EXPLORING THE LATENT SHORTCOMINGS OF CONFLICT RESOLUTION TECHNIQUES AMONG PROJECT TEAMS IN THE CONSTRUCTION INDUSTRY OF GHANA.

By

Veronica Ansaah-Nyarko

(B.A. Community Development)

A thesis submitted to the Department of Construction Technology and Management, Kwame Nkrumah University of Science and Technology, Kumasi in partial fulfillment of the requirements for the award degree of

MASTER OF SCIENCE IN PROJECT MANAGEMENT

November, 2019

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institute, except where due acknowledgement has been made in the thesis.

Veronica Ansaah-Nyarko …… ……

(Student) Signature Date

Dr. De-Graft Owusu Manu …… ……...

(Supervisor) Signature Date

Prof. Bernard K. Baiden ……. ……..

(Head of Department) Signature Date

ABSTRACT

Projects are temporary endeavors and multi-organizational in structure hence, making it a conflict prone industry. There is, however, scarcity of information on latent conflict resolution techniques among project teams in the Ghanaian construction industry as most of the studies on conflict resolution do not tackle techniques used in resolving latent conflicts. Therefore, the study aimed at exploring the latent/perceived shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. With this aim three (3) objectives were set which were to assess the underlying causes of conflicts among project teams in the construction industry of Ghana, to establish the most significant conflict resolution technique adopted in resolving conflicts among project teams in the construction industry of Ghana and to explore the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. Extensive literature review was conducted and with the use of quantitative research method, a structured questionnaire was designed to collect data from fifty-five (55) respondents. Prior to the data analysis, the reliability and validity of the data was ascertained using the Cronbach's Alpha value. The data were analyzed using frequencies, percentages and Relative Importance Index (RII). From the analysis of the objective one, it was realized that, the most important cause of conflict was delayed client responses followed by the difference in perception of work quality, inaccurate design information and the use of substandard materials for construction. For the second objective, it was realized that, negotiation was the most significant conflict resolution technique followed by mediation, arbitration and early neutral evaluation. For the third objective it was noticed that, the most significant shortcoming of conflict resolution technique was conflict of interest followed by dismissal of employee and extra expenses. It was therefore recommended that, stakeholders should adequately stipulate expectations at the early stages of a project to avoid differences in perception of work requirements.

Keywords: Conflict, Latent, Conflict resolution.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENT

I am very grateful to God almighty for seeing me through this thesis. I also say a very big thank you to my supervisor, Dr De-Graft Owusu-Manu for his outstanding guidance, patience and knowledge impacted in me. I am most grateful.

DEDICATION

This thesis is dedicated to all my family, friends and loved ones for their support and encouragement.

CHAPTER ONE

GENERAL INTRODUCTION

1.0 OVERVIEW

This chapter presents the general overview of the thesis in relation to the background of the study. Chapter one emphasized on the problem statement, the aim and the objectives, research scope, significance of the research and summarized methodology. Finally, the structure of the thesis outlined.

1.1 BACKGROUND OF THE STUDY

Construction projects involve interaction among many different participants. In the pursuit of ensuring projects progress, different professionals are always involved in the execution of construction projects although each with distinct and well-defined specialized role which generates conflict among parties (Mohammed, 2012). The involvement of different stakeholders creates opportunities for misinterpretation of information and differences in opinion regarding the activities involved in the execution of projects which undermines the cooperative nature of the building process (Kishor and Ogunlana, 2011). Hagan (2016) opined that, conflicts that arise between construction teams expose workers to extreme hostility. These conflicts arise from disagreements that emerge as a result of difference in opinions in solving problems, poor planning and inadequate contract documents (Babalola et al., 2015). They further indicated that, these misunderstandings affect the performance of a project as litigation can lead to increase in project cost and collapse in communication.

Conflict is described as "any divergence of interests, objectives or priorities between individuals, groups, or organizations; or non-conformance to requirement of a task, activity or process" (Gardiner and Simmons, 1992)

Conflicts are inevitable in any given construction industry due to the complex nature of the industry itself. A number of authors such as Saunders *et al.,* (2015), Tang (2010) contended that, in a project environment, conflict is an inevitable byproduct of the organizational activities. The nature and types of conflict that occur in construction vary from one construction to another and the common types usually occur between the laborers on one hand and the project managers on the other hand (Okotoni, 2002). Mohammed (2012) suggested that the most common conflicts associated with the industry are delay in the supply of material, delay in payments for completed work, improper construction method, delay caused by the subcontractor and discrepancies in contract documents between the various parties. When delay occurs in construction projects, it has adverse consequences on project objectives in terms of time, cost and quality. The results of conflicts are varied and range from financial and economic losses, decreased productivity, and low employee morale, lost customers and dysfunctional relationships with colleagues (Cloke and Goldsmith, 2005). The success of most projects is contingent on how these inevitable conflicts are managed and resolved. That notwithstanding, many conflicts arising out of construction projects in developing countries are resolved by arbitral tribunals in Europe. This is mainly as a result of lack of efficient framework for dispute resolution and the absence of relevant knowledge, infrastructure and expertise (Mante, 2014).

Nowadays, resolving conflicts through litigation and arbitration are however, perceived with shortcomings which stem from concomitant rise in costs, delays, and adversarial relationships. These shortfalls have encouraged the rapid growth of conflict resolution techniques in addressing construction conflicts among project teams. This study therefore, explores the latent shortcomings of conflict resolution techniques among project teams.

1.2 STATEMENT OF THE PROBLEM

Conflicts seem to be a never-ending story within the construction industry (Pétursson, 2015), and there are many terms used to define and describe these problems, such as delay in delivery, increased project cost, reduced productivity, loss of profit, or damaged professional or business relationship. “The complex, relational, and lengthy process of designing and building makes construction a process in which disputes are virtually ensured” (Cakmak and Cakmak, 2013). In view of this, construction projects conflict resolutions are highly technical and complex which may lead to unnecessary delays and even project abandonment (Ceballos-Ramírez and Martínez, 1997). International studies indicate that drivers of dispute development within construction contracts can be arranged into as little as three main categories. The first driver of dispute is project uncertainty, the second driver is contractual problems, and the last is categorized as opportunistic behavior (Cheung and Yiu, 2006).

It is not uncommon within the construction sector to hear talks about disputes, disagreements, and conflicts arising at many stages of the building process. It is also common to hear that the cost, time, and effort in resolving disputes with the help of an attorney is higher than resolving them directly, either by applying discounts or by making improvements. Mostly, conflict influences the success of construction project and gives rise to problems such as reduced productivity, project delays, loss of profit, or damaged professional or business relationship. It is considered that as much as 95% of disputes within construction are resolved directly between the parties involved (Stipanowich, 2004). The ideal situation would be to avoid disputes with increased professional procedures and at the same time increase productivity within the industry, decrease cost, and reduce rework caused by mistakes, misunderstanding and related causes.

Brooker and Lavers (1997) opined that, conflict resolution is a very significant tool in resolving disputes. According to Cheung (2002), each member of the project team may have an objective that could be in conflict with the overall objective of a project. Similarly, Edum-Fotwe and McCaffer (2000) opined that, the stakeholders of a construction project may have varying goals that tends to be in conflict with the overall goal of a project. Projects are temporary endeavors and multi-organizational in structure hence, making it a conflict prone industry (Nyarko, 2015). There is, however, scarcity of information onlatent conflict resolution techniques among project teams in the Ghanaian construction industry as most of the studies on conflict resolution do not tackle techniques used in resolving latent conflicts. This has left a knowledge gap, which this study filled by exploring the latent/perceived shortcomings of conflict resolution techniques among project teams in the construction industry.

1.3 AIM AND OBJECTIVES OF THE STUDY

1.3.1 Aim of the Study

Theaim of the study is to explore the latent/perceived shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana.

1.3.2 Specific Objectives of the Study

In order to achieve the above stated aim, the following specific objectives are set:

1. To assess the underlying causes of conflicts among project teams in the construction industry of Ghana;
2. To establish the most significant conflict resolution techniques adopted in resolving conflicts among project teams in the construction industry of Ghana; and

3. To explore the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana.

1.4 RESEARCH QUESTIONS

This study seeks to answer the following questions;

1. What are the underlying causes of conflicts among project teams in the construction industry of Ghana?
2. What are the most significant conflict resolution techniques adopted in resolving conflicts among project teams in the construction industry of Ghana?
3. What are the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana?

1.5 SCOPE OF STUDY

The geographical coverage for the study was restricted to project teams in the construction industry in Accrametropolis. This is because Greater Accra is currently the most urbanized region in the country with major on-going construction works with accompanying in-house conflicts. According to Badu (2013), more than 60% of registered building contractors, operate officially in the Greater Accra region. The study location is selected due to the nearness of study site to the researcher which facilitated questionnaire administration and retrieval in order to situate the problem in context. Contextually, this study focused on the techniques project teams use in resolving conflict at the latent stage and its observed shortcomings. The team members comprised the clients or promoters, project managers, contractors, engineers, architects, suppliers, quantity surveyors and the users.

1.6 SUMMARY OF METHODOLOGY

The deductive approach was adopted based on the argument by Cacioppo *et al.,* (2004) that as a general rule, positivist studies usually adhere closely to the deductive approach. Deductive research approach involves the movement from theory to data in order to explain the causal relationship between variables. It is largely dependent on the use of scientific principles involving highly structured approach and the selection of sufficient sample size in order to generalize conclusions. It involves the application of controls to ensure validity and the collection of quantitative data for analysis (Wahyuni, 2012). The quantitative research strategy was used for this work. Quantitative research strategy employs the collection of hard and reliable data which consists of large population and permits numerical analysis built on facts collected via surveys and experiments (Wahyuni, 2012). The quantitative strategy follows the deductive approach.The survey-based research design was employed for primary data collection. The primary data was collected from the project team in the construction industry by the use of survey questionnaires. The target population for the study includedproject stakeholders; mainly clients/promoters, project managers, contractors, sub-contractors, suppliers, quantity surveyors, engineers and architects, who can be identified with registered construction firms in the Accra Metropolitan Assembly. Data collection instrument was structured survey questionnaires with closed-ended questions and convenience sampling technique was applied to generate the research sample

Data analysis werestandard deviation for descriptive analysis, thus, descriptive statistics using tables, figures and percentagesand relative importance index for inferential analysis. These were used to find out the most significant conflict resolution techniques among project teams.

1.7 SIGNIFICANCE OF STUDY

The construction industry is highly complex and high risk in nature and conflict are widespread (Ceric, 2012). Project environments conflicts and resolution practices exist to provide direction in managing these conflicts by adapting established strategies of analyzing and collaborating to minimize the effect of conflict so that organizational goals can be achieved effectively (Floyd and Lane, 2000). To actualize this, the project manager is expected to keep all the stakeholders satisfied, keeping in view of their expectations, needs and wants at different stages of the project(Munns and Bjeirmi, 1996). In conflict scenario of a project, the project manager has to exercise influencing skills (Chin, 2004). These influencing skills are required for negotiating internal and external conflicts to harmonize peace and tranquilityamong project teams.

Although, conflict resolution studies have been done in Ghana, it remains a field still in its infancy with much knowledge gaps (Elgoibar, 2016). It is therefore worthwhile to explore the latent shortcomings of conflict resolution techniques among project teams in the construction industry. What are not obvious are the influence of conflict on project deadlines and the intractability of the conflict on the survival and progress of projects. It is therefore important to assess the techniques instituted by construction industries in finding lasting solution to the barriers of latent conflicts. This can go a long way to distil the industry with lengthy legal issues which often hinder progress of a project (Jannadia *et al*., 2000). Researching into the situation can help pave way for further research in related areas of study, and the findings will be of academic relevance in an effort to broaden the scope and frontiers of human learning.

1.8 LIMITATIONS

This research work would be presented with some inevitable limitations in its conduct as well as scope. For instance, one key limitation that was anticipated to be encountered whiles undertaking this research work was low response rate and delay in response which may be due to the busy schedule of respondents to respond to the questionnaires which would most likely affect the distribution and retrieval of the questionnaires. This could then affect generalization.Also, the researcher again anticipated that the stipulated time under which the thesis was to be completed could pose restriction to in-depth information. Despite these challenges, efforts were made to collect the relevant information for the study which prevented the nullification of the survey findings.

1.9 ORGANISATION OF STUDY

This study is structured into five (5) separate chapters. The first chapter is the introductory chapter. It discusses the background to the study, problem statement, research aim, and objectives, research questions, scope of study, significance, and organization of the report. Chapter two comprises relevant literature based on critical review and evaluation of the empirical and theoretical propositions and generalization of the study. The third chapter provides an in-depth explanation of the methodology that was used to carry out the study. This section looks at the research strategy, approach, design, the population, sampling technique, and sample size, as well as the data type, data collection instruments, and data analysis technique adopted. Chapter four covers the results in the form of data analysis, findings and discussions. The analysis was done to reflect the research objectives. The study concludes with chapter five, which summarises the whole work and makes conclusions based on the findings that were made. In addition, the study gives critical recommendations for academia and industryas well as indicators for future research directions.

