrepancies or ambiguities in contract documents. Carmicheal, (2002) identified causes of construction disputes caused by contractors which include inadequate contractor's management, supervision and coordination, delay or suspension of works, failure to plan and execute the changes of works, failure to understand and correctly bid or price the works, lack of understanding and agreement in contract procurement, reluctance to seek clarification and inadequate critical path method (CPM) scheduling and update requirements.

The problem in construction project is aggravated by the presence of ambiguities such as unclear scoping and under-defined task objectives. Most construction projects are interrupted due to incomplete specification of the drawing (Huang *et al.*, 2008). Problem between the subcontractor and the contractor may be triggered due to unclear drawings provided by the main contractors (Al-Hammad, 1992). Communication plays a fundamental role in all facets of operations. It is therefore very important that both internal communication within an organisation as well as the communication skills of your employees are effective (Avansh, 2016). Therefore, effective Communication is important for the development of a workplace, in essence, ineffective communication gives rise to unachieved goals, misunderstandings and lack of co-existence between main contractors and subcontractors. The subcontractors may also develop bitter feeling towards the main contractors under this circumstance (Bagilhole *et al.*, 2000). Findings from collected and analysed data reaffirm findings of previous works by authors as discussed. Reliability of findings that fulfil this objective was determined through Cronbach's Alpha.

5.4 The Role of Consultants in Managing Conflicts between Subcontractors and Main Contractors

This objective was fulfilled by finding an answer to the research question; what roles do Consultants play in minimizing the incidents of conflicts between subcontractors and main contractor in construction projects in Ghana? Section three of the research questionnaire was dedicated to answering this question. This section comprised of 8 questions, out of which the 73 respondents answered with diverse responses. The results of this section suggests that consultants do little in managing conflicts among main and subcontractors. Four out of the eight constructs including “Make clear understanding of the contract conditions and requirements, project objectives and implementation”, “The clarity of the contract between main contractors and subcontractors”, “Compliance with regulations by the contractors & Subcontractors” and “Adherence to subcontract requirements” received negative responses, suggesting that consultant shortfall in these areas. It is not surprising that issues of conflict are rampant amongst main and subcontractors in the construction industry, given that consultant do not full partake in their mediating role between main and sub-contractors. Consultant are perceived as universal mediators, they stand between clients, subcontractors and main contractors. Clients often question their consultants in respect of incomplete design, omissions in scope brief, low aesthetic appeal, and budget overruns (Shapiro, 2005). Müller and Turner (2005) believe that the first step in dealing with conflicts is to avoid the occurrence of problems on the project site to the furthest extent possible indicating that if all constructs developed to examine the involvement of consultants in managing conflicts on projects had produced positive values, the advent of conflicts between main and subcontractors would have declined. This iterates the importance of effective role play on the part of consultants as discussed in the literature.

5.5 Effects of Conflicts between Subcontractors and Main Contractors on Project Delivery

The research question; to what extent do conflicts effects construction projects? Section 4 of the questionnaire sought to answer this question. All 10 questions developed and posed to respondents in this section saw positive responses. Findings from this section are in line with earlier research conducted in this field. According to Habu, Dagett and Freejob, (2012) conflict in any worksite causes decrease in productivity, Conflicts do lead to high rate of labour turnover in an organization, Conflict promotes mutual mistrust and suspicion among groups in the organization and leads to unfulfilled organisational goals. Conflicts and disputes have negative impacts on the project's completion, cost, and performance (Ashworth, 2012). Conflicts are inherent within the construction industry; therefore, they are always expected during the course of the construction project. Conflicts cause a delay in completing the project on time and within budget (Fenn, 2007). Conflicts consume more time, cost more money than the estimated cost, and also lead to the ruining of relations which may have taken numerous years to establish (Ashworth, 2012). Conflicts always lead to failure and destruction of relationships when not manage well (Gibbson, 2007).

