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GHANA

An Assessment of Conflict Management Practices in Construction Projects in Ghana  
(A Case Study of Greater Accra Region)

By

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degree of

MASTER OF SCIENCE

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## DECLARATION

I hereby declare that this submission is my own work towards the MSc. Project Management and has not been submitted in part or full to any University or organization for the purpose of publication, assessment or any other purpose. Apart from acknowledgements, references, bibliographies and expressions quoted in the work or text, I confirm that the content of this research work is the result of my own efforts and no one else.

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## **ABSTRACT**

Project management system involves the planning, control and co-ordination of a project from inception to completion and ensuring that client's needs are met and within a specified time, within a controlled budget to conform to quality standards. People have gradually realized that stakeholders in construction industry play a vital role in project success which cannot be relegated in any discussion concerning the success of any project. Conflicts can arise usually from contractual claims and individual misunderstanding. The aim of this study was to assess the conflict management practices in construction projects in Ghana. Questionnaires were used to collect data from 263 respondents. The study revealed that inadequate communication among project team members, excessive change orders, use of substandard materials for construction, poor performance by contractors and ambiguous and contradicting instructions are major sources of conflict in the construction industry in Ghana. Furthermore, remedial works on projects affects time of completion and subsequently cost overruns. The research also uncovered that, conflicts can strain business relations between construction project teams, and can escalate into long standing litigation in court if not properly managed. Conflict management such as compromise, collaborating, accommodating, avoiding and forcing was employed in resolving conflict issues on construction projects. It is recommended that efforts such as detail designs from consultants and the use of quality material will curb or minimize the various identified conflict issues on construction projects in order to ensure successfully delivery of projects.

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## **LIST OF ACRONYMS**

GDP	Gross Domestic Product
RII	Relative Importance Index
PMBOK	Project Management Body of Knowledge

## **ACKNOWLEDGEMENT**

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First of all, I wish to acknowledge the strength and wisdom Almighty God has given me to complete this work.

## **DEDICATION**

This piece of work is dedicated to my family for their unrelenting support and prayer towards successful completion of this work.

I also express my profound gratitude to my dynamic and hardworking supervisor of the Development Office, KNUST-Kumasi, Mr. David N. Korda, who did not only encourage me to write on the topic but also, supervised and guided me through at no cost. My thanks also goes to all others whose names cannot be readily mentioned, I am equally grateful to them.

## **CHAPTER ONE**

### **GENERAL INTRODUCTION**

#### **1.1 Background to the Study**

Project management involves assembling or mobilizing the needed project resources including a professional (i.e project manager) who will manage resources to successfully execute a project (Burke, 2013; Turner, 2014; Larson and Gray 2015). The end result or ultimate goal is to satisfy project owners or stakeholders who are direct beneficiaries or project sponsors by means of successfully completing and delivering projects within project timeframe (Raymond and Bergeron 2008; Kerzner and Kerzner 2017; Project Management Institute, 2018). This is because, successful projects require strong project foundation, proper planning, progress or continuous project execution, effective monitoring and controlling of project activities, and successful project completion (Turner and Müller 2005; Müller and Turner 2007; Thomas and Mengel, 2008). Conflicts of various forms are deemed to be associated with project management Thamhain and Wilemon, (1975)

There are several interactions that occur between various stakeholders on the project, this range between clients, consultants and contracting organizations. Moreover, conflicts of interests could be observed among project professionals and could results into diverting or distorting the goal of a project, including cost incursions (Al-Tabtabai and Thomas, 2004).

#### **1.2 Problem Statement**

The execution of projects involves various stakeholders such as project managers, contractors and project consultants such as architects, civil engineers and quantity surveyors, in addition to project owners. These stakeholders contribute immensely to the success of projects due to the

unique roles they play in the chain of project execution (Egan 2002; Meng, 2007; Dey 2009; Ochieng and Price 2010) and they cannot be relegated in any discussion concerning the progress of the project. Conflicts can arise usually from contractual claims and individual misunderstanding among categories of project team players such as general contractors and sub-contractors; design teams and clients; design teams and general contractors; and clients and general contractors.

Therefore, the study intends to unravel and examine the associated problems or issues as a result of conflicts relating to construction projects. Hence, the study search for how the management of conflicts in the following categories of professionals in the building industry.

### **1.3 Research Aim**

The aim of the research is to assess the conflict management practices in construction projects in Ghana

#### **1.3.1 Research Objectives**

The specific objectives of the study are to:

1. identify various causes and sources of conflicts in the Ghanaian construction industry.
2. determine the effects of conflicts on the Ghanaian construction industry.
3. assess the use of conflicts management practices to resolve conflict.

### **1.4 Scope of the Study**

The geographical setting of this study covers some major building projects in Ghana, however the studies will involve about 263 firms that are engaged in construction industry in the Greater Accra Region.

## **1.5 Organization of the Thesis**

This study is organized into chapters of five (5). **Chapter One (1)** entails the introduction to the study, the research problem statement, the study aim and its objectives, as well as research questions, and the scope and organization contents of the study. **Chapter Two (2)** is centered on the literature that revolves the study. It covers discussions on the relationship of the various project players, traditional systems of projects, project management, overview of the Ghanaian construction industry, procurement processes in Ghana; general discussion on conflict including its sources, and management. **Chapter Three (3)** provides information on the study area, and further describes the procedure and methodology of the study, stating the research design, population of the respondent, sampling frame and size, research instrument employed, in addition to data processing and analysis. **Chapter Four (4)** focuses on the presentation of study findings and its discussions. The study results were mainly presented in tabular formats due to the kind of analysis run for the data. **Chapter Five (5)** provides information on the summary of study findings, conclusion of study findings, and recommendations based on the findings of the study.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter generally provides a review of key literature on the subject matter, thus conflict and its management practices on broadly and sub-sections basis. This chapter further discusses a dynamic process consisting of different types of conflict. It further argues on the negative and positive levels of conflict in organizations. It also focuses on the relationship between various parties on a construction project.