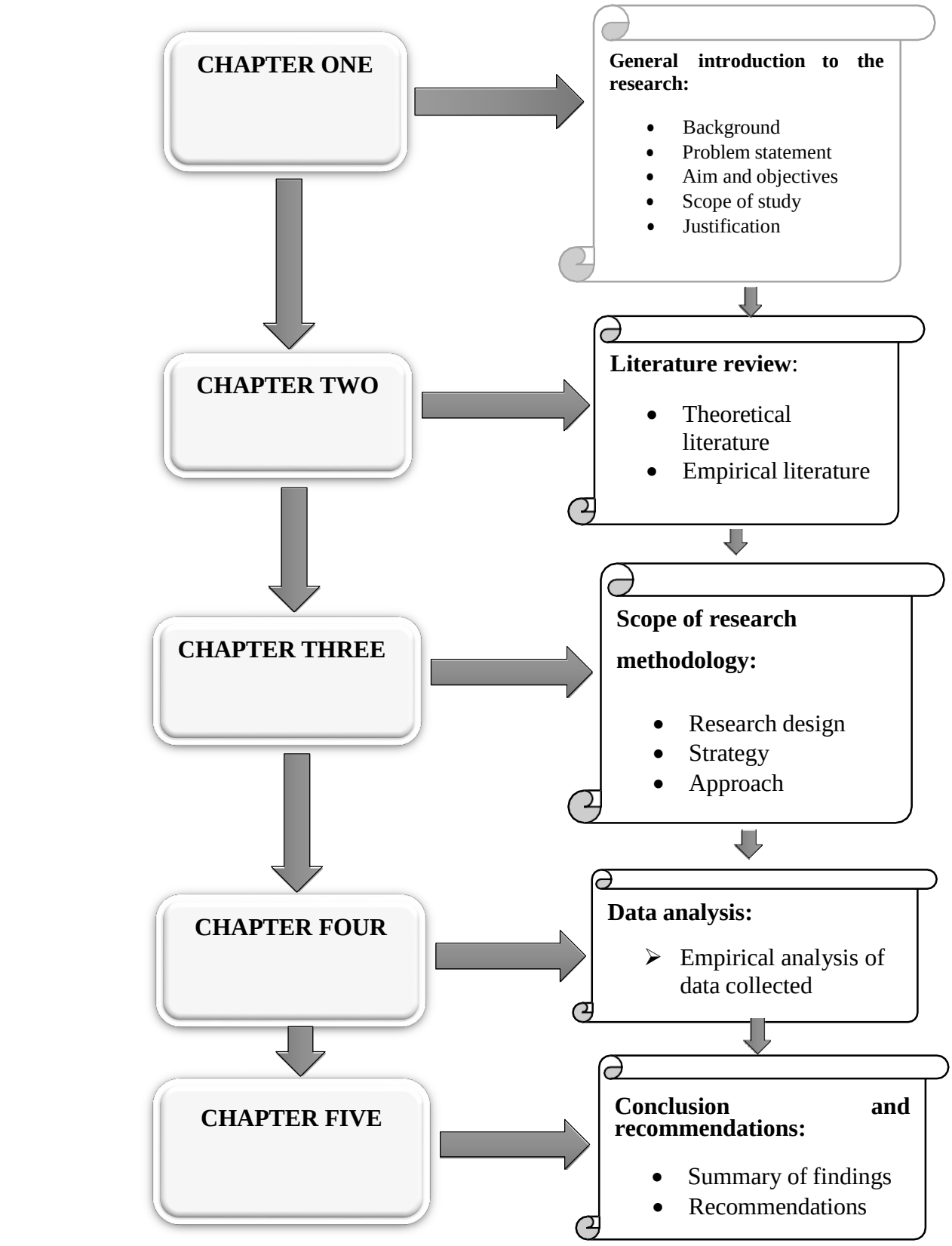

Figure 1. 1: Conceptual Framework of the Research Organization.
Source: Author's construct (2019).

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses a wide range of literature to create knowledge on conflict and how it is inevitable in construction projects. The chapter presents the conceptual, theoretical, empirical and ends with the conceptual frameworks of the study. The conceptual section starts with various scholars' definition of conflict, concepts and various conflict viewpoints. The theoretical section deals with only one theory (system theory) which to the researcher has a positive bearing on the conflict situation. Regarding the empirical review, themes and sub-themes were presented and discussed. The section discusses the functional and dysfunctional phenomenon perceptions of conflicts to express the positive and negative sides of conflicts in construction projects. The section further reviews sources and causes of conflicts in construction projects as determined by various researchers. Also, the empirical section again reviews conflict resolution techniques that can be used in resolving conflicts before getting to the felt and manifest stage. Again, the section reviews the phenomenon of conflict perceived as a dynamic process. The final section looks at the conceptual framework. It provides detailed illustrations and projects and the concepts in a graphical manner.

2.2 CONCEPTUAL REVIEW

2.2.1Definition and Concept of Conflict

Conflicts are inevitable if a group of individuals gather to achieve an objective (Hagan, 2016). There are always different views among project members on the most ideal way to complete a task. Tashi and Peansupap (2013) described conflict as the situation in which a group of people have varying ideas in the execution of a task. There are varying descriptions in the definition of conflict among researchers. Conflict as spelt out by

Hagan (2016) is “when one individual observes that his or her welfare or interest is being resisted or adversely affected by a different individual or group”. It has also been perceived as disagreement and opposition between people about something relating to individual’s interest, beliefs, ideas, goals and needs (Hellard, 1988 as cited in Tashi*et. al.,* 2013). Pelled (1996) characterizes conflict as the existence of opposition or dispute between persons, groups or organizations. Warioba (2008) contends conflict as the process which starts when one party perceives that the other has frustrated or is about to frustrate some concern of his/hers. Conflict is caused by unlike points of view. Pondy (1967) points out that conflict is not really good or bad and that it can have both good and bad outcomes. He contends that conflict generates pressure to reduce conflict but when it persists, it can be endured under certain conditions. Martinelli and Almeida (1998) also posit that conflicts are disagreements, open dissentions and protests involving contentions, physical assault and claims. Feelings of injustice, suspicion, and outrage lead to engagement.

Conflicts can also be caused by the structure of an organization or from uncertainties that could arise internally or externally (Ng *et al*., 2007). Conflicts are always seen as resentments and threats to cooperation, however not all conflicts are in this form in the construction industry. “They come in a form of need to be met or desires to be satisfied, disagreement to be settled and ideas to be shared that eventually leads to change of attitude, feelings and perception”. Femi (2014), opined that, it is impossible to execute a project with zero conflict as conflict is part of human nature.

2.2.2 Conflict Viewpoint

Conflicts related to projects may be viewed from three (3) different viewpoints. They include interactionist, traditional and behavioral perspective (Verma, 1998 cited in Femi, 2014). From the traditional viewpoint, conflict is seen as an event that hinders the achievement of the objectives of a project. Hence, conflict has destructive consequences. In the traditionalist viewpoint, conflicts must be reduced, subdued or eradicated

With the behavioral viewpoint, conflict is regarded as an inevitable occurrence that could have either useful or harmful outcome (Verma, 1998). Khanaki and Hassanzadeh (2010) opined that, conflicts have positive outcome hence team leaders must cease control and augment novelty and ingenuity rather than stamping it out entirely.

The interactionist viewpoint is an advancement in the behavioral viewpoint as it encourages leaders to preserve conflict within a suitable confine that may make projects self-effacing and innovative (Ogunbayo, 2013).

2.3 THEORETICAL REVIEW

2.3.1Underpinning Theory

The findings of the reviewed studies can best be explained by several theories of conflicts such as Vasquez's territoriality theory, frustration- aggression theory, enemy system theory, equity theory, restorative justice theory etc. However, this study has adopted the system theory due to its direct bearing on construction conflicts. Traditionally, systems theory was propounded in 1979 by Zeleny. According to Bucklund (2000), a system is a group of interacting units that come together to perform an activity. Haines (2000), opined that, each element influences the same system and thus, no element can act independently. This implies that, strengthening one part of the system will improve the whole to help prevent unnecessary conflicts among participants. Similarly, weakening

one part will have negative implications on the whole system. A construction project team can be regarded as a system that is put together to execute a project at predefined objectives thus, target cost, quality and duration. The elements of the system can be regarded as the project team which includes the client, consultant and contractor who come together to form the project team. Each team member performs a specific role to ensure that the overall goal is achieved. It must be noted that, the roles assigned to the individuals are interrelated; hence, the non-performance of one member of the team can affect other members notwithstanding how well they perform their duty. Therefore, neglecting one element may degenerate into dysfunctional conflict.

2.4 EMPIRICAL REVIEW

2.4.1 The Construction Industry

The construction industry is regarded as one of the major contributors to the Gross Domestic Product (GDP) of a country. Ahmad and Kitchen (2008), opined that, the GDP contributed by the construction industry ranges approximately between 5% and 15%. According to Ng *et al*., (2007), fifty-five (55) largest countries spend an approximate figure of $4 trillion on construction related activities. According to the statistics given by UKCG (2012), the construction industry employs approximately 3.2 million personnel ranging from low-skilled to high-skilled experts. Hence, the construction industry plays a very significant role in the development of a country's economy. Studies have shown that, the construction industry is dynamic in nature and thus in past years, some factors surrounding that construction industry have changed due to the increase level of uncertainties in budget, technology and development process used (Silas et al., 1996; Ada, 2004).

In real sense, the activities executed in the construction industry are a result of a blend of other industries. For instance, a finished construction product comprises a combination of building materials, tools and elements that are manufactured by other industries (Kwakye, 1997). Hence, any negative influences on the construction industry directly affect other industries. Conflicts and disputes are regarded as the factors that affect the industry negatively. There are some characteristics of the construction industry that also have effects on the industry. For instance, the construction industry is fragmented, temporary and short-term (Albert and Ada, 2004). Ballard and Howell (1998), opined that, the construction industry is unique. Hence, in recent times, the construction industry has become much more dynamic and complicated in terms of the varying activities and parties involved (Ward and Chapman, 2003).

Another significant characteristic of the construction industry is its dependency on estimates and future events. Ward and Chapman (2003) indicated that, construction estimators basically work on cost and time-related estimates for construction projects which are highly unstable in nature. The level of uncertainty within construction projects is high as every project is unique in terms of its location, technology used and level of design (Ashworth, 2013). Hence, the construction industry is regarded as a natural ground for disputes and conflicts. Cheung et al., (2013), opined that, the construction industry involves a number of stakeholders with varying disciplines, hence, the probability of dispute occurrence is always high.

2.4.2 Conflict Causes in Construction Projects

A typical construction project involves stakeholders from different professions as they come together from independent firms to form a unit for the purpose of project execution. According to Walker (1996) cited in Hare (2007) indicated that, the status quo is to be

predisposed to conflict, because of their varying background and the needs of the stakeholders and that of the project. Various researchers identified the major causes of conflicts in their studies.

For instance, Hare (2007) identified five reasons for conflicts to include design, time, management, contract and economic. However, Kumaraswamy (1998), grouped the causes of conflict into two (2) namely; the core causes and contiguous causes. He indicated that, the contiguous causes originate from the client whiles the core causes originate from other stakeholders. Conflicts can also be caused by technical problems and performance trade-offs. In another study conducted by Thamhain and Wilemon (1994) cited in Cheung and Chuah (1999) grouped conflicts into seven (7) major causes. They are project priorities, administrative procedures, technical opinions, performance trade-offs, human resources, cost, schedule and personality. Hagan (2016) also perceived that, conflicts may be caused by organizational pressures, inconsistent demand from team members, time and other deliverables.

Table 2.1: Some Causes of Conflict by Different authors.

Writers	Date	Causes of Conflict
Tipili*et. al.,*	2014	Inadequate communication
Mitkus&Mitkus	2014	Differing site condition, Errors and omissions in design, Local people obstruction, Excessive quantity of works, difference in change order evaluation, double meaning in specification.
Agwu	2013	Task dependence, scarce resources, goal incompatibility, communication failures, poorly designed reward system, individual difference.
Cakmak and Cakmak	2013	Pre-award design, change orders, pre-construction challenges and quality assurance.
Li *et. al.,*	2012	Mismatch in people's perception and expectation.
Yiu and Cheung	2007	Delay; site access delay, delay in running bill, delay in decision by owner.
Kumaraswamy	1997	Changes of conditions, changes of scope, unrealistic expectations, communications, delays, unpredictability, contract document.
Conlin*et. al.,*	1996	Payment and budget; delay and time; budget performance; negligence; administration.

Author construct 2019

2.4.3 Conflict Types

Two main schools of thoughts exist concerning conflict (Rubin *et al.,* 1994; Rubestein, 1993; Sanddelin, 1997). One school of thought views conflict as 'pathological and dysfunctional'. In this perspective, conflict generally conveys negative connotations and is deciphered as something irrational that should be smothered in light of the fact that it is opposite to co-operation and peace (Warners and Jones, 1998). Another school of thought considers that conflict can likewise be a utilitarian means for social change and acknowledges its prevalence.

According to Gorse (2002), conflicts may be natural, functional and constructive or unnatural, dysfunctional and unproductive. Functional conflicts arise from challenges relating to the execution of activities. Atreyi et al., (2007) indicated that, conflicts can be issue based or interpersonal, functional or dysfunctional. This research deliberately distances the argument from the interpretation of conflict as "functional". My point of departure is that conflict is debilitating and should not be allowed to eat into the fabrics of the construction industry because it has the tendency to both disintegrate and transform society.