5.6 Validated Framework for Minimizing incidents of Conflicts between Main Contractors and Subcontractors

A validated questionnaire was developed and given to some selected main contractor's site engineers/managers and subcontractor's site engineers/foremen to agree to the model or otherwise. The responder's suggestss that some changes should be made after going through the first model and now the final model is presented below.

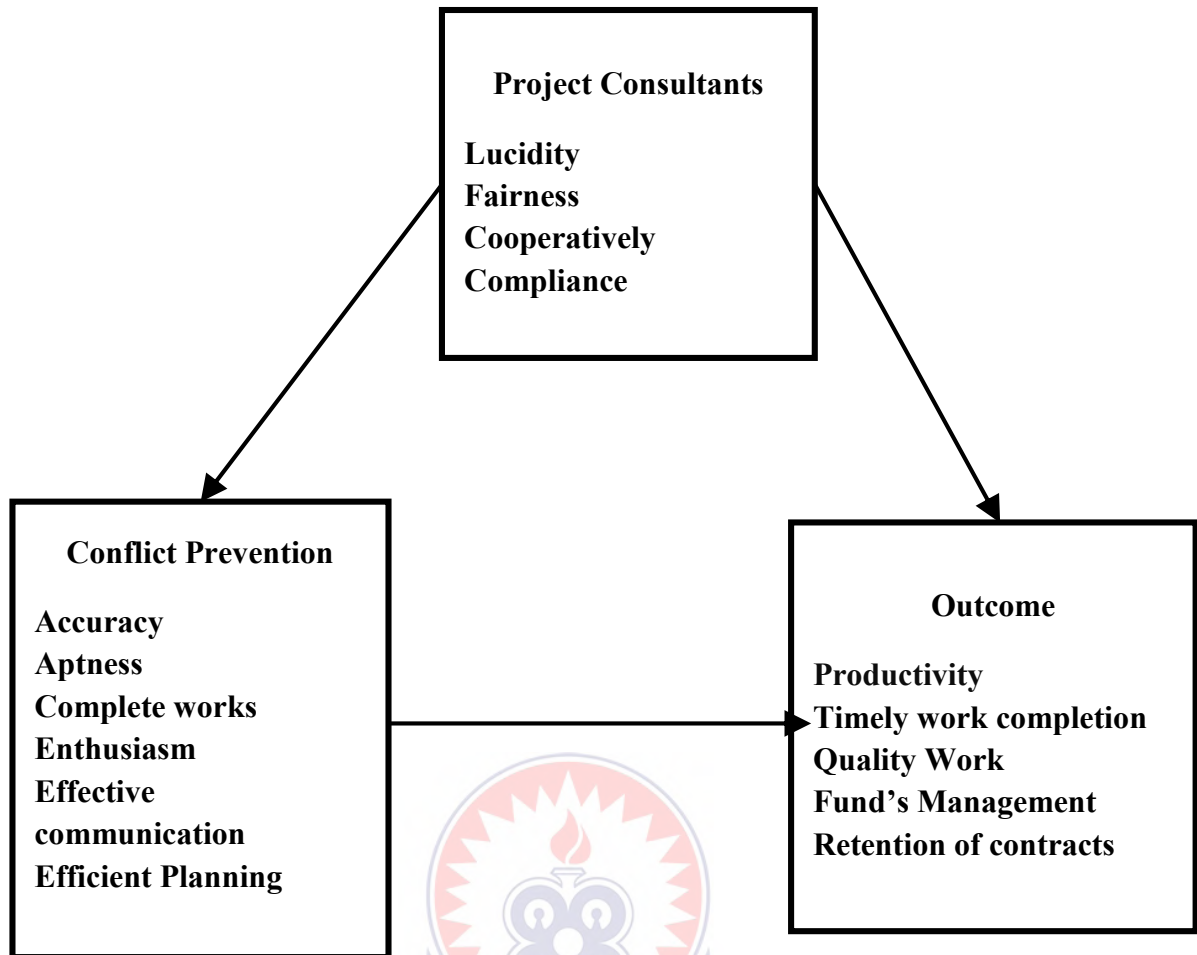


Figure 5.1: Validated Framework for Minimizing incidents of Conflicts between Main Contractors and Subcontractors