#### **2.2 Relationship of Various Parties Involved in a Project**

The prevention of conflicts requires the initiation of several practices including the actors or players that are directly involved in the conflict. The ultimate concern is to understand the underlying issues initiating the conflict, as well as considering the interests of the actors, and the effects on the projects (Speiss and Finn, 2008). In the traditional setting of construction and building procurement processes, project owners normally contract project designers preferably architects to draw building plans based on the requirements given by the owner. This design is expected to show the details or levels of works during the construction process (Goldfayl, 2004)

##### **2.2.1 Clients**

In the traditional or conventional systems, the project owner holds contracts or agreements with the contractor and to some extents, the project consultants. These actors are deemed to provide expert services on their various job portfolios. Clients are obliged to fulfill or provide financial resources to complete the project.



### **2.2.2 Consultants**

In the construction or building sector, a consultant refers to an authorized construction firms with the requisite knowledge and experience on the job, and preferably a track record of successfully completing projects or tasks within timeframes. These consultants may include a quantity surveyor, civil engineer, and an architect, all being individuals or firms. These consultants offer unique and extraordinary services, all contributing to the progress and completion of the project. In the traditional setting, two main services namely administration and design are provided by consultants. The administration aspects of consultancy services mainly deal with the observation of works usually done by contractors in the execution project designs. The terms of agreements including the roles to be played by the various actors based on the goal of the project should be well-defined, especially in the contract document.

### **2.2.3 Architects**

Architects are professionals trained in building information modeling (BIM) and computer-aided design and drafting (CADD) to design or draw building structures or plans (Alur et al., 2003; Duany et al., 2010; Davidson, 2011). Additionally, they are experts that possess authorization or license in providing work designs and plans commercial and residential structures (Duany et al., 2010; Ponzini and Nastasi, 2011; Son et al., 2015). Moreover, and especially at the construction site, architects are required to possess hand-drawing skills to be useful at the project conceptual phases of projects (Clements et al., 2003; Beatley, 2011).

### **2.2.4 Engineers**

In a nut shell engineers are accountable for planning the construction stages of the projects. Their responsibilities involve, conducting surveys, research, analyses of results, planning and supervising of all construction activities. They are to ensure that the facilities been constructed

meets function and safety requirement of the client. They are to ensure that contractors adhere to all specifications required in the design. The engineer also provides adequate information to the parties and public to keep them informed and in the case there are matters arising before, during and after the completion of the project.

### **2.2.5 Quantity Surveyors**

Quantity Surveyors are experts that provide estimates on building projects and they are to ensure that the estimates are observed from start to finish of the project (Cartlidge, 2012; Lee et al., 2014; Wu et al., 2014). They are better known as Project Cost Managers or Construction Economist (Shafiei & Said, 2011; Masterman and Masterman, 2013; Stanley & Thurnell, 2014). In effect, they are to ensure that the cost of a construction project are efficiently managed (Bowen et al., 2008; Frei and Mbachu, 2009; Eadie et al., 2010).

### **2.2.6 Contractor**

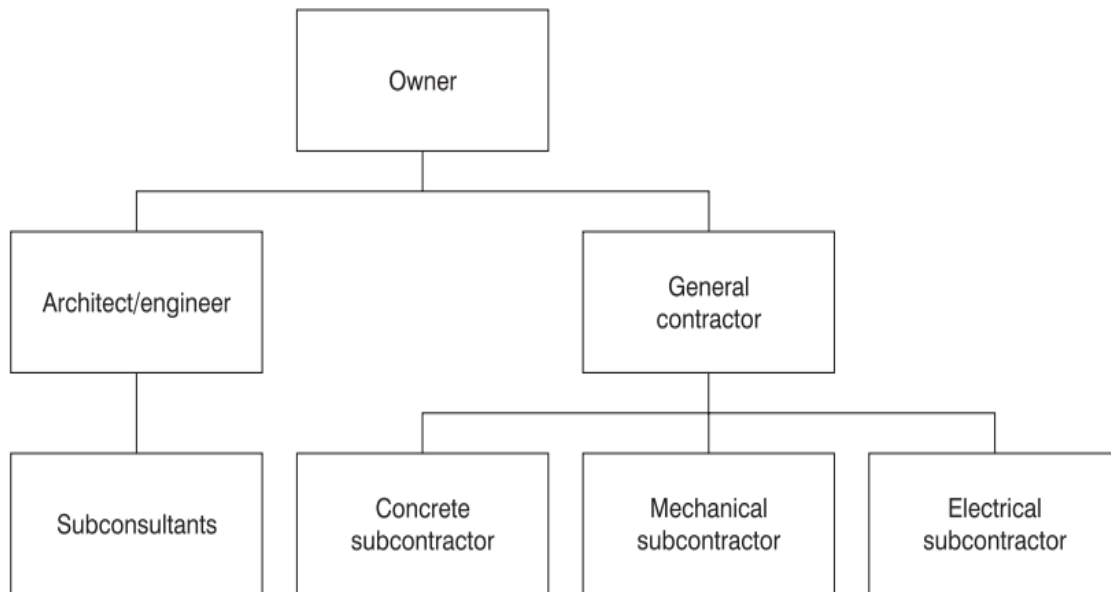
Contractor is responsible for carrying out in detail all the designs into physical infrastructure. The executing or the contracting firm is required to ensure that work is done to the satisfaction of the client or owner and to meet requirement of the consultant and the end user.