2.4.4 Techniques in Conflict Resolution

In the previous century, different academic institutions proposed various methods for dispute resolution. Even though the formal, binding conventional methods have been the customary means of dispute resolution within the construction industry, informal, non-binding methods like negotiation or arbitration are gaining ground (Jannadia, 2000). According to Kovach (1994), Alternative Dispute Resolution (ADR) could be described as any approach used to resolve disputes and conflicts without undergoing the litigation process. As revealed by Fenn (1997), 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 dispute. According to Tucker (2005), the number of cases going to trial in the USA related to construction disputes are falling. That may raise the question of how the remaining cases are being resolved. They are defaulted, settled/dismissed, or resolved using other methods. The data indicates that seeking results using alternative dispute resolutions is considered a popular manner of reaching a final decision. Generally, when two parties have a dispute, they normally want to settle the matter effectively, quickly, and with as little added cost as possible. The other thing that is of concern is minimizing

the adversity to prevent the business relationship from being damaged or destroyed (Tucker, 2005).

Research has shown that, early implementation of conflict remedy increases the probability of avoiding litigation. There are some demerits associated with the use of adjudication proceedings. These include; the reduction in communication, poor business relations, more alternatives for settlements and increase in cost. The available ADR methods are negotiations, conciliations, neutral evaluation, dispute boards and arbitration (Kellogg, 1992; Cheung et al., 2000; Commerce, 2002). Dispute resolution methods that maintain control of the dispute dealt with by the parties in disagreements can apparently incur less cost during the resolution process and reduce the effect of hostility. On the other hand, disputes that depend entirely on the decisions of other individuals (litigation and binding negotiation) are believed to have higher costs and escalated hostilities. Figure 2.1 depicts dispute resolution techniques and their corresponding cost increases (Richter, 2000).

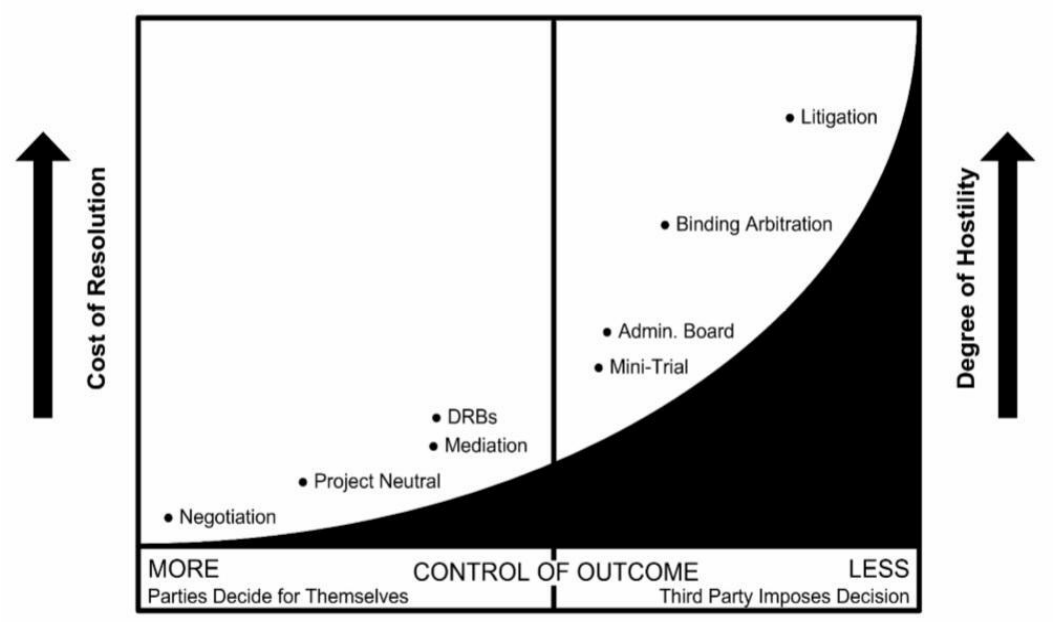

Figure 2.1: Control of Outcome vs. Cost and Hostility of Dispute

Source: Richter (2000)

2.4.4.1 Negotiation

In the construction industry, negotiations are a basic and important step in dealing with disputes. When negotiations fail severally in resolving the dispute, then the dispute can then be regarded as out of hand. Negotiation is seen as a less expensive and cooperative way in solving disputes and thus, preferred over more costly and challenging systems. However, negotiations are mostly unsuccessful even though it possesses numerous merits. According to Loosemore (1999), negotiations fail due to deliberate miscalculations. The significant benefits in the use of negotiations are its flexibility and low cost, however, its consensual scenery remains its weakness and power simultaneously. Disputes that arise as a result of misunderstandings between clients and consultants can be resolved through negotiations (Peter, 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.

2.4.4.2 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 (Gaitskell, 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). It must be noted that, mediation has its own demits along with conciliation. One of the major hindrances in mediation is that, each party has the option not to partake in the process. Furthermore, there is lack of compulsion and lack of enforcement of outcomes. Blake (2014) opined that, mediation can lead to delays in negotiations and commencement of proceedings.

2.4.4.3 Early Neutral Evaluation

Early neutral evaluation is the use of a neutral third-party which is non-binding. For this process, a neutral person is asked to evaluate the various issues on the basis of law to ascertain the advantages of the parties. Gaistskell (2006) opined that, the early neutral evaluation process sets the ground for consideration of other method for conflict resolution. The process is regarded as very private and confidential as the parties decide on the person to conduct the neutral evaluation. Furthermore, it is the decision of the parties to determine if the time and extent of valuation is suitable.

2.4.4.4 Dispute Boards

Harmon (2008) described Dispute Boards as a neutral dispute resolving method that consist of a number of highly-skilled professionals selected by the parties prior to project commencement hence, their selection before the emergence of any dispute. The role of the dispute board is to address each dispute as they occur or prevent them before they occur (Thompson et al., 2000).

In order for the dispute board to efficiently execute its task, it is important for them to understand the developments of the project and its location. Hence, the dispute board hasmuch access to project documents and also visit project locations so as to get updated on project developments (Gerber, 2000, McMillan and Rubin, 2005). When disputes occur the nature of the decision taken relies on the variant of dispute board that is used (Matyas, 1996).

2.4.4.5 Arbitration

Arbitration is regarded as the most common form of dispute resolution available in the construction industry. Bernsterin (2003), opined that, the arbitration mechanism depends on the agreement between the parties to refer a dispute to a third party whose duty is to settle the dispute and come up with a binding award.

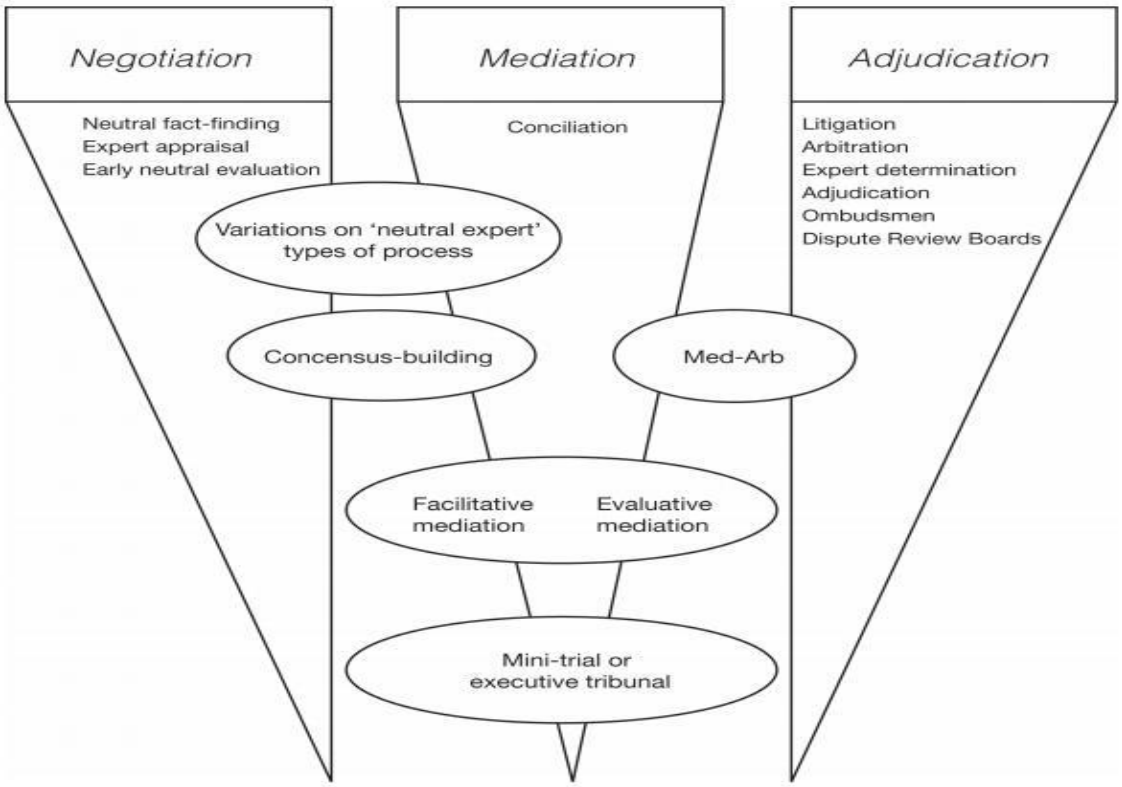

Figure 2.2: The Dispute rResolution Landscape

Source: Mackie & Miles (1995)

2.5 CONCEPTUAL FRAMEWORK

2.5.1 Conceptual Framework

A lot of discussion has been done on conflicts, causes of conflicts, conflict episodes, and conflict types as well as definitions. In addition, conflict resolution techniques have been discussed. It must be emphasized that the effective resolution of latent/perceived conflict is dependent on strong internal mechanism.

Figure 2.3 discusses the institutionalized dispute resolution techniques and forms the conceptual framework of this study.

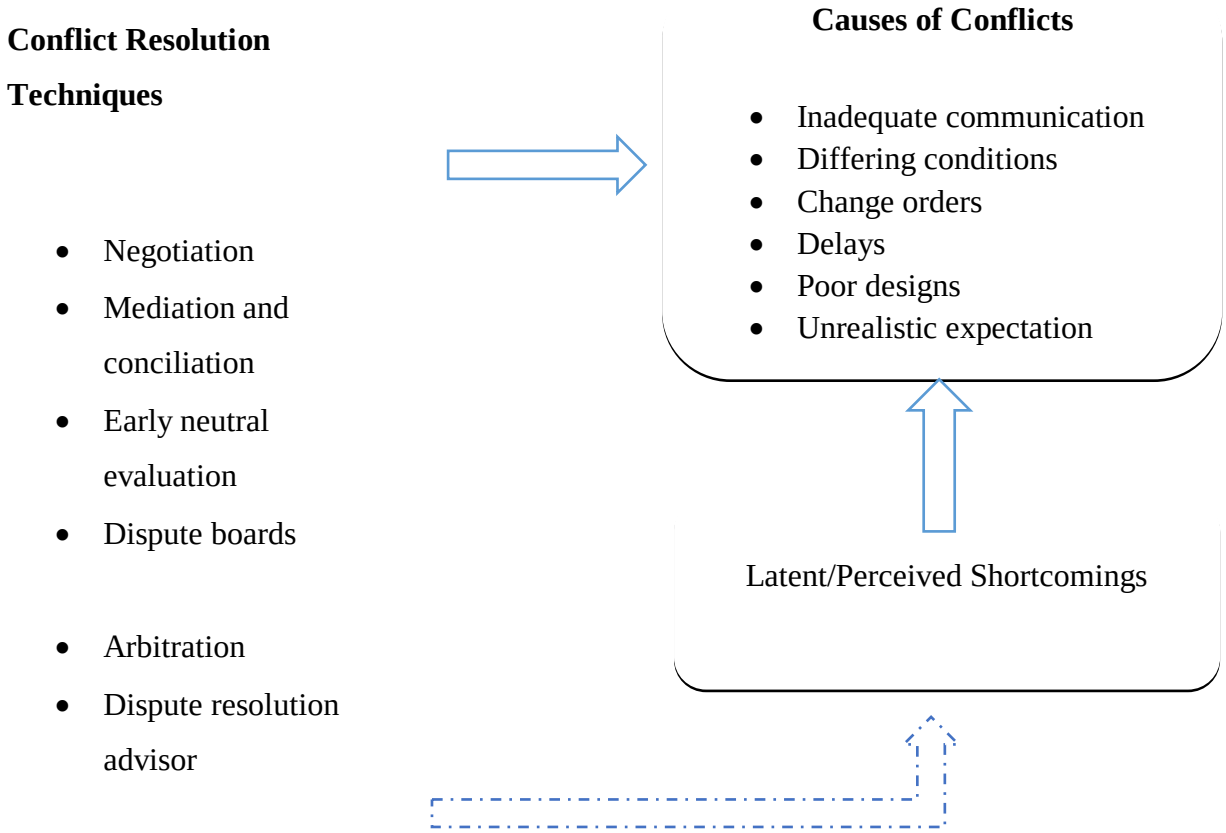

Figure 2.3: Conceptual framework of the study

Source: Authors' Construct 2019

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter reports on the research methodology or framework adopted for this study. It broadly takes into account the various approaches used in conducting research and elaborates on why specific ones were employed in conducting the study to achieving its specific objectives. Following chronologically in similar vein of discussing theories and determining what was adopted for the study are presentations made on: the research approach used (either deductive or inductive); the research strategies adopted (whether experiment, survey, case study etc.) and the data collection methods employed (interviews, questionnaires etc.). Moreover, the chapter presents on the population and sampling frame of the study and concludes by discussing the data processing approaches and tools of analysis used in analyzing the primary data obtained from respondents of the study.