CHAPTER SIX

SUMMARY FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter of the research focuses much on the key findings of the study and the research was on the causes of conflict between the main and the subcontractors in construction projects. The study also found out the main conclusions and provides pivotal recommendations for eliminating the causes of conflict in the construction of projects based on the findings. Introduction to the study in chapter one, literature review and discussions in chapter two for which reason analysis and interpretation of the research data was formed. Chapter three spelt out the appropriate methodologies applied to address the objectives of the study. Chapter four gave in a whole view of the data presentation whilst chapter five gave in the discussion of findings. Finally, chapter five brought the research to conclusion by presenting a vivid summary fulfilling the aims and objectives of the research work.

6.2 Summary of Findings

The key findings from the study are summarised in this section.

6.2.1 Causes of Conflict amongst Contractors in Projects

The study revealed that all 16 possible causes of conflicts amongst contractors which were provided in the study questionnaire were affirmed by respondents as they all attained responses higher than average, 3.0. In order of importance, the first five causes of conflicts between main contractors and subcontractors include:

- Ambiguous and contradicting instructions;

- Different perception of work quality;
- Delayed in response on the part of the main contractor;
- Inaccurate design information; and,
- Delays in payments

6.2.2 Effects of Conflicts on Projects

The findings of the study revealed that conflicts between main contractors and subcontractors can lead to the following.

- Reduces productivity at site;
- Leads to cost overrun;
- Increases the additional work for the project from the limit set in the contract;
- Diversion of resource in respect of management time allocated to resolving conflict;
- Loss and reduction of quality of work;
- Delays in project completion;
- Termination of contract;
- Delays and inefficiencies in construction projects;
- Long standing litigation in court and,
- Waste funds on incomplete project.

6.2.3 Role of Consultants in Minimizing conflicts amongst contractors in Projects

The findings of the study suggest that consultants are partly to blame for conflicts between main and subconsultants. They do not fully partake in their mediating duties between the main and subcontractors. They shortfall in the following areas;

- Adherence to subcontract requirements;

- Compliance with regulations by the contractors & Subcontractors;
- The clarity of the contract between main contractors and subcontractors; and,
- Make clear understanding of the contract conditions and requirements, project objectives and implementation.

6.3 Conclusion

Construction industry is one of the largest and complex industry in Ghana which involve multiple Consultants with different interests' areas. The Consultants here stand for the clients (owners), consultants, architects, engineers, contractors and subcontractors in carrying out construction project with difference views and difference goals. Every contractor is working toward a successful, profitable, and quality project, but sometimes conflict comes in as a result of the differences in the Consultants' views and goals. Following the complexity nature of construction and its adversarial environment, many projects experience disputes and sometimes get out off-hand that result in mediation or litigation. The study makes the following conclusions based on the data obtained from seventy-three (73) Consultants of the construction industry. First, the causes of conflict in the construction industry include Delayed in response on the part of the main contractor, Ambiguous and contradicting instructions, Different perception of work quality, Changes of contract due to site and environmental condition, non-adherence to safety rules and the use of substandard materials for construction. Even though all 16 fields had positive responses from participants, these had the highest frequencies. Secondly, the effects of conflicts among contractors in construction projects per analysis prove to reduce productivity and quality of work, loss and waste of funds and termination of contracts. Thirdly, the role of consultants plays a very vital role in the causes and effects of conflicts in projects. It is worth mentioning

that consultants do not fulfill their mediating roles as they shortfall in salient aspects. The advent of conflicts would be minimized if consultants fully partake in their duties on projects.

6.4 Recommendations

The causes of construction disputes in the construction business are proposed to be reduced by the following suggestions. In the construction business, the study investigates a framework to reduce disputes between principal contractors and subcontractors. Conflict has a significant negative impact on production in every business. In division, nothing can be accomplished. Conflicts on a project only result in ineffective work. In order to establish clarity and fluidity, which will promote understanding among them and lessen disputes, it is advised that primary contractors and subcontractors work together to maintain continual contact on projects. By establishing reasonable timelines, delivering explicit directions, creating clear and comprehensive work drawings, and providing sufficient work resources, main contractors should treat subcontractors fairly. This can be embedded in reviewed construction policies.