## **2.3 Procurement Systems**

Construction-based projects require combining various organizations with the purpose of forming a project team to execute the goals of projects. The collaboration of the team is regarded as a procurement system, thus establishing effective relationship among them in the project. There exist a contracting and procurement systems related to managing of projects, and they include: traditional procurement system, design and build, contract management, project management, as well as build-operate-transfer approach.

### 2.3.1 Traditional Systems

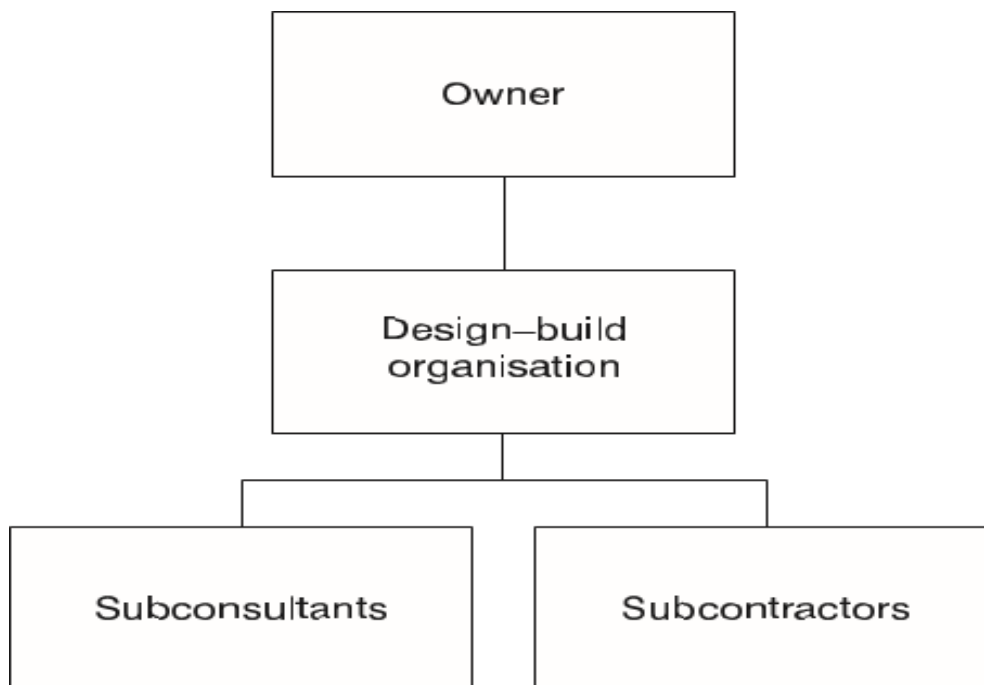
The Client (Owner) employs two different consultants, namely a project designer and project contractor. The design-tender-build procedure is characteristically a separate system of delivery of design in the construction industry. Moreover, this system ensures that design works regarding projects are completed prior to the tendering process since construction works cannot start without the completion of the tender process. There is a time consuming process during design-tender-build system. A chart portraying a conventional design–tender–build relationship is provided or shown below. This process has been effective in the advanced worlds such as the United Kingdom, and some commonwealth nations including Ghana (Ramus, 1993).



**Figure 2.1: Traditional system Relationship (Source: F. Lawrence Bennet,2003: p13)**

### 2.3.2 Design and Build

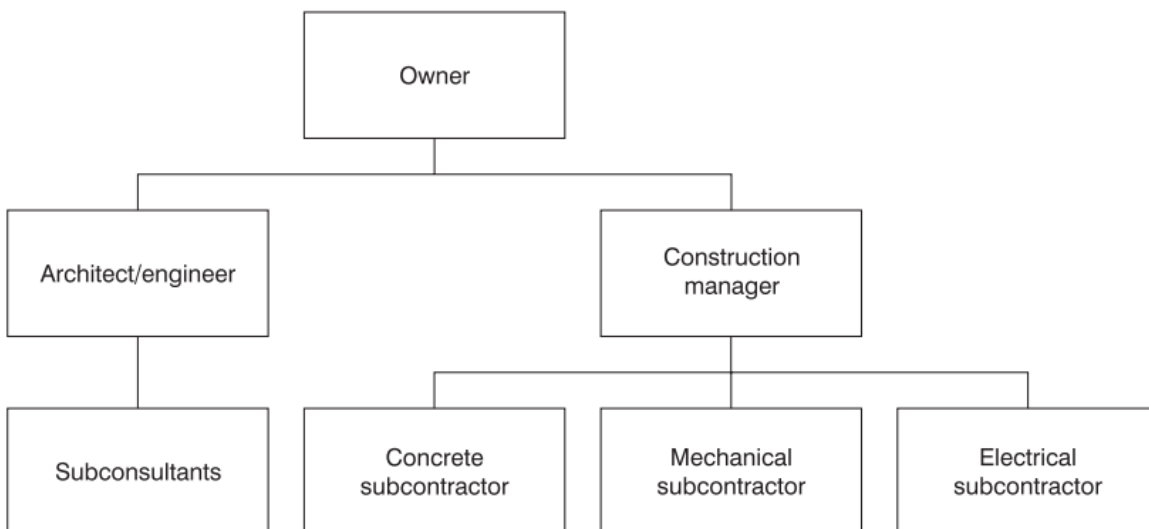
Under this stage, the responsibility of the owner is to manage one contract, which is to focus on the contractor and designer as team working from project commencement to completion by considering the project costs and timeframes. All project challenges is to rectified by the team to enhance work progress of the project. This is deemed to help in avoiding shifting of blame as it is usual in traditional method of procurement system.