3.2 RESEARCH STRATEGY

Research strategy is defined as "the way in which the research objectives can be questioned" Creswell 2012). Booth (2016) expressed that research strategy consists of three distinct areas, which are quantitative, qualitative and mixed. The decision to use any of these three broad areas depends on number of factors like; the purpose of the study, the research questions and the type and ease of getting the needed information (Naoum, 2012).

3.2.1 Quantitative

Quantitative research approach is the approach that enables in the investigation of quantitative properties and their relationships systematically (Johnson and Onwuegbuzie, 2004). Creswell (1994) is of the view that the quantitative research approach considers past actions, words, or records with a statistical significance, and measures the findings of these observations. Wadsworth (1997) in an effort to explaining the quantitative research approach simply said that this approach would enable you to know how many, to what extent or how much of the parts is found in the data analysis and counting. The objective of this approach is simple; how do we employ mathematical models, theories and hypothesis concerning a natural phenomenon (Sarantakos, 2005). Sources of data collection are mostly concerned with the employment of questionnaires, surveys, and experiments and using mathematical tools in analyzing them (Antwi-Afari, 2016). Quantitative research approach was adopted for this study as it uses variables on a subject and by adopting some tools like correlation; descriptive statistics (mean, standard deviations, frequencies etc.); regression etc. to express the differences between the various variables.

3.2.2 Qualitative

Qualitative research is a form of social interaction in which the researchers learns and converses with the subject being studied (Lee, 1992). Alternatively, Creswell and Creswell (2017) explicated further that the qualitative research is a research process which involves forming meaning of reality. Qualitative research is aimed at a complete and detailed description. The main characteristic of qualitative research is that it is mostly appropriate for small samples, while its outcomes are not measurable and quantifiable. However, the effectiveness of qualitative research is heavily based on the skills and abilities of researcher. Denzin and Lincoln (2003) ascertained that the qualitative research

involves a naturalistic approach, understanding the subject matter; looking at interpreting or making sense of issues, by considering the meaning which people attach to them. Sources of data for a qualitative research includes case studies, interviews, questionnaires, documents, researcher's impressions and responses (Bryman, 2009).

3.2.3 Mixed or Triangulated

The mixed method or triangulated approach is a mixture or the use of both quantitative and qualitative approaches to undertake an observation for generalization of phenomenon on the assumption that there is an increased understanding of such phenomenon through the collection and analysis of copious data (Creswell, 2013). In following the philosophical view of pragmatism, the mixed method approach enables the collection of data either simultaneously or sequentially commencing with a survey of generalization and later with an interview for the detailed view form respondents (Creswell, 2009). The mixed approach has also been used as a tool for coming out with diverse context often with an emphasis on the purpose of bringing different acumen rather than the simplicity of the qualitative and quantitative approach (Booth, 2016). Irrespective of the benefit of combining both approaches, the mixed approach has been tagged as an expensive and time-consuming approach.

3.3 RESEARCH APPROACH

Research approach deals with the stepwise procedures and action plans used for a research from one stage (general assumption) up to the interpretation of data (Creswell, 2013). It considers the most appropriate approach for the study within the available approaches with a valid justification for adopting such an approach. Research approach comprises two key areas, deductive and inductive approach. Easterby-Smith *et al.,* (2008) formulated three main reasons which will influence a researcher to choose a particular

approach. Firstly, the research design to be used will cause one researcher to choose one approach over the other. Secondly, the research strategies and choices also influence the decision and lastly knowledge in the different research conducts.

3.3.1 Inductive

According to inductive approach, researchers begin with specific observation, which are used to produce generalized theories and conclusions drawn from the research. Inductive approach takes into account the context where research effort is active, while it is also most appropriate for small samples that produce qualitative data. In developing theories using inductive approach, it can be said to be one that helps in gaining more understanding of the problem from the perspective of society such that the researcher is part of the search in identifying the phenomenon, collecting data and analyzing it for deeper understanding (Saunders *et al.,* 2009). However, the main weakness of the inductive approach is that it produces generalized theories and conclusions based only on a small number of observations, thereby the reliability of research results being under question (Denzin and Lincoln, 2005).

3.3.2 Deductive

This approach deals with existing theories that have been widely been accepted or ideas about a subject by identifying the theory and testing through observations to confirm the theory (Ofori-Kuragu, 2013). The deductive approach mostly consists of a top-down initiative in the creation of the theory and testing of hypothesis while maintaining the independence of the researcher. Hence, the process starts from the identification of the relevant theories and the use of scientific study through observations to confirm these theories. Iacobucci (2010) added that, the deductive approach is concerned with testing of patterns identified through observation to confirm the actual occurrence of the patterns

from general to specific. This approach mostly adopts the quantitative methods for its data collection and analysis in testing the validity of assumptions.

3.3.3 The Research Approach Adopted

The deductive research approach was the useful approach for this study as it involves the movement from theory to data in order to explain the causal relationship between variables. It is largely dependent on the use of scientific principles involving highly structured approach and the selection of sufficient sample size in order to generalize conclusions. The deductive research approach is objective in nature, and in exploring the latent shortcomings of conflict resolution techniques, it was imperative to allow for experts' views collection through primary data by using structured research questionnaires. It also involves the application of controls to ensure validity and the collection of quantitative data for analysis.

3.4 RESEARCH DESIGN

The research styles fall under any of the three main research strategies proposed by Bryman (2004). Thus, it could either be experiment or surveys (quantitative); case study, action research, grounded theory, ethnography etc. (qualitative); or convergent, transformative, explanatory or exploratory sequential etc. (mixed method).

3.4 1The Research Strategy and Design Used

The research strategy and style employed for this study was survey questionnaires (quantitative approach). The survey process enables data to be gathered from a relatively large number of respondents so as to generalize the results of the study. Moreover, the survey process was adopted due to its ability to allow for the collection of the opinions of respondents on the latent shortcomings of conflict resolution techniques. The survey usually involves the use of samples as a representative of a larger population and is

feasible for investigating the relationships between variables, perceptions and predicting behaviors (Oppenheim, 2003; Bryman, 2009). Blismas (2001), is of the view that survey instrument is efficient in enhancing the validity and reliability of research observations as a result of the use of standardized measurement (questions) and sampling procedures towards generalization. It leans towards the deductive approach and positivism paradigm and thus maintains the independence of the researcher (Oppenheim, 2003; Bryman, 2009; Cresswell, 2009).

3.5 SAMPLE SIZE AND SAMPLING TECHNIQUE

After identifying the population and sample frame of the study, the next step is to determine how the population would be targeted and the sample size which will be used to represent the entire population (so as to obtain an accurate assessment of the whole population). This next stage of research methodology is presented in the sub-sections below.

3.5.1 Sampling Techniques

In research, collection of data from the entire population appears as costly and time wasting. Therefore, several measures have been formulated to enable us to target a part of the population in a careful but impressive manner which will still represent characteristics of the entire population. Saunders *et al.*, (2009) defines these approaches as the sampling technique. Sampling techniques have been grouped into two main broad areas, namely: the probability sampling technique and the non-probability sampling techniques.

Probability sampling technique deals with impartiality and there is fairness in the selection of individuals from a population. Each populace has equal opportunity of being picked. It is mostly used when the population is known. Probability sampling techniques are seen as expensive and consume a lot of time. Examples of probability sampling

techniques are, cluster sampling, simple random sampling, systematic sampling, stratified random sampling, and multi-stage random sampling (Saunders *et al.*, 2009).

Non-probability sampling techniques make it difficult and impossible for each populace to be selected at all cost. Examples of non-probability sampling techniques are: quota sampling, convenience sampling, purposive sampling, self-selection sampling and snowball sampling. This is the case for this study. Thus, this study adopted the use of convenience sampling technique, which is a non-probabilistic sampling tool.

3.5.2 Sampling Technique Used for this Study (Convenience Sampling Technique)

Convenience Sampling Technique is a type of sampling where the data collection is relied on the population who are conveniently available to be involved in a study. Convenience Sampling Technique was adopted because it is a non-probability sampling usedwhen the researcher decides on wherever it is convenient to find participants. The advantage of convenience sampling is that data collection can be facilitated in a short duration (Saunders *et al.*, 2012).

3.5.3 Determination of Sample Size

Fleiss *et al.* (2013) was of the view that in determining the sample size for an unknown population some few things can be taken into consideration to enable us come out with the sample size for the study. These are the level of precision and the desired confidence level. Therefore, since this study adopted a non-probability sampling technique, the sampling size could not be determined by any of the probabilistic approaches. Yamane's formula of sample size estimation was used to calculate the required sample size for the study (Yamane, 1967). It uses the parameters such as size of the population, and margin of error. The total number of registered construction firms in the La Nkwantanan

Municipal Assembly is hundred and twenty-five (125). The sample size is therefore estimated at 66.

Mathematically, the formula is given below:

$n = \frac{N}{1+N(e)^2}$ $n = \frac{125}{1+125\,(0.10)^2}$= 56

Add 10 for non-responsiveness = 66

Where,

n = the sample size

N= the estimated proportion of characteristics in the population

e = the level of precision desired = 0.10

3.6 DATA COLLECTION TECHNIQUES

The data collection methods adopted for a study is of importance as it affects the attainment of the research objectives and purpose of the study.

3.6.1 Sources of Data

There are two main sources of data; primary and secondary data. Only primary data was used to carry out the research. The method for collecting primary data was through the use of structured questionnaire.

3.6.2 Types of Data

Saunders *et al.,* (2009) grouped quantitative data into two main types: categorical data and numerical data. Brown and Saunders (2008) purported that quantitative data can be grouped into the various types by using a scale, mostly in ascending order of numerical precision. Since numerical measurement would have several levels, choice of techniques, presentation and summarizing analysis is influenced by the diverse levels.

Categorical Data are data which are grouped in categories considering the characteristics which categorizes or shows the variable; they cannot be calculated numerically (Brown and Saunders, 2008). Though categorical data are descriptive, they can still depict areas which are overloaded and even cases where data is equally even. Saunders *et al.,* (2009) further divides categorical data into two main distinct forms: nominal and ordinal data. Chi-Square, measures of central tendency (mean, median, mode, variance and standard deviation) are examples of statistical analyses which can be conducted for categorical data. The data considered for this study can be said to be a categorical data.

Nominal (dichotomous) data is for only qualitative groupings. Kukah (2017) postulated that nominal data can only be counted but not measured. For example, gender, race, color etc.

Ordinal data gives contrary understanding to nominal data, (gives out logical meaning to the data measured (Kukah, 2017). This is the accurate option of the categorical data type of quantitative data). This type is accurate because it tends to define the actual position of each data, mostly for scales or ratings where the respondents are entreated to indicate how they "agree" or "disagree" with a statement, or variable (Saunders *et al.,* 2009). Ordinal data can be ranked in order of magnitude (Kukah, 2017).

Numerical Data are data which can be calculated or measured numerically (quantifiable data) (Brown and Saunders, 2008). This means that their accuracy is far above that of the categorical data, because numerical data assign each variable on a numerical scale (Saunders *et al.,* 2009). For numerical data, Saunders *et al.* (2009) argue that, these types of data can be divided into ratio or interval data and also into continuous or discrete data.

Continuous data are sometimes operated in a constraint but their values have the propensity of taking up any other value on the basis that it can accurately measure it

(McVilly, 2008). Analytical tools for continuous data include: multiple regression, correlation, path analysis, logistic regression, ANOVA, MANCOVA, MANOVA, ANCOVA, Box Plots, and Histograms.

Discrete data are data which deals with precision in measurement. Using a scale that considers changes in units of discrete, each case is enforced to take one of a finite number of values to achieve this purpose (Saunders *et al.,* 2009). Analytical tools for discrete data include: Pareto Chart, Pie Chart, Bar Diagram, Goodness of Fit and Test for independence etc.

3.6.3 Questionnaire Development

Abawi (2013) explains questionnaire as an information accumulation instrument steady of a progression of inquiries and different prompts to gather data from respondents. This study employed the use of structured survey questionnaires as the primary data collection tool to get the experts views on the latent shortcomings of conflict resolution techniques. Questionnaires designed and administered to participants based on the research objectives to collect relevant data needed for the study (designed set of closed ended questions for respondents to administer). Considering the fact that most of the respondents would be reachable on email for the online survey due to their busy schedules. Email addresses and contacts of respondents were taken and link sent to them to complete the survey.

There was the use of closed-ended questions to get definite answers from respondents. These enabled respondents to take a position and encourages short or single-word answer. The questionnaire designed was done with due consideration to the education and level of experience of the targeted respondents. Furthermore, the questionnaire was designed using five Likert scales for the respondent to rate their respective opinions on each question.