According to the research, consultants are crucial in the management and avoidance of conflicts between principal and subsidiary contractors. In projects, they also serve as a mediator between the principal and the subcontractors as well as the clients. Therefore, in order to manage and reduce disputes, it is advised that consultants respect their positions to the utmost extent. According to the study, consultants should oversee initiatives as moderators rather than only acting as mediators, another policy to be considered.

It should be highlighted that the data collection tool used in this study was subjectively constructed, which makes claim verification challenging, if not impossible. The questionnaires ought to be developed objectively, or at the very least as a blend of objective and subjective measurements. Adding to literature, to augment the use of questionnaires or to gain information from respondents, other data collection tools (such as interviews) may be utilized. This will assist in addressing the drawbacks of only employing surveys to gather data. It is advised that the study be repeated in the other areas that it did not examine. Future studies should look at how consultants affect disputes between primary and subcontractors in the building sector.



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APPENDIX A

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

FACULTY OF TECHNICAL EDUCATION

DEPARTMENT OF CONSTRUCTION AND WOOD TECHNOLOGY

TOPIC:

DEVELOPING A FRAMEWORK FOR MINIMISING CONFLICTS

BETWEEN SUBCONTRACTORS AND MAIN CONTRACTORS IN THE

CONSTRUCTION INDUSTRY IN SELECTED REGIONS IN GHANA.

QUESTIONNAIRE FOR MAIN CONTRACTOR'S SITE MANAGERS/SITE

ENGINEERS AND SUBCONTRACTOR SITE ENGINEERS/FOREMEN

My name is Bukari Mohammed, a final year MPhil student of the Department of Construction and Wood Technology, University of Education, Winneba College of Technology Education, Kumasi (UEW-K). This research is being conducted as part of the requirements for the award of an MPhil in Construction Management. The information you provide will therefore be used for academic purposes only and will be treated with optimum confidentiality.

The objectives of the study are to: determine the causes of conflicts between subcontractors and main contractor in the construction projects in Ghana; assess the role of project Consultants in minimizing the incidents of conflicts between subcontractors and main contractors in construction projects in Ghana; determine the effects of conflicts between subcontractors and main contractor in construction projects in Ghana; and develop a frame work for minimizing the incidents of conflicts between subcontractors and main contractor in construction projects in Ghana.

Researcher's Tel: 0243618779, E-mail: mohammedbukari77@gmail.com

SECTION ONE

1. Which institution do you work for?

Public Sector	<input type="checkbox"/>
Private Sector	<input type="checkbox"/>

2. What is your highest academic Qualification? *(Please tick (√))*

Master's degree	<input type="checkbox"/>
Bachelor degree	<input type="checkbox"/>
Diploma (HND)	<input type="checkbox"/>
Other. Please specify	<input type="checkbox"/>

3. What is your age category? *(Please tick (√))*.

15-20 years	<input type="checkbox"/>	31- 40 years	<input type="checkbox"/>
21-30 years	<input type="checkbox"/>	41- 50	<input type="checkbox"/>
Above 50	<input type="checkbox"/>		<input type="checkbox"/>

4. What is your gender? *(Please tick (√))*

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

5. How long have you been working in the industry? *(Please tick (√))*

Under 5 years	<input type="checkbox"/>	5 – 10 years	<input type="checkbox"/>
Above 11 but less than 15 years	<input type="checkbox"/>	16 – 20 years	<input type="checkbox"/>
Above 20 but less than 30 years	<input type="checkbox"/>		<input type="checkbox"/>

6. What is your specialization area? *(Please tick (√))* the correct one.

Electrical Installation	<input type="checkbox"/>
mechanical Installation	<input type="checkbox"/>
Construction	<input type="checkbox"/>
Others	<input type="checkbox"/>

SECTION TWO**Causes of Conflicts between Subcontractors and Main Contractor in the Construction Projects.**

7. Below are a number of potential causes of Conflicts between Subcontractors and Main Contractor. From your experience, please tick the appropriate cell by indicating how significant each cause is.