**Figure 2.2: Design and build Relationship (Source: F. Lawrence Bennet,2003: p15)**

### 2.3.4 Management Contract

This phase requires the services of construction managers to offer their expertise in the construction process. The construction managers are employed by the project owners. The manager advises the project owner on issues pertaining to project safety, project timelines, and project budget or costs, as well as project activities. This advisory process could be run throughout the life cycle of projects. The agency kind of management in construction requires that construction managers perform their advisory activities for contract management fees.



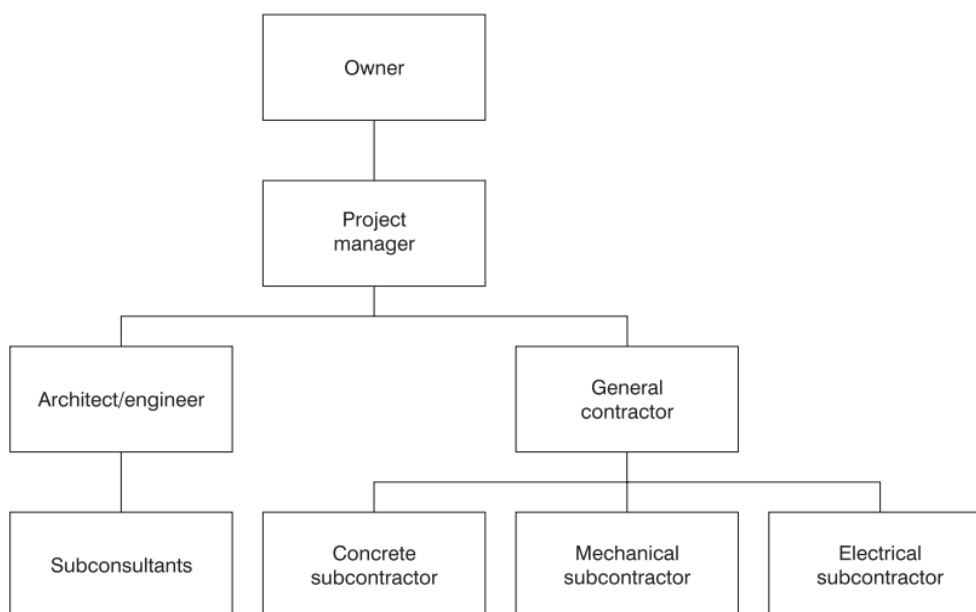
**Figure 2.3: Management Contract Relationship (Source: F. Lawrence Bennet,2003: p17)**

The project owner achieves project success through the advisory services offered by construction managers in relation to project quality, budget or costs, time consideration, as well as reduction of risks associated with projects, in connection with the changes reviewed based on the projects.

### 2.3.5 Project Management

In this type of procurement system, independent construction managers can be contracted by project owners to manage the project. The construction manager at this stage takes control of the

entire management of the project. Construction managers at this stage engage other actors such as project general contractors and designers. For instance, the manager can make decision on the engagement of a single-build organization. The difference in characteristics of construction managers is in relation to the responsibilities performed by different organization for the project owner. The prime goal of ensuring work satisfaction for the project clients is a unique feature of project management.



**Figure 2.4: Project Management Relationship (Source: F. Lawrence Bennet,2003: p18)**

Corporation and partnership are similar concepts, but differ in the context that, the latter enables the liabilities and profits from the business to be shared among the members who have made investments into the business.

### **2.3.6 Operational Partnership**

An operational partnership streamlines and rationalizes the construction process with an emphasis on improving competitiveness – this contract would be ideal between two small trade

companies offering similar services for a large project. For example, this contract would work well between an excavation company like ours and a structural steel contractor or between two small excavation contractors. The purpose is to provide clients with a full scope of services that improve either price or schedule, with each contractor adding value to its partner. An operational partnership demands an effective, clear agreement between the partners on responsibilities and work distribution and process systematization, information management, and communication are essential to its success. (<https://aec-business.com/strategies-for-successful-partnering/>)

### **2.3.7 Tactical Partnership**

A tactical partnership integrates different services under one partnership. For example, a collaborative partnership between an excavation and Earthworks Company, a geotechnical engineer, a construction manager, an architect, and a structural steel company can offer a full set of services in a design-build or P3 project. Together under this partnership, the contractors and companies become a cohesive team. The competitive advantages of a tactical partnership include learning together and creating a common culture utilizing real dialogue and complete collaboration – improving process quality and each partner's profitability. (Heiskanen, 2012)

### **2.3.8 Strategic Partnership**

A strategic partnership is the most demanding contract, but also the most rewarding. Based on a shared strategy, this partnership creates a competitive advantage via an innovative business model. Together, they create an innovative product or service offering that wouldn't be possible outside of the collaboration, redefining or creating new markets. These partnerships thrive in a networked business environment where ideas can be shared and tested openly. A strategic partnership is basically the creation of a new company, and requires members to work toward the

same goal and vision. As always, communication is essential, as these parties need to openly share their knowledge and experience in a trusting environment. (Stephenson, 1996)

Sustainable Developments' project managers are leaders in managing each partnership's demands, effectively communicating and collaborating on project goals and strategies, conflict resolution, project steering, and procedures.