The questionnaire was divided into two main parts: part A and part B. The part A covered the background questions which needed to be identified to validate the respondents of the study. The part B was divided into three main sections, with each section targeting the objectives of the perceived/latent shortcomings of conflict resolution techniques.

The questionnaire captured four sections. Section 1 was about background of the respondents (highest level of education, level of experience and their category in the construction industryidentification. Section 2 of the questionnaire was used to collect data on the causes of conflict among project teams. Section 3 of the questionnaire was used to collect data on conflict resolution techniques. Section 4 of the questionnaires was used to collect data on thelatent shortcomings of conflict resolution techniques. The questionnaire was distributed via online. In total, sixty-six (66) questionnaires were distributed however; fifty-five (55) were retrieved for the analysis.

3.7 VALIDITY AND RELIABILITY TESTS

Valid data means data that captures and answers the posed research question, whereas reliable data repeats the same result in every trial, with or without the same researcher. Reliability and validity are therefore undoubtedly vital tools of positivist epistemology. They are unquestionably proved useful in providing checks and balances for quantitative research methods (Bashir *et al*., 2008).

3.7.1 Validity

Kelly (1927) came out with the concept of validity and stated that a test is said to be valid if it measures what it claims to measure. Taking precautionary measures to confirm areas of validity within any research study is the sole responsibility of the researcher (Strauss and Corbin, 2008). Reflexivity, documentation, theoretical sampling, negative case analysis, and transferability are just but few measures to ensuring the achievement of

validity in research (Denzin and Lincoln, 2005). According to McLeod (2013), Content-related, and criterion-related validity are the two main classes of validity used to assess the legitimacy of any test (i.e. questionnaire, interview, IQ test, etc).

3.7.2 Reliability

Reliability has to do with the question of whether the results of any research can be repeated, (Bryman and Bell 2003). The goal of reliability is to reduce the rate at which errors and biases occur in a study. Reliability deals with data collection process to ensure consistency of results at all times.Kirk and Miller (1986) identified three types of reliability in relation to quantitative research to be the degree of consistency of results, the stability over time, and the similarity within a given time period. Similarly, some of the types of reliability which are relevant to quantitative research include stability (test re-test), internal consistency, alternative form reliability, and inter-observer reliability (Drucker-Godard, 2001; Bryman and Bell, 2003).

3.8 DATA ANALYSIS TECHNIQUES

Data analysis is referred to as a process of cleaning, transforming and modeling data to discover useful information for decision-making. This process generally refers to how data are organized, examined, categorized, tabulated, interpreted and tested (Iacobucci, 2010). There are numerous types of data analysis techniques that exist based on technology. The decision to use one method over the other depends on the type of analysis, accuracy of work and the kind of information which the researcher want to get from the primary data. The various methods are also influenced by the research design, data distribution and type of variable. Below are the types of data analysis techniques this study adopted.

3.8.1 Entering and Organization of Data

Data for this study needed to be sorted and organized in order to do away with incomplete questionnaires or missing values, and then strategically be coded and entered into the Statistical Package for Social Sciences (SPSS). Missing Values (MV) and incomplete questionnaires were checked because, Bentler (2005) is of the view that MV are frequent in surveys, and one must make sure that such missing values do not affect the quality of the analysis which would be carried out. Furthermore, the data was analyzed by using descriptive statistics for the demographic questions, Relative Importance Index and for the next sections (2 and 3) after successfully inputting the data into SPSS

3.8.2 Descriptive Statistics (Data Presentation Using Tables and Figures)

It is very important to make meaningful conclusions and presentation after collecting the data and analyzing them. Descriptive statistics gives way for presentation of findings in tables and figures. Ryan (2004) opined that descriptive statistics enables us to present our findings in easy ways which is audience friendly and communicates easily to the audience. Tables and figures have been noted as a meaningful channel in presenting large quantity text in simplified modules for easy understanding. UN (2009) was of the view that all tables should contain these five main criteria in presenting their findings to respondents. These are: table title, column headers, row stubs, footnotes and source line.

3.8.3 Inferential Analysis: Hypothesis Testing

Inferential analysis is also a type of analysis employed by this study. Inferential analysis approach can be grouped into two main types; parametric and non-parametric inferential analysis (Babbie and Halley, 1995). Examples of parametric inferential analysis include t-test, ANOVA, and Pearson Product Moment Correlation Coefficient. Examples of non-parametric test also includes the chi-square test, the Mann-Whitney U test, Wilcoxon

matched pairs singed-ranks test and asymmetrical test (Adeyemi, 2019). The difference between the above is that usually, parametric tests are used for normally distributed data while non-parametric tests are used for non-normally distributed data (Saunders *et al.*, 2009).

(Deveries, 2007) is of the view that hypothesis testing is used to make useful conclusions on the population of interest by inferring from the results of the collected data and listed some of the procedures for hypothesis testing to encompass z-test, t-test, correlations, analysis of variance and chi-square test. Hun (2010) asserted that we use hypothesis testing to make assumption about the population of interest. Hun (2010) also stated that a quality hypothesis would be easy and capable of being tested. There are two types of hypothesis testing statements; the null hypothesis H_0 and the alternative hypothesis H_1. The null hypothesis means that there is no significant difference between a parameter and a specific value, or that there is no difference between two parameters. H_0: U = K. Alternative hypothesis on the other hand comes in the form of left tail, right tail or two tail tests. Greater than are always right tail test (positive or increase) while less than are always left tail test (negative or decrease). When we cannot determine whether the variable would be greater than or less than the hypothesized mean, the two-tail test is used. In hypothesis testing, one must set the confidence interval (either 0.01 or 0.05). *p*-value on the other hand is used to represent the statement of values which did not occur in the analysis by conducting a test statistic (Anderson *et al.,* 2000). To show that a test is highly significance (a true alternative hypothesis) *p*-values should be less than 1%. Moreover, p-value shows that the degree of risk of rejecting the null hypothesis (Hun, 2010). (Barr *et al.*, 2013) Generally, do not reject the alternative hypothesis for a p-value which is less than critical value (for example .05).

Hypothesis testing comprises five main steps; stating the hypotheses (the null and alternative hypotheses); identifying the test statistics (whether it is a type I error or type II error); Setting your confidence interval; Making a decision on the analysis whether to reject or not to reject the hypothesis, and drawing conclusions from the analysis (Deveries, 2007 and Hun, 2010).

3.8.4 Relative Importance Index (RII)

The RII was proposed by Soofi*et al.*, (2000) as a tool for determining the relative significance of quantities through the formulation of indexes from which the various characteristics are ranked (hence, understanding the contribution of each variable to a response variable). RII helps in identifying the relative importance of variables and informing the researcher in making a choice one out of the several variables which best explains or is critical to achieving the objective at hand (Carpio *et al.,* 2007). Kapadia-Kundu and Dyalchand (2007) opined that adopting a five-point Likert scale is very good in measuring statement which would be solved using the RII tool. Therefore, this study adopted a similar approach in its questionnaire formation.

RII was calculated based on this formula; RII = $\frac{\sum W}{A*N}$where W is the weight given to each factor by respondent ranging from 1 – 5, $N$is the total number of respondents, and A is the highest response integer.

3.9 DATA VALIDITY TESTING

Internal and external validity are relevant to evaluating the legitimacy of a research study or procedure (McLeod, 2013).

3.9.1 Internal Validity

Bryman and Bell (2003) explain internal validity to be concerned with the level of confidence that "the independent variable is at least in part responsible for the variation that has been identified in the dependent variable". Internal validity can be improved by controlling unimportant variables, using standardized instructions, counterbalancing, and eliminating demand characteristics and investigator effects (McLeod, 2013). The study did not adopt internal validity because the questionnaire survey did not aim at establishing a causal relationship.

3.9.2 External Validity

External validity is explained as the degree of reliability and generalization of research results to and across populations, settings, and times - beyond a specific research context (Johnson and Christensen, 2000; Bryman and Bell, 2003; McLeod, 2013). Generating a representative sample in a study is one of the main objectives employed to achieve external validity (Bryman and Bell, 2003). Therefore, in the questionnaire survey conducted in this research, external validity was employed since a representative sample of the population was determined and used in seeking for the opinions of qualified respondents of the questionnaire by virtue of their knowledge and experience in the construction industry in Ghana.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

This chapter concentrates on the analysis and discussion of the data collected from the respondents. This helped in the achievement of the aim of the study which was to explore the latent/perceived shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. The analysis was based on the three (3) objectives of the study which was to assess the underlying causes of conflicts among project teams in the construction industry of Ghana, to establish the most significant conflict resolution techniques adopted in resolving conflicts among project teams in the construction industry of Ghana and to explore the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. Through an extensive literature review, various factors were identified for each objective which was subsequently used in the development of a structured questionnaire for the collection of quantitative data from the respondents. The questionnaire was distributed via online. In total, sixty-six (66) questionnaires were distributed however; fifty-five (55) were retrieved for the analysis. The analysis of the data collected was divided into two (2). The first section concentrated on the background of the respondents where frequencies and percentages were used in describing the data. Thus, descriptive analysis was used for the background of the respondents. For the objectives of the study, both descriptive and inferential statistics were used in analysing the data. The descriptive statistics used was the frequencies whiles the Relative Importance Index was used for the inferential statistics. The last section of this chapter focuses on the summary of findings based on the outcome of the analysis.

4.2 BACKGROUND OF THE RESPONDENTS

The respondents' background is a crucial part of every research study. It aids the researcher in ascertaining the level of knowledge of the respondents to provide reliable set of data to be analyzed. For this study, the respondents were asked to indicate their highest level of education, level of experience and their category in the construction industry. Summary of the responses is shown in Table 4.1, 4.2 and 4.3 and also discussed in subsequent sections

4.2.1 Level of Education

As part of assessing the background of the respondents, they were asked to indicate their highest level of education. 3.70% of the respondents had HND qualification whiles 50.90% had BSC qualification. 43.60% had masters and one (1) respondent indicated NVTI. The level of education aids in ascertaining the level of knowledge acquired by the respondents through education.

Table 4.1: Level of Education

DESCRIPTION	FREQUENCY	PERCENTAGE
HND	2	3.70
BSC	28	50.90
Masters	24	43.60
PHD	0	0.00
N.V.T.I	1	1.80
TOTAL	**55**	**100.00**

Source: Field survey (2019)

Higher educational levels depict higher educational knowledge thus improving the reliability of the responses given by the respondents. Based on the responses, over 50% of the respondents had BSC qualification and higher. This was deemed satisfactory for the study. Summary of the response on the level of education is shown in Table 4.1

4.2.2 Level of Experience

The respondents were further asked to indicate their level of experience. The experience level of the respondents aids the researcher in assessing the level of knowledge of the respondents gained through practice. Higher experience levels depict higher practical knowledge. From Table 4.2, it was realized that, 27.20% of the respondents had less than 4-year experience whiles 47.30% of the respondents had 4 to 8-year experience. 18.20% of the respondents had 8-12-year experience and 7.30% had above 16-year experience. None of the respondents had 12-16-year experience. The analysis denotes that, more than 60% of the respondents had above 4-year experience. Therefore, it was deemed satisfactory for the study.

Table 4.2: Level of Experience

DESCRIPTION	FREQUENCY	PERCENTAGE
Less than 4 years	15	27.20
4-8 years	26	47.30
8-12 years	10	18.20
12-16 years	0	0.00
Above 16 years	4	7.30
TOTAL	**55**	**100.00**

Source: Field survey (2019)

4.2.3 Category in the Construction Industry

The final question on the background of the respondents wanted to ascertain their category in the construction industry. The options provided were D1K1, D2K2, D3K3 and D4K4. In Ghana construction firms are categorized based on their financial and technical capabilities. The most capable construction firms are classified as D1K1 whiles the least capable are classified as D4K4. Therefore, asking this question helped the researcher to ascertain the level of complexities that the respondents could handle in terms of projects. From Table 4.3, none of the respondents were D4K4. However, 30.90% were D1K1, 47.30% were D2K2 and 21.80% were D3K3. From the analyzed data the outcome was deemed satisfactory for the study.

Table 4.3: Category in the Construction Industry

DESCRIPTION	FREQUENCY	PERCENTAGE
D1K1	17	30.90
D2K2	26	47.30
D3K3	12	21.80
D4K4	0	0.00
TOTAL	**55**	**100.00**

Source: Field survey (2019)

4.3 VALIDITY AND RELIABILITY TEST

Kelly (1927) came out with the concept of validity and stated that a test is said to be valid if it measures what it claims to measure. Taking precautionary measures to confirm areas of validity within any research study is the sole responsibility of the researcher (Strauss and Corbin, 2008). The Cronbach's Alpha value was used in assessing the validity and reliability of the data. Studies have shown that, the acceptable ranges of Cronbach values

are 0.700 0.950 (Bland and Altman 1997; DeVellis, 2003). For this study the Cronbach Alpha value was ***0.895*** which is satisfactory as depicted by numerous researchers.