Ranking	Interpretation
1	Strongly Not Significant
	Not Significant
3	Average
4	Significant
5	Very Significant

S/N	Causes of Conflict on Projects	Ranking				
		1	2	3	4	5
a.	Inaccurate design information					
b.	Delayed in response on the part of the main contractor					
c.	Lack of proper communication among project teams					
d.	Amendments					
e.	Incomplete work-drawings or specifications					
f.	Inadequate supply of materials					
g.	Site coordination challenges					
h.	Unrealistic time targets and durations					
i.	Non-adherence to the construction schedule					
j.	Contractor's financial challenges					
k.	Ambiguous and contradicting instructions					
l.	Delays in payments					
m.	The use of substandard materials for construction					
n.	Different perception of work quality					
o.	Changes of contract due to site and environmental condition					
p.	Non-adherence to safety rules					

SECTION THREE**The Role of Consultants in Minimizing Conflicts between Subcontractors and Main Contractors.**

8. Below are a number of roles played by Consultants in minimizing conflicts. From your experience, please tick the appropriate cell by indicating how significant each role is.

Ranking	Interpretation
1	Strongly Not Significant
2	Not Significant
3	Average
4	Significant
5	Very Significant

S/N	Role of Consultants in Minimizing Conflicts	Ranking				
		1	2	3	4	5
a.	Help in selection of subcontractors through competitive tendering.					
b.	Assisting the main contractors in pricing the tender by the subcontractors					
c.	Make clear understanding of the contract conditions and requirements, project objectives and implementation					
d.	The clarity of the contract between main contractors and subcontractors					
e.	Compliance with regulations by the contractors & Subcontractors					
f.	Adherence to subcontract requirements					
g.	Make payment method to the main contractor by the client available.					
h.	Regular and effective communication & coordination of main contractor and subcontractors by the project manager					

SECTION FOUR**Effects of Conflicts between Subcontractors and Main Contractors in Construction Projects.**

1. The following are some of the effects of Conflicts on projects. Using the scale below, what is the relative importance of each of the factors.

Ranking	Interpretation
1	Strongly not significant
2	Not significant
3	Average
4	Significant
5	Very significant

S/N	Effects of conflict on projects	Ranking				
		1	2	3	4	5
a.	Reduces productivity at site					
b.	Leads to cost overrun					
c.	Increase the additional work for the project from the limit set in the contract					
d.	Diversion of resource in respect of management time allocated to resolving conflict					
e.	Loss and reduction of quality of work					
f.	Delays in project completion					
g.	Termination of contract					
h.	Delays and inefficiencies in construction projects					
i.	Long standing litigation in court					
j.	Waste funds on incomplete project					

SECTION FIVE**A Framework for Minimising Incidents of Conflicts between Contractors.**

1. This section examines the conflict management practices. Using the scale below, what is the relative importance of each of the factors.

Ranking	Interpretation
1	Strongly not significant
2	Not significant
3	Average
4	Significant
5	Very significant

S/N	Process of Conflict Management	Ranking				
		1	2	3	4	5
a.	Identifying Discrepancy					
b.	Diagnosing the difference between parties					
c.	Analysing the problem					
d.	Measuring the gravity of the discrepancy					
e.	Intervention					

S/N	Conflict Resolution Behaviour Between Subcontractors and Main	Ranking				
		1	2	3	4	5
a.	Compromising					
b.	Accommodating					
c.	Competing					
d.	Avoiding					
e.	Collaborative					

S/N	Outcome	Ranking				
		1	2	3	4	5
a.	Performance					
b.	Productivity					
c.	Satisfaction					
d.	Dissatisfaction					
e.	Re-diagnostics					

Thank you for your input

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