## **2.4 Overview of Ghana's Construction Industry**

The construction industry in Ghana is facing a lot challenges. The industry has to strive to ensure alliance with the private and public sectors, including the academia. According to Laryea (2010), the gross domestic product (GDP) of Ghana gained 60% from the contributions of the construction industry. The growing demands for urban planning and housing as a result of urbanization, rapid growth of populations and economic development are affecting the African continent (De Boeck, 2013), even though the solution to challenges that affect development could be as a backbone of the construction industry (Ebohon and Rwelamila, 2001)

Ghana is observed to be among the sub-Saharan nations that benefits from the contribution to the GDP by the construction industry. This is because the construction industry is largely manifested through physical infrastructure for economic growth, as well as asset-based-lending platforms (Songwe, 2014). The Ghanaian construction industry is observed to employ about 10% workers and also contribute 5%-10% to the GDP of Ghana. (Asamoah and Decardi-Nelson 2014:63). It is also observed that the construction industry contributes to poverty alleviation; particularly in areas that have massive construction projects on-going (Ofori, 2012). The industry consists of multi-stakeholders due to the complexity of the construction industry (Dadzie et al., 2012). The Works and Housing and Water Resources Ministry of Ghana is a key stakeholder that classifies



building contractors. More so, the classification is grouped into four, namely: projects above \$500,000 (D1K1); projects worth \$250,000-500,000 (D2K2); projects worth \$75,000-250,000 (D3K4); and projects worth \$75,000 (D4K4) (Frimpong and Kwasi 2013). It is observed that the D3K4 and D4K4 categories befit most of the Ghanaian companies (Oxford Business Group 2014). Again, over 1,600 building contractors have been in existence since 2012 according to statistics compiled by the Chartered Institute of Building in Ghana (Oxford Business Group, 2014). The industry is however challenged with unprofessional practices against the backdrop of contributions that the construction industry provides (Asamoah et al., 2014)

## **2.5 Procurement Processes in the construction industry**

### **2.5.1 The Project Stages**

The process of construction is composed of diverse stages due to the nature of works in the construction industry. A typical construction project in Ghana is based on the traditional procurement system, these processes are namely: predesign, design, construction and post-construction stages. There are sub-stages under each of the above stages enabling several performances of other activities.

### **2.5.2 Pre-design Stage**

The client, at this stage, takes into consideration the purpose of establishing a project, preferably a building project. There are three sub-stages peculiar to this stage, and they include: feasibility study; inception; and idea development stages. The sub-stage of idea development requires project clients planning to undertake a construction project. The reason of building this facility may be as a result of the need and demand for the facility or the market value of such facilities and eventually for economic gains. Inception sub-stage requires the project client to deliberate on the necessities and functions of the facility and engages a designer to prepare the outline of

requirements, plan and all other considerations. The Public Procurement Act, 2003 provides regulations and supervision of project design team regarding public projects. The sub-stage of feasibility study requires the client to forecast plans for the project. It includes an appraisal and recommendations to determine the structure of the project. This is to ensure that, the project is feasible in terms of function, technical accuracy and its financial viability. For this stage to be successful, the design team carries out several research works that is geared towards the design, client's requirement, planning, including existing site conditions as well as budgeting to arrive at conclusive decisions. This sub-stage is crucial for construction projects. (American Society of Civil Engineers, 2012)

### **2.5.3 The Design Stages**

This stage encompasses the entire project activities from commencement to completion of projects. Activities including proposed project design which enables the project designer to draw the general project layout to be approved by the project client. The designer further completes the project plan at the design sub-stage, construction method and procedures, outline of drawings, specification of materials to be used for the construction, and cost plan. (Frank Harris, 2013) This is then presented to the client for consideration and approval. After this sub stage the accepted design is then presented for approval from authorized entities or firms for assessment and permit. After getting necessary documentation approvals the next stage is the preparation of production sub-stage. The issues regarding costs and specifications are rectified and finalized. The final project plans are prepared at this stage. It also includes documents such as work schedules and material specifications and other equally important documents. The next activity involves the preparation of bills of quantities and tender. Final and several project activities

including tendering process as stated by the Public Procurement act, 2003 for all public projects are completed.

#### **2.5.4 The Construction Stage**

This stage is where the project plan is manifested into reality. The project contractor takes full control of the site and the execution of the works starts. Supervision is done by design team. Their duty to visit the site to assess the progress of project activities to ensure that quality is assured are works are done according to the design and specifications given and resolve further issues associated with the project.

#### **2.5.5 Post-Construction Stage**

The project client is expected to be handed over the projects at this stage. A period is set aside to ensure that defects are dealt with; this period is called defects liability period. Within this period, elements of projects associated faults are rectified to enable continuous activities of the projects, and the contractor is responsible for this and bears the costs since he is in full control of the project. The design team is required to carry out frequent inspections on projects to ensure that issues of risks and external factors are taken into accounts. (American Society of Civil Engineers, 2012)