4.4 ANALYSIS USING THE RELATIVE IMPORTANCE INDEX

The RII was proposed by Soofi*et al.* (2000) as a tool for determining the relative significance of quantities through the formulation of indexes from which the various characteristics are ranked (hence, understanding the contribution of each variable to a response variable). RII helps in identifying the relative importance of variables and informing the researcher in making a choice one out of the several variables which best explains or is critical to achieving the objective at hand (Carpio *et al.*, 2007). RII was calculated based on this formula; RII = $\frac{\sum W}{A*N}$where W is the weight given to each factor by respondent ranging from 1 – 5, $N$is the total number of respondents, and A is the highest response integer. All the three (3) objectives were analyzed using RII supplemented with frequencies to give a further intuition of each variable. Table 4.4, 4.5 and 4.6 shows a summary of the analysis and discussed in subsequent sections.

4.4.1 Objective one: Causes of conflict

There are numerous factors that lead to conflict. From the review of literature, sixteen (16) variables were identified and subsequently used in developing a structured questionnaire. The respondents were asked to rate the significant causes of conflict among project teams using a five-point Likert scale. Summary of the analysis is shown in Table 4.4.

Using the RII, the most underlying cause of conflict was delayed client responses. It had an RII value of 0.862 with 25 of the respondents indicating very high affirmation with the variable. The finding was in-line with a study conducted by Yiu and Cheung (2007)

where they indicated that, the delay in response from clients is a major source of conflict among project team. If decisions from clients are delayed, it leads to restlessness of other project members that can subsequently lead to conflicts. Furthermore, the delays in decisions can also cause delays in the entire project leading to claims from the contractor. Not honoring the claims made is a major source of conflict.

The second ranked factor was the difference in perception of work quality. It had an RII value of 0.840 and 24 respondents indicated a very high affirmation with the variable. Li et al., (2012) had a similar finding in their study in which they indicated that, if there is a mismatch in the expectations of project stakeholders, there is a high likelihood of the eruption of conflicts. Differences in the perception of work quality can lead to disagreements and confusions if not managed properly. Therefore, it is very important to stipulate expectations at the early stages of a project.

Table 4.4: Ranking of the Causes of Conflicts

CAUSES OF CONFLICTS	WEIGHTING					TOTAL	∑W	RII	RANK
	1	2	3	4	5				
Delayed client response (decisions)	0	3	2	25	25	55	237	0.862	1ST
Different perception of work quality	1	4	2	24	24	55	231	0.840	2ND
Inaccurate design information	0	3	5	34	13	55	222	0.807	3RD
The use of substandard materials for construction	2	6	1	26	20	55	221	0.804	4TH
Poorly developed project plan and scheduling	2	0	10	28	15	55	219	0.796	5TH
Inadequate communication among project teams	0	4	9	27	15	55	218	0.793	6TH
Unrealistic time targets	1	6	4	27	17	55	218	0.793	6TH
Slow progress and performance by Contractor	2	3	6	28	16	55	218	0.793	6TH
Local people obstruction	1	2	8	32	12	55	217	0.789	9TH
Ambiguous and contradicting instructions	1	8	3	27	16	55	214	0.778	10TH
Delays in payments	2	4	7	30	12	55	211	0.767	11TH
Lack of funds/resources	4	4	6	25	16	55	210	0.764	12TH
Inadequate site investigations	0	10	3	30	12	55	209	0.760	13TH
Pre-construction challenges and quality assurance	1	8	7	29	10	55	204	0.742	14TH
Errors and omissions in design	2	7	9	28	9	55	200	0.727	15TH
Goal incompatibility	6	4	15	21	9	55	188	0.684	16TH

Source: Field survey (2019)

The third ranked cause of conflict was inaccurate design information. It had an RII value of 0.807 and 13 respondents indicated a very high affirmation with the variable. Hare (2007) identified five reasons for conflicts to include design, time, management, contract and economic. Hence, issues of design are a very significant cause of conflict. Mitkus and Mitkus (2014) opined that, the issues of errors in design can lead to major conflicts during project execution.

4.4.2 Objective two: Conflict Resolution Techniques

There are numerous conflict resolution techniques. From the review of literature, nine (9) variables were identified and subsequently used in developing a structured questionnaire. The respondents were asked to rate the important conflict resolution techniques adopted by teams using the five-point Likert scale. Summary of the analysis is shown in Table 4.5.

Using the RII, the most significant conflict resolution technique was negotiation. It had RII value of 0.785 and 27 respondents indicated a very high affirmation with the variable. In the construction industry, negotiations are a basic and important step in dealing with disputes. When negotiations fail severally in resolving the dispute, then the dispute can then be regarded as out of hand. Negotiation is seen as a less expensive and cooperative way in solving disputes and thus preferred over more costly and challenging systems.

The second ranked factor was mediation. It had an RII value of 0.738 and 19 respondents indicated a very high affirmation with the variable. Blake (2014) opined that, mediation can lead to delays in negotiations and commencement of proceedings.

Table 4.5: Ranking of Conflict Resolution Techniques

RESOLUTION TECHNIQUES	WEIGHTING					TOTAL	∑W	RII	RANK
	1	2	3	4	5				
Negotiation	5	6	4	13	27	55	216	0.785	1ST
Mediation	3	10	7	16	19	55	203	0.738	2ND
Arbitration	1	11	7	22	14	55	202	0.735	3RD
Early neutral evaluation	1	16	11	15	12	55	186	0.676	4TH
Conciliation	5	8	11	24	7	55	185	0.673	5TH
Adjudication	5	10	14	19	7	55	178	0.647	6TH
Dispute board	3	13	23	10	6	55	168	0.611	7TH
Litigation	16	9	12	14	4	55	146	0.531	8TH
Mini-trial	14	14	2	15	0	45	108	0.393	9TH

Source: Field survey (2019)

The third ranked conflict resolution technique was arbitration. It had RII value of 0.735 and 14 of the respondents indicated a very high affirmation with the variable. Arbitration is regarded as the most common form of dispute resolution available in the construction industry. Bernsterin (2003) opined that, the arbitration mechanism depends on the agreement between the parties to refer a dispute to a third party whose duty is to settle the dispute and come up with a binding award.

4.4.3 Objective three: Shortcomings of Conflict Resolution Techniques

There are numerous shortcomings in the conflict resolution techniques. From the review of literature, twelve (12) variables were identified and subsequently used in developing a structured questionnaire. The respondents were asked to rate their level of agreement with the shortcomings of the conflict resolution technique using the five-point Likert scale. Summary of the analysis is shown in Table 4.6.

The most perceived/latent shortcoming was conflict of interest, followed by dismissal of employee and extra expenses. Some forms of dispute resolutions are high cost compared to others. There could be conflict of interest in using ADRs especially in cases where the third party is selected by the parties in conflict. Most ADRs outcomes are non-binding in nature and the aftermaths of events can be very substantial like dismissal of employees. Finally, in order for the dispute board to efficiently execute its task, it is important for them to understand the developments of the project and its location. Hence, the dispute board must have access to project documents and also visit project locations so as to get updated on project developments (Gerber, 2000, McMillan and Rubin, 2005). If these factors are not made available, then the idea of ADRs will be defeated.

Table 4.6: Ranking of the Shortcomings of Conflict Resolution Techniques

SHORTCOMINGS	WEIGHTING					TOTAL	∑W	RII	RANK
	1	2	3	4	5				
Conflict of interest	0	10	7	21	17	55	210	0.764	1ST
Dismissal of employee (layoff)	2	6	10	24	13	55	205	0.745	2ND
Involves heavy financial resource	2	7	10	26	10	55	200	0.727	3RD
Force majeure	4	9	10	18	14	55	194	0.705	4TH
Conflict sustenance	2	10	10	24	9	55	193	0.702	5TH
Problem of confidentiality	7	8	4	22	14	55	193	0.702	5TH
Language barrier	3	10	10	23	9	55	190	0.691	7TH
Non-binding ruling	4	12	9	21	9	55	184	0.669	8TH
Time consuming (inherent delays)	1	15	14	16	9	55	182	0.662	9TH
Apathy among the legal fraternity	2	15	10	21	7	55	181	0.658	10TH
No guaranteed resolution	0	5	30	20	0	55	180	0.655	11TH
Limited fairness	0	29	19	6	0	54	139	0.505	12TH

Source: Field survey (2019)

4.5 SUMMARY OF FINDINGS

This chapter focused on the analysis and discussion of the results. Structured questionnaires were used in collecting data to be used for the analysis. In total, sixty-six (66) questionnaires were distributed however; fifty-five (55) were retrieved for the analysis. The analysis of the data collected was divided into two (2). The first section concentrated on the background of the respondents where frequencies and percentages were used in describing the data. Thus, descriptive analysis was used for the background of the respondents. For the objectives of the study, both descriptive and inferential statistics were used in analyzing the data. The descriptive statistics used was the frequencies whiles the Relative Importance Index was used for the inferential statistics. From the analysis of the objective one, it was realized that, the most underlying cause of conflict was delayed client responses, followed by the difference in perception of work quality, inaccurate design information and the use of substandard materials for construction. For the second objective, it was realized that, negotiation was the most important conflict resolution technique followed by mediation, arbitration and early neutral evaluation. For the third objective it was noticed that, the most perceived/latent shortcoming of conflict resolution technique was conflict of interest, followed by dismissal of employee and extra expenses.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter provides the summary of findings, conclusion and recommendations for the study. Conflicts in the construction industry are very common and hence, it is important to have alternative ways of solving the disputes at less cost. Hence, the study aimed at exploring the latent/perceived shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. With this aim three (3) objectives were set which were to assess the underlying causes of conflicts among project teams in the construction industry of Ghana, to establish the most significant conflict resolution techniques adopted in resolving conflicts among project teams in the construction industry of Ghana and to explore the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana. Extensive literature review was conducted and using the quantitative research method, a structured questionnaire was designed to collect data from fifty-five (55) respondents. Prior to the data analysis, the reliability and validity of the data was ascertained using the Cronbach's Alpha value. The data were analyzed using frequencies, percentages and Relative Importance Index (RII). The summary of findings is discussed in the subsequent section.

5.2 SUMMARY OF FINDINGS

This section describes how the various objectives were achieved and the outcome of each objective. The study had three (3) objectives established to aid in the achievement of the aim of the study. The processes of achievement of the objectives of the study are discussed as follows.

5.2.1 Objective one: To assess the underlying causes of conflicts among project teams in the construction industry of Ghana

The objective one was achieved through an extensive literature review and questionnaire survey. With the literature review, sixteen (16) variables were identified and subsequently used in developing a structured questionnaire. The respondents were asked to rate the significant causes of conflict among project teams using a five-point Likert scale.From the analysis of the objective one, it was realized that, the most underlying cause of conflict was delayed client responses followed by the difference in perception of work quality, inaccurate design information and the use of substandard materials for construction

5.2.2 Objective two: To establish the most significant conflict resolution technique adopted in resolving conflicts among project teams in the construction industry of Ghana

The objective two was achieved through an extensive literature review and questionnaire survey. With the literature review, nine (9) variables were identified and subsequently used in developing a structured questionnaire. The respondents were asked to rate the significant conflict resolution techniques adopted by teams using the five-point Likert scale. For the second objective, it was realized that, negotiation was the most important conflict resolution technique followed by mediation, arbitration and early neutral evaluation.

5.3.3 Objective three: To explore the perceived/latent shortcomings of conflict resolution techniques among project teams in the construction industry of Ghana.

The objective three was achieved through an extensive literature review and questionnaire survey. Twelve (12) variables were identified and subsequently used in developing a

structured questionnaire. The respondents were asked to rate their level of agreement with the shortcomings of the conflict resolution techniques using the five-point Likert scale. For the third objective it was noticed that, the most latent shortcoming of ADR was conflict of interest followed by dismissal of employee and extra expenses.

5.4 CONCLUSION

Construction projects involve interaction among many different participants. In the process of project execution, the participants interact with each other within the project team as a unit and as individuals or sub units also interact with units outside the project team. The involvement of different stakeholders creates opportunities for misinterpretation of information and differences in opinion regarding the activities involved in the execution of projects which undermines the cooperative nature of the building process. Hence, conflicts are inevitable in the construction industry. From the study, it was realized that, the most important cause of conflict was delayed client responses. Delays in decisions can also cause delays in the entire project leading to claims from the contractor. Not honoring the claims made is a major source of conflict. Furthermore, the study showed that, the most important conflict resolution technique was negotiation. Negotiation is seen as a less expensive and cooperative way in solving disputes and thus, preferred over more costly and challenging systems. Finally, the study discovered that, there are numerous shortcomings in the conflict resolution techniques adopted in the construction industry. The most significant shortcoming was conflict of interest. Construction projects are significant in the development of our economy but it is invested with numerous conflicts. Therefore, it is necessary to find ways to deal with such issues of conflicts and see conflicts as a tool to enhance innovation and creativity.

5.5 LIMITATIONS AND FURTHER STUDIES

The following are the limitations and avenues for further studies;

1. The study was limited to only construction firms. However, there are other stakeholders like consultants whose perception on conflicts is key for the study. Hence, further studies can involve the opinions of other stakeholders in the construction industry.
2. The study was also limited to quantitative data only. Further studies can include qualitative data to create a more in-depth understanding of the perception of the respondents.

5.6 RECOMMENDATIONS

Based on the findings and conclusion of the study, the following recommendations were made;

1. Construction firms should see conflicts as inevitable and treat conflicts as a way to stimulate innovations and creativity;
2. Clients and consultants should adequately stipulate expectations at the early stages of a project to avoid differences in perception of work requirements
3. Clients and consultants should adequately define the scope of the project prior to the commencement of a project.
4. When conflicts occur, the parties in conflict must be ready to submit to ADR methods to have a less expensive way of coming to a consensus so as to maintain business relations.