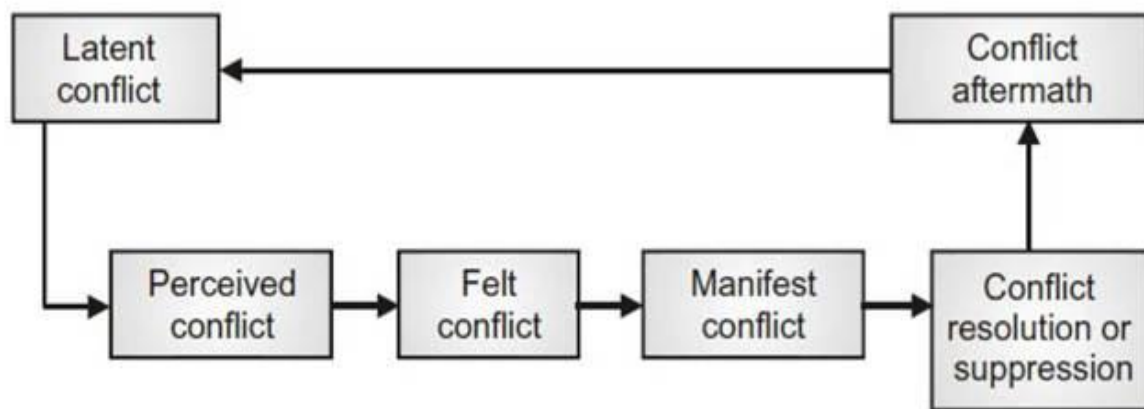
### **2.6 Definition of Conflict**

Conflict as a word is literally understood to have negative connotations (Verma, 1998; Warner, 2000). Conflict is by word means the conduct of individuals or organizations that hinders another individual or group from achieving a goal (Thamhain and Wilemon, 1975). Conflict as defined by Brown (1995) is a pattern of interface among individuals that differ in preferences,

perceptions and interests. Some scholarly works on conflicts revealed that conflict links with threats and oppose interests, differentiates common goals among individuals, and serve as antagonistic feature in a phenomenon (Mba, 2013). Conflicts in the construction industry is observed in ways such as disagreements due to unsettled common differences, and a necessity to accomplish project goals, all resulting into change in personal feelings and emotions. Project managers in particular often consider conflict as an avenue to project completion and delivery. This is because it enables project stakeholders to resolve any impeding and unforeseen factors that could reduce the progress of projects. Conflicts further help people to blend and effectively collaborate to achieve an end result. Two or more independent entities that struggle to perceive a common goal, scarce resources, and other related issues that halt the progress of an entity could be seen as conflict (Wilmot and Hocker, 2001). It could also be observed as negatively affecting individuals or groups of common character. A more well-known meaning of conflict regular with the construction sector is per Rahim (1986), who describes conflicts “as an irreconcilable shared process at tacit and obvious stage where opposing concerns, groups and organizations in the building processes, overindulges the verge of concentration”. Owing to rigorous interface between the participants, conflict controlling or handling is a significant aspect in regard to the whole project managing procedures (Lu and Leung, 2001). Rahim (1986) also states that conflicts may arise among individuals, teams, organizations. Conflicts are an in-house opposition (Chong, 2011) that happens among task members, attributable to skewed goals, collapse communication and incorrect placement of participants in positions, for being the chief predominant roots of conflicts in the building sector.

### 2.6.1 Stages of Conflict

A model developed by Pondy in 1967 gives a unique and ideal way of understanding how conflict is initiated and what it leads to in a five stage framework termed as 'conflict episode'. The five stages include latent, perceive, felt, manifest and conflict aftermaths.



**Figure 2.5: Conflict Episode**

(Source:[https://ebrary.net/2866/management/stages\\_conflict\\_conflict\\_process](https://ebrary.net/2866/management/stages_conflict_conflict_process))

#### **The concept of Pondy's Conflict Episode.**

Firstly, in latent Conflict, factors that exist in real circumstances is potentially observed as conflicts that encourage force; there are four common types namely: competition for scarce resources; divergence of goals; drive for autonomy; and role of conflict. Secondly, perceive conflicts results into conditions in which two individuals perceive that each is causing a disturbance of achieving a goal. This is said to be attributed to misunderstandings of each other's stand point of stand. This can be resolved by effective communication among individuals. Thirdly, felt conflict is actually cognized and felt by the affected individuals (personally affected conflict). This is of two forms: the unforeseen demands of growth of organizations could lead to

anxieties that emanate from special cases such as extra- organizational pressures, as individuals ought to escape these so as to maintain equilibrium internally; personalized conflicts resulting from a wholly involved relationship among individuals. This could lead to unfriendly feelings in the relationship.

Fourthly, manifest conflict erupts among two individuals engage in attitudes that distort communications from each other, and these could be among indifferences, open aggressions, disobedience of rules and sabotage.

Fifthly, conflict aftermath is experienced after conflict has happened. It could negatively or positively affect the organization due to its management. Conflicts cases that were satisfactory resolved produce positive outcome, and vice versa. Resolution of conflicts is adamant to give clarification in the direction of conflict aftermath.

## **2.7 Sources of conflicts**

Generally, it is observed that when individuals unable to arrive at a decision on a common issue, dispute is bound to set in (Ekhatior, n.d.). Conflict caused in a team relates to issues bothering needs, values, perceptions, attitudes, resources, expectations and personality traits. Skills developed to resolve conflicts can enable project managers to effectively resolve issues of conflict in order to achieve project success (Cheung et al., 2002). In the setting of construction, individual professions have their respective goals and expectations. Conflicts are regarded as inevitable since affected individuals swiftly run into disputes (Khekale et al., 2013)

### **2.7.1 Sources of conflicts in Construction Projects**

Many individuals are qualified are completely or partially involve with the construction industry in Ghana, these includes, Architects, Mechanical, Electrical, Civil, Structural Engineers, Project

Managers, and Quantity Surveyors as well as Town Planners. These individuals are assembled from independent firms or organisations to form a project team where the relationship between them grow in the organization and interdependently rely on each other for a precise project execution. Kumaraswamy (1997) in his research point out some contrast between two major claim causes and construction industry conflict, mentioned as the contiguous causes and core causes. In addition, he gives a detail explanation and stated that contiguous causes are those that are straightaway and obvious and are provoked by the client while core or root causes emanates from other stakeholders. Technical issues and performances could be affected by conflicts in that, project team members differently may oppose to proposals or suggestions geared towards problem solutions. Proposals or suggestions can be outcast based on its communication to the project team members. Characteristics of conflict sources were classified into seven areas by Thamhain and Wilemon (1975) and Posner (1986). These include:

### **1. Conflict over project priorities**

**i. Different Stakeholder Interests:** an advocacy for simple and standardized product is proposed by manufacturing stakeholders due to products reliability. Whereas an advocacy is also proposed for complex products by marketing stakeholders to enable customers have extensive options. These forms of stakeholders may be perceived to be in conflicts due to the interest they possess.

**ii. Project Failure:** this could discourage progress of works due to external factors that might be the causal elements such as financial or cost changes, as well as change in regulations regarding projects. When a project is cancelled, conflict can be initiated among project team members.

### **2. Conflict over administrative procedure**

**i. Disagreement over communication methods:** in several organizations many of their professionals ensure that a difference is achieved among the chain of command and communication. Conflict in the form of disagreement is encountered due to the communication processes.

### **3. Technical conflict opinions and performance trade-off**

**i. Disagreements with Suppliers:** project suppliers are relied upon mainly to deliver and perform peculiar roles and functions. When project team and suppliers differently engage in interpretations regarding project specifications and standards, conflict is bound to be encountered, because of the time consumption that the conflict took, the project timeline is affected. (Chong, 2011)

**ii. Project Management Methodology Disputes:** the methodology of project execution largely depends on the project management practices that would enable projects to have success or failure. The Project Management Body of Knowledge (PMBOK) stipulates certain frameworks for project manager to achieve project success.

### **4. Manpower Resources Conflict**

**i. Project Team History:** this is lessons learnt from teams that were formed in previous projects; it will inform you about individuals in your organization. This gives you the behaviour of some of individuals and their approach to work. (Wilmot and Hocker, 2001)

**ii. Project Manager Management Style:** This is how a project manager who takes steps to ensure that project is managed successfully. This management style will reflect on the success off the project. It includes how messages are communicated and unproductive tension and conflict are managed



## **5. Conflict over cost estimates**

**i. project budget and cost conflicts:** financial support plays a pivotal role in the execution of projects under project management practices. Inadequate project funding leads to project delay and possible failure. Project costs and budget cutting method can initiate conflict during project execution. The contributory factors could be poor project fund management and rigid economic conditions. Proper cost management regarding projects before its commencement could reduce the conflict associated with it.

## **6. Conflict over scheduling and sequencing of work**

**i. Schedule Changes:** crashing of project activities a best practice defined in the PMBOK Guide glossary as a method employed to lessen the timelines due to cost increment and additional resource put in place. (Posner, 1986)

**ii. Scope Changes:** the changes in project scope are best experienced when there are expected issues the needed to attend to, thus diverting the arrangements previously made for the project. This can trigger conflict among project team.

## **7. Conflict over personality conflict**

**i. Personality and Ego clash:** humans possess personality and ego traits. Generally strong personality and ego about men have resulted in large projects that have survived the test of time. Project management revolves around people, and leaders of projects are regarded as project managers possessing some personality and ego traits to manage projects successfully. A standard practice of ego by project managers could sustain a project till its completion. Developing sound emotional intelligence is a prime key to curb personality and ego clashes (Wilmot and Hocker, 2001)

**ii. Different perceptions, ways of working and biases:** when someone develops a perception about a working practice, it becomes a culture of life for that person. The resulting influence is when the positive differences are celebrated for common good among project team. Tackling of conflict associated with perception is to create a common ground for project stakeholders and team to make decisions.

**iii. Miscommunication and misunderstandings:** project management is hugely concerned with communication to effectively perform project activities to achieve project success. When project issues are miscommunicated and misunderstood, conflict is initiated among concerned groups. To avoid this conflict kind, an atmosphere should be created for all project actors to simplify differences in opinions and seek clarification to issues affecting project progress.

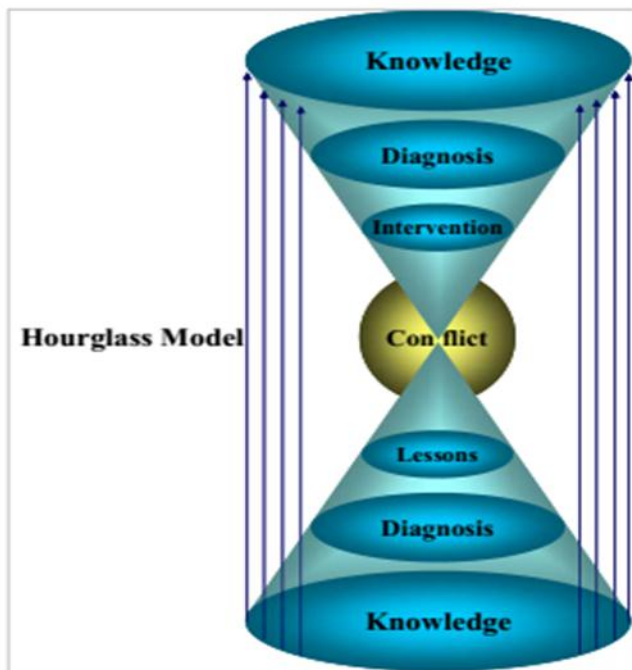
**iv. Lack of trust and respect between team members**