REFERENCES

Adeyemi, S. B., Omobude, S. I., and Udofia, I. E. (2019). Impairment Testing of Intangible Assets and Quality of Financial Reporting of Nigerian Manufacturing Companies. *Global Journal of Accounting*, 5(1): pp. 1-15.

Adu-Acheampong, R., Jiggins, J., Quartey, E. T., Karikari, N. M., Jonfia-Essien, W., Quarshie, E. and Owusu-Manu, M. (2017). An innovation platform for institutional change in Ghana's cocoa sector. *Cahiers Agricultures*, 26(3): pp. 35002.

Agwu, M. O. (2013). Conflict management and employees' performance in Julius berger NigeriaPLC. Bonny Island. *International Journal of Academic Research in Management (IJARM)* 2(16):pp. 125-139.

Ahmad, S. Z. and Kitchen, P. J. (2008). International expansion strategies of Malaysian construction firms: entry mode choice and motives for investment. *Problems and Perspectives in Management*, 6(3): pp. 15-23.

Albert, P. C. C. and Ada, P. L. C. (2004). Key performance indicators for measuring construction success. *Benchmarking: An International Journal*, 11(2): pp. 203-221.

Anderson, D. R., Burnham, K. P., and Thompson, W. L. (2000). Null hypothesis testing: problems, prevalence, and an alternative. *The journal of wildlife management*, 38(4): pp. 912-923.

Antwi-Afari, M. F. (2016). *Development of a framework for technology transfer partnerships in the Ghanaian construction industry* (Doctoral dissertation).

Ashworth, A. (2013). Willis's practice and procedure for the quantity surveyor. Hoboken: Wiley.

Atreyi, K., T., Bernard, et al., (2007). "Conflict and performance in global virtual teams." *Journal of Management Information Systems,* 23 (3): pp. 237-274.

Babalola, I.H., Oluwatuyi, O.E., Lawal, A. and Aiyewalehinmi, E. (2015). Factors influencing the performance of construction projects in Akure, Nigeria. *International Journal of Civil Engineering, Construction and Estate Management*, 3(4): pp.57-67.

Backlund, A. (2000). The definition of system. *Kybernetes*, 29(4): pp. 444-451.

Baiden, B.K., Price, A.D. and Dainty, A.R. (2006). The extent of team integration within construction projects. *International journal of project management*, 24(1): pp.13-23.

Ballard, G. and Howell, G. (1998). What kind of production is construction? Proc. 6th AnnualConf. Int'l. Group for Lean Construction.

Barr, D. J., Levy, R., Scheepers, C., and Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of memory and language*, 68(3): pp. 255-278.

Bashir, M., Afzal, M.T. and Azeem, M. (2008). Reliability and validity of qualitative and operational research paradigm. *Pakistan journal of statistics and operation research*, 4(1): pp.35-45.

Bentler, P.M. and Wu, E.J. (2002). EQS 6.1 for windows. Encino, CA: Multivariate Software Inc. pp. 1-26.

Bernstein, R. (2003). Bernstein's handbook of arbitration and dispute resolution practice. SweetMaxwell.

Birgel, S. (2018). *The association of natural resources and human conflict—natural gas and the peace process in Cyprus* (Doctoral dissertation, University of Oxford).

Blake, S. (2014). A practical approach to alternative dispute resolution. Oxford University Press.

Blismas, N. G. (2001). *Multi-project environments of construction clients*, Ph.D. Thesis, Loughborough University.

Booth, A. (2016). Searching for qualitative research for inclusion in systematic reviews: a structured methodological review. *Systematic reviews*, 5(1): pp.74.

Brooker, P., and Lavers, A. (1997). Perceptions of alternative dispute resolution as constraintsupon its use in the UK construction industry. *Construction Management and Economics*, 15(6): pp. 519-526.

Bryman, A. (2009). "Social research methods", 2nd Ed, Oxford: *Oxford University Press.*

Building Industries of Australia and Sri-Lanka: Doctoral Thesis, Murdoch University, Perth.

Cakmak, P. I., and Cakmak, E. (2013). An analysis of causes of disputes in the construction industry using analytical hierarchy process (AHP). In *AEI 2013: Building Solutions for Architectural Engineering*.

Carpio, C; Sydorovych, O and Marra, M. (2007). Relative Importance of Environmental Attributes Using Logistic Regression, Selected paper prepared for presentation at the Southern Agricultural Economics Association Annual Meetings Mobile, Alabama

Ceballos-Ramírez, M., and Martínez, O. J. (1997). Conflict and Accommodation on the US-Mexican Border, 1848-1911. *Myths, Misdeeds, and Misunderstandings: The Roots of Conflict in US-Mexican Relations*, 135-158.

Ceric, A. (2012). Communication risk in construction projects: Application of principal-agent theory. *Organization, technology and management in construction: an international journal*, 4(2): pp. 522-533.

Cheung, S. O., Suen, H. C., and Lam, T. I. (2002). Fundamentals of alternative dispute resolution processes in construction. *Journal of construction engineering and management*, 128(5): pp. 409-417.

Cheung, S. O., Yiu, T. W. and Lam, M. C. (2013). Interweaving trust and communication with project performance. *Journal of Construction Engineering and Management*, 139(8): pp. 941-950.

Cheung, S.O. and Yiu, T.W. (2006). Are construction disputes inevitable? *IEEE Transactions on Engineering Management*, 53(3): pp.456-470.

Chia, R., and Holt, R. (2008). The nature of knowledge in business schools. *Academy of Management Learning and Education*, 7(4): pp. 471-486.

Chin, G. (2004). *Agile project management: how to succeed in the face of changing project requirements*. AMACOM/American Management Association.

Cloke, K., and Goldsmith, J. (2005). Resolving conflicts at work: eight strategies for everyone on the job. San Francisco, CA: Jossey-Bass.

Cohen, L., Manion, L., and Morrison, K. (2007). *Research methods in education* (6th Edition). London: Routledge.

Collet-Klingenberg, L.L. and Kolb, S.M. (2011). Secondary and transition programming for 18-21-year-old students in rural Wisconsin. *Rural Special Education Quarterly*, 30(2): pp.19-27.

Commerce, O. O. G. (2002). Dispute resolution guidance. Norwich.

Creswell, J. W., and Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Davies, M. B., and Hughes, N. (2014). *Doing a successful research project: Using qualitative or quantitative methods*. Macmillan International Higher Education.

Drucker-Godard, C., Ehlinger, S., and Grenier, C. (2001). Validity and reliability. In R.A. Thietart (Ed.), Doing management research: a comprehensive guide (pp. 196-219). London: Sage.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (2003) 2nd Ed. Management Research: An Introduction. London: Sage Publications.

Edmonds, W. A., and Kennedy, T. D. (2016). *An applied guide to research designs: Quantitative, qualitative, and mixed methods*. Sage Publications.

Edum-Fotwe, F. T., and McCaffer, R. (2000). Developing project management competency: perspectives from the construction industry. *International Journal of Project Management*, 18(2): pp. 111-124.

Elgoibar, P., Munduate, L., and Euwema, M. (2016). Building trust and constructive conflict management in organizations. In *Building Trust and Constructive Conflict Management in Organizations* (pp. 1-13). Springer, Cham.

Etikan, I., Musa, S. A., and Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5 (1):pp. 1-4.

Fellows, R. and Liu, A. (2015). *Research Methods for Construction*. 4th Edition. WestSussex: Wiley Blackwell.

Femi, O. T. (2014). Causes and effects of conflict in the Nigerian construction industry. *International journal of technology enhancements and emerging engineering research*, 2(6): pp. 7-16

Fenn, P. (1997). Conflict and dispute in construction. *Construction Management and Economics*, 15(6):pp. 513-518.

Floyd, S.W. and Lane, P.J. (2000). Strategizing throughout the organization: Managing rconflict in strategic renewal. *Academy of management review*, 25(1): pp.154-177.

Fowler, J, and Floyd, J. (1995). *Improving survey questions: design and evaluation*, Thousand Oaks: Sage Publications.

Gaitskell, R. (2006). Engineer's dispute resolution handbook. Thomas Telford.

Gall, M., Gall, J., and Borg, W., (2003). "Educational Research: An introduction", 7th ed., Boston: *Allwyn and Bacon.*

Gardiner, P.D. and Simmons, J.E. (1992). Analysis of conflict and change in construction projects. *Construction Management and Economics*, 10 (6): pp.459-478.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative report*, 8 (4): pp.597-606.

Gorse, C. A. (2002). Effective interpersonal communication and group interaction during construction management and design team meetings. Unpublished PhD thesis, University of Leicester.

Gould, N., Capper, P., Dixon, G. and Cohen, M. (1999). Dispute resolution in the construction Industry, London: Thomas Telford Limited.

Guba, E.G. and Lincoln, Y.S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(1): pp.105-117.

Hagan, K. E. (2016). *Managing conflicts in construction of public projects in Ghana:(a case study of selected building project in Ashanti Region.* Doctoral dissertation.

Hagan, K.E. (2016). *Managing conflicts in construction of public projects in Ghana:(a case study of selected building project in Ashanti Region)* (Doctoral dissertation).

Haines, S. (2000). *The systems thinking approach to strategic planning and management*. CRC Press.

Hare, A. P. (2007). Conflict resolution. *Peace psychology*: *A comprehensive introduction*.

Harmon, K. M. (2008). Resolution of construction disputes: A review of current methodologies. *Leadership and Management in Engineering,* 3 (4): pp. 187-201.

Holden, M. T., and Lynch, P. (2004). Choosing the appropriate methodology: Understanding research philosophy. *The marketing review*, 4(4): pp. 397-409.

Iacobucci, D. (2010). Structural equations modeling: Fit indices, sample size, and advanced topics. *Journal of consumer psychology*, 20(1): pp. 90-98.

International Construction Management (1992). *Construction conflict management and resolution.* London: Spon.

Jannadia, M. O. (2000). Contractual methods for dispute avoidance and resolution (DAR). *International Journal of Project Management,* 18 (1):pp. 41-49.

Jannadia, M.O., Assaf, S., Bubshait, A.A. and Naji, A. (2000). Contractual methods for dispute avoidance and resolution (DAR). *International Journal of Project Management*, 18 (1):pp.41-49.

Johnson, R. B., and Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7): pp. 14-26.

Kelley, T. L. (1927). *Interpretation of educational measurements. New York*: Macmillan.

Kellogg, J. C. (1992). The contract disputes resolution continuum: Kellogg Corporation.

Khanaki, H. and Hassanzadeh, N. (2010), Conflict management styles: The Iranian General Preference Compared to the Swedish. *International Journal of Innovation, Management and Technology*, 1 (4): pp. 419-426.

Kirk, J., Miller, M.L. and Miller, M.L. (1986). *Reliability and validity in qualitative research* (Vol. 1). Sage.

Kishor Mahato, B. and Ogunlana, S.O. (2011). Conflict dynamics in a dam construction project: a case study. *Built Environment Project and Asset Management*, 1 (2): pp.176-194.

Kolb, S.M. and Hanley-Maxwell, C. (2003). Critical social skills for adolescents with high incidence disabilities: Parental perspectives. *Exceptional Children*, 69(2): pp.163-179.

Kovach, K. K. (1994). Mediation: Principles and practice.WestPublishing Company.

Kukah, A. S. K. (2017). *Investigating the causal relationships and effects of moral hazard and adverse selection on public-private-partnership construction projects* (Doctoral dissertation).

Kumaraswamy, M. (1998): Consequences of Construction Conflict: A Hong Kong Perspective, *Management in Engineering Journal,* 14 (1):pp. 66 – 74.

Kumaraswamy, M. M. (1997). Conflicts, claims and disputes in construction. *Engineering, construction and architectural management*,4 (2): pp. 95-111.

Kwakye, A. A. (1997). Construction project administration in practice. Harlow: Longman and Chartered Institute of Building.

Langford, D. A. and Male, S. (2001). Strategic management in construction, Oxford: Blackwell Science.

Lee, S. J. (1992). Quantitative versus qualitative research methods—two approaches to organization studies. *Asia Pacific Journal of Management*, 9(1): pp. 87-94.

Loosemore, M. (1999). Bargaining tactics in construction disputes. *Construction Management and Economics*, 17(2):pp. 177-188.

Mackie, K. J. and Miles, D. (1995). *Commercial Dispute Resolution: An ADR Practice Guide.* London: Butterworths Law.

Mante, J. (2014). *"Resolution of Construction Disputes Arising from Major Infrastructure Projects in Developing Countries–Case Study of Ghana"*. PhD Thesis, University of Wolverhampton. Available at: http://hdl.handle.net/2436/333130.

Matyas, R. M. (1996). Construction dispute review board manual.McGraw-Hill Professional Publishing.

Mays, J. B. (2003). Exploratory review and analysis of dispute resolution techniques employed in the construction industry by CURT organizations. Austin, University of Texas.

Mba, O. A. (2013). Conflict management and employees' performance in Julius Berger Nigeria PLC, Bonny Island, *Journal of Human Resource Management and Labor studies*, 1 (14): pp. 34-45.

McMillan, D. D. and Rubin, R. A. (2005). Dispute review boards: Key issues, recent case law, and standard agreements. *Constr. Law.*, 25 (14): pp. 405-428

McVilly, K. R., Stancliffe, R. J., Parmenter, T. R., & Burton-Smith, R. M. (2008). Remaining open to quantitative, qualitative, and mixed-method designs: an unscientific compromise, or good research practice? *International review of research in mental retardation*, 35 (4): pp. 151-203.

Mertens, D.M. (2014). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Sage publications.

Mitkus, S., and Mitkus, T. (2014). Causes of conflicts in a construction industry: A communicational approach. *Procedia-Social and Behavioral Sciences*, 110 (26): pp. 777-786.

Mohammed, A. (2012). *Assessment of the Administrative Process in the Management of Maintenance Project Execution on Trunk Roads (A Case Study of Ghana Highways Authority (GHA), Volta Region)* (Doctoral dissertation).

Munns, A. K., and Bjeirmi, B. F. (1996). The role of project management in achieving project success. *International journal of project management*, 14(2): pp. 81-87.

Naoum, S. G. (2012) Dissertation research and writing for construction students, Oxford: Butterworth-Heinemann.

Ng, H. S., Pena-mora, F. and Tamaki, T. (2007). Dynamic conflict management in large-scale design and construction projects. *Journal of Management in Engineering*, 23 (2): pp.252-266.

Nyarko, M. (2015). *Conflicts in Construction Projects in Ghana: Analysis of Causes and Management Approaches* (Doctoral dissertation).

Ofori-Kuragu, J. K. (2013). *Enabling world-class performance in Ghanaian contractors: A framework for benchmarking* (Doctoral dissertation).

Ogunbayo, O. (2013), Conflict management in Nigerian construction industry: project managers‟ view, *Journal of Emerging Trends in Economics and Management Sciences*, 4 (2): pp. 140-146.

Okotoni, C. A. (2002). Management of Conflicts in Secondary Schools in Osun State. Unpublished M. A. Thesis, *Obafemi Awolowo University, Ile –Ife.*

Oppenheim, B. (2003). Questionnaire design, interviewing and attitude measurement: Continuum. *London (New edition)*, 24 (4): pp.7-8.

Pelled, L. H. (1996). Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization science*, 7(6): pp. 615-631.

Peter, E. D. L. (2010). A systemic view of dispute causation. *International Journal of Managing Projects in Business*, 3 (4): pp. 661-680.

Pétursson, B.K. (2015). *Disputes and Conflicts within Construction Contracts in the Icelandic Construction Industry* (Doctoral dissertation).

Pondy, L. R. (1967). Organizational conflict: Concepts and models. Admin. Sci. Q. 12 (2): pp.296–320.

Prince, M. J., and Felder, R. M. (2006). Inductive teaching and learning methods: Definitions,comparisons, and research bases. *Journal of engineering education*, 95(2): pp. 123-138.

Richter, I. (2000). The project neutral: Neutralizing risk, maintaining relationships and watching the bottom line. *Construction Business Review*, 8(2):pp. 52-54.

Rubenstein, D.I. (1993). "Science and the pursuit of a sustainable world", *Ecological Applications*, 3 (4): pp. 585-587.

Rubin, Jeffrey Z., and Bert R. B. (1975). *The Social Psychology of Bargaining and Negotiation*. New York: Academic Press.

Salant, P, and Dillman, D.A. (1994). *How to conduct your own survey*, New York: John Wiley and Sons.

Sarantakos, S. (2005), *Social Research*, 3rd ed., Melbourne, Victoria: Palgrave Macmillan.

Sarstedt, M., and Mooi, E. (2019). Getting Data. In *A Concise Guide to Market Research*. Springer, Berlin, Heidelberg. 4 (8): pp. 47-90.

Saunders, F.C., Gale, A.W. and Sherry, A.H. (2015). Conceptualizing uncertainty in safety-critical projects: A practitioner perspective. *International Journal of Project Management*, 33(2): pp.467-478.

Saunders, M., Lewis, P., and Thornhill, A. (2009) Research methods for business students. 5th edn. Harlow: Prentice Hall.

Scott, L. (2018) *Proceedings of Arcom Doctoral Workshop Research Methodology* Dublin Institute of Technology.

Silas, B. Y et al., (1996). A review of changes in the UK construction industry: Their implications for the marketing of construction services. *European Journal of Marketing*, 30(3): pp. 47-64.

Smith, K. A. (2002). Conflict Management,MaGraw-Hills, Best Series-Basic Engineering Series and Tools. *International Journal of Project Management,* 17(6): pp. 393 – 399.

Stipanowich, T.J. (2004). ADR and the "Vanishing Trial": the growth and impact of "Alternative Dispute Resolution". *Journal of Empirical Legal Studies*, 1 (3): pp.843-912.

Stitt, A. (2004). Mediation: A practical guide. London: Cavendish.

Strauss, A., and Corbin, J. (2008). Basics of qualitative research: Grounded theory procedures and techniques. (3rd Ed.). Newbury Park, CA: Sage.

Tang, L., Shen, Q., and Cheng, E. W. (2010). A review of studies on public–private partnership projects in the construction industry. *International journal of project management*, 28 (7): pp. 683-694.

Thompson, R. M. (2000). Innovations to manage disputes: DRB and NEC. *Journal of Management in Engineering,* 16(5): pp. 51-59.

UKCG (2012). Construction in the UK economy. The benefits of investment. London.

UN (2009). Making Data Meaningful Part 2: A guide to presenting statistics, United Nations Economic Commission for Europe, CE/CES/STAT/NONE/2009/3.

Vaaland, T.I. and Häkansson, H. (2003). Exploring inter-organizational conflict in complex projects: *Industrial Marketing Management,* 32 (2): pp. 127 – 138.

Verma, V. K. (1998). Conflict Management, the Project Management Institute Project Management Handbook, Ed Jeffrey Pinto.

Wahyuni, D. (2012). The research design maze: Understanding paradigms, cases, methods and methodologies. *Journal of applied management accounting research*, 10(1): pp.69-80.

Walker, A. (1996): *Project Management in Construction.* (3rd edition). London: BlackwellScience.

Ward, S. and Chapman, C. (2003). Transforming project risk management into project uncertainty management.*International journal of project management*, 21(2): pp. 97-105.

Warioba, L. M. (2008). Management of Conflict in City and Municipal Councils in Tanzania with Specific References to Iringa Municipal Council and Tanga City Council. Doctoral dissertation, University of South Africa.

Warner, M., and Jones, P. (1998). Assessing the need to manage conflict in community-based natural resource projects. ODI Natural Resource Perspectives.

Yamane, T. (1967). Statistics: *An introductory Analysis,* 2nd Edition, New York: Harper, and Row.

Zeleny, M. (1979). Cybernetics and general systems—A unitary science? Kybernetes, 8(1): pp. 17-23.

APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ART AND BUILT ENVIRONMENT

DEPARTMENT OF BUILDING TECHNOLOGY

RESEARCH QUESTIONNAIRE

Topic

Exploring the Latent Shortcomings of Conflict Resolution Techniques Among Project Teams in the Construction Industry in Ghana.

Dear Sir/Madam,

I am a postgraduate student at Kwame Nkrumah University of Science and Technology, Kumasi, undertaking a research to solicit your views on the topic. This is purely academic exercise. Your confidentiality and anonymity are assured and all responses are highly respected.

Yours Sincerely,

Veronica Ansaah-Nyarko MSc. Student, KNUST

Dr. De-Graft Owusu-Manu, Project Supervisor, Department of Building Technology (KNUST)

Contact: 0242501028 **Email**: maamenyarko777@gmail.com

PART A: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Please tick **(√)** the correct answer from the space provided

1. Highest educational qualification [ ] HND [ ] BSc [ ] Masters [ ] PhD [ ] Other……..
2. How many years have you been working in your profession/portfolio? [ ] Less than 4 years [ ] 4-8 years [ ] 8-12 years [ ] 12-16 years [ ] Above 16 years
3. Category in the construction industry. [ ] DIK1 [ ] D2K2 [ ] D3K3 [ ] D4K4 [ ]

PART B: CAUSES OF CONFLICTS AMONG PROJECT TEAMS

Kindly indicate the causes of conflicts among project teams on a Likert scale from 1-5: [**1 –Strongly disagree**, **2 –disagree**, **3- undecided**, **4-agree, 5 -Strongly agree]**

No.	**Causes of conflicts among project teams**	**Rating**
1	Inaccurate design information	☐1; ☐2; ☐3; ☐4; ☐5
2	Inadequate site investigations	☐1; ☐2; ☐3; ☐4; ☐5
3	Delayed client response (decisions)	☐1; ☐2; ☐3; ☐4; ☐5
4	Inadequate communication among project teams	☐1; ☐2; ☐3; ☐4; ☐5
5	Unrealistic time targets and durations/Unrealistic expectations	☐1; ☐2; ☐3; ☐4; ☐5
6	Slow progress and performance by Contractor	☐1; ☐2; ☐3; ☐4; ☐5
7	Ambiguous and contradicting instructions	☐1; ☐2; ☐3; ☐4; ☐5
8	Different perception of work quality/ Mismatch in people's perception and expectation.	☐1; ☐2; ☐3; ☐4; ☐5
9	Delays in payments	☐1; ☐2; ☐3; ☐4; ☐5
10	The use of substandard materials for construction	☐1; ☐2; ☐3; ☐4; ☐5
11	Lack of funds/resources	☐1; ☐2; ☐3; ☐4; ☐5
12	Poorly developed project plan and scheduling.	☐1; ☐2; ☐3; ☐4; ☐5
13	Errors and omissions in design	☐1; ☐2; ☐3; ☐4; ☐5
14	Local people obstruction	☐1; ☐2; ☐3; ☐4; ☐5
15	Goal incompatibility	☐1; ☐2; ☐3; ☐4; ☐5
16	Pre-construction challenges and quality assurance	☐1; ☐2; ☐3; ☐4; ☐5

PART C: CONFLICT RESOLUTION TECHNIQUE ADOPTED IN RESOLVING CONFLICTS

This part (Question 2) explores the most significant conflict resolution technique adopted in resolving conflicts among project teams in the construction industry of Ghana.

Question 2: Conflict resolution techniques

Please, mark the choice to indicate the level of importance of conflict resolution technique in the construction industry of Ghana: **1 = not important; 2 = slightly important; 3 = fairly important; 4 = important; 5 = very important**

No.	**Conflict resolution techniques**	**Rating**
1	Negotiation	☐1; ☐2; ☐3; ☐4; ☐5
2	Mediation	☐1; ☐2; ☐3; ☐4; ☐5
3	Arbitration	☐1; ☐2; ☐3; ☐4; ☐5
4	Litigation	☐1; ☐2; ☐3; ☐4; ☐5
5	Adjudication	☐1; ☐2; ☐3; ☐4; ☐5
6	Conciliation	☐1; ☐2; ☐3; ☐4; ☐5
7	Mini-trial	☐1; ☐2; ☐3; ☐4; ☐5
8	Dispute board	☐1; ☐2; ☐3; ☐4; ☐5
9	Early neutral evaluation	☐1; ☐2; ☐3; ☐4; ☐5
	Please indicate and rate other conflict resolution techniques (if any)	
1	Click here to enter text.	☐1; ☐2; ☐3; ☐4; ☐5
2	Click here to enter text.	☐1; ☐2; ☐3; ☐4; ☐5
5	Click here to enter text.	☐1; ☐2; ☐3; ☐4; ☐5

PART D: PERCEIVED/LATENT SHORTCOMINGS OF CONFLICT RESOLUTION TECHNIQUES

Please, kindly rate the following shortcoming of conflict resolution techniques among project teams on a Likert scale from 1-5: :[**1 –Strongly disagree**, **2 –disagree**, **3-undecided**, **4-agree, 5 -Strongly agree]**Please tick (√) in the space provided.

No.	Perceived/latent shortcomings of conflict resolution techniques	Rating
1	Limited fairness	☐1; ☐2; ☐3; ☐4; ☐5
2	Involves heavy financial resource (cost effective)	☐1; ☐2; ☐3; ☐4; ☐5
3	Conflict sustenance (real conflict starts when a winner is proclaimed)	☐1; ☐2; ☐3; ☐4; ☐5
4	Time consuming (inherent delays)	☐1; ☐2; ☐3; ☐4; ☐5
5	Conflict of interest	☐1; ☐2; ☐3; ☐4; ☐5
6	Dismissal of employee (layoff)	☐1; ☐2; ☐3; ☐4; ☐5
7	Language barrier	☐1; ☐2; ☐3; ☐4; ☐5
8	Problem of confidentiality (disclosing of information)	☐1; ☐2; ☐3; ☐4; ☐5
9	Apathy among the legal fraternity	☐1; ☐2; ☐3; ☐4; ☐5
10	Non-binding ruling	☐1; ☐2; ☐3; ☐4; ☐5
11	Force majeure	☐1; ☐2; ☐3; ☐4; ☐5
12	No guaranteed resolution	☐1; ☐2; ☐3; ☐4; ☐5
13	Others please specify…….	

Thank you for your time.

Please return the completed questionnaire by email to: maamenyarko777@gmail.com