Mutual trust and relationship among project team members could foster unity in executing projects. In project management practices, collaboration enhances the chances of completing tasks as scheduled. Building initiatives for regular team helps to unify the team to focus on common decisions geared towards project progress

## **2.8 Identification of conflicts**

There are many different approaches that are used to describe and manage conflict. Hudson et al., (n.d.) has developed a framework called 'hourglass' that describes conflict. One part of the framework is through diagnosis, and finally intervention, the knowledge is acquired. The intervention is seen to flow lessons, thus extending knowledge. The possibility to recognize more required information is through the consultation of knowledge. The diagnosis of preliminary dialogue is engaged on the

premises of knowledge facilitation. The ellipses magnitude features the amount of time to be applied to the lenses. On the output side, learnt lessons needed diagnosis to increase knowledge base, based on individuals to organization level (Hudson et al., n.d.)



**Figure 2.6: Hourglass model (Source: Hudson et al., 2005)**

## **2.9 Conflict Balance**

Argyris (1962) observed that symptoms and disturbed relationships of organizational sickness is as result of conflict. An organization attaining maximum performance needs to achieve conflict balance (Brown, 1995). But without any form of crisis and misunderstanding, ill-feelings and disagreement remains impossible in managing projects (Rosenhead, 2006; Femi, 2014). To

achieve conflict balance, a moderate level of issues should be reached (Brown, 1995). To effectively manage conflicts, a balance should be maintained of all related project issues.

## **2.10 Levels of Conflicts**

Hellriegel et al (1986; cited in Abdullah, 2012) identified five conflict levels namely: interpersonal, intrapersonal, inter-group, intra-group and intra organization.

### **i. Intra-personal Conflict**

This level of conflict occurs within the conscience of persons, and that happens during daily execution of activities. The person possessing distracted goals when to decide on negative and positive outcomes of issues bothering personality focus. The state of being indecisive on personal issues is regard as intra-personal conflict.

### **ii. Inter-personal Conflict**

These levels of conflict happens among individuals or groups with different goals, values, behaviours and attitudes and fail to commonly share these traits to achieve a common goal. In the work place, this level of conflict may be attributed to beliefs or work ethics, and human personality differences. Supervised employees fall into routine disagreements over managerial style, employees may enter conflict with customers and clients, managers, co-workers disagreeing over problem-solving tactics or shared resources, all may be forms of inter-personal conflicts.

### **iii. Intra-group Conflict**

This level of conflict occurs among groups or members of organizations; it occurs within members of a common team or group. Relationship or emotional conflict and task conflict remain the kinds of intra-group conflict.

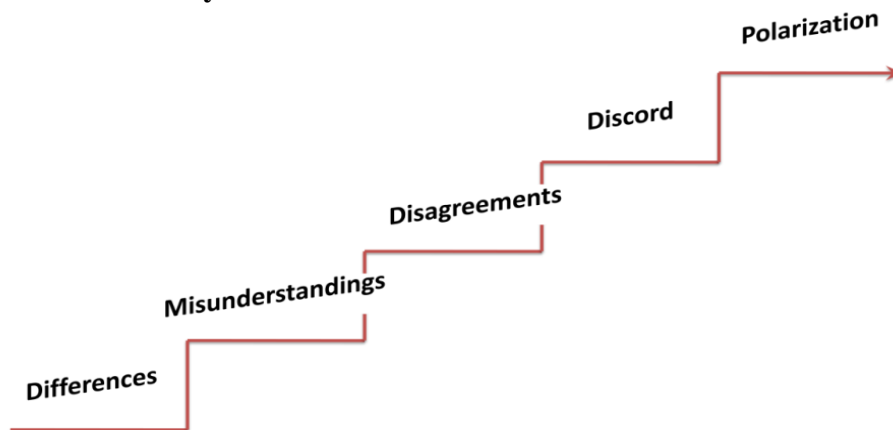
#### iv. Inter-group Conflicts

This conflict level usually happens among formal or informal groups or teams within the same organization that interact with diverse purposes Religion, race, ethnicity or decision-making levels remain some of the conflicts that exist under this level of conflict. This is because there is difference in prestige, power, work activities and goal among the groups.

#### v. Intra-organizational Conflict

This level of conflict happens among groups of organizations, and it may vary among different organizations. This can affect the organization's structure of works or activities, formal authority located, and the design of works. It is observed that organizational conflicts are encountered the most to result into productivity than performance deterioration.

### 2.11 Conflict intensity



**Figure 2.7: Levels Conflict Intensity (Runde and Flanagan, 2007)**

#### Level one – Differences

Situations that are viewed from different perspectives by involved parties and at the same time possess awareness of other member's interests and goals. Runde and Flanagan (2007) explained

the unusual state of effects that are encountered by this kind of conflict results into negative productivity and relationship.

### **Level two – Misunderstandings**

Misunderstanding is created when two or more individuals differently interpret situations (Runde and Flanagan 2007). It is important that checking misunderstandings of issues at the early stages helps to avoid escalated conflicts.

### **Level three – Disagreements**

Disagreement as defined by Runde and Flanagan (2007) requires two people differently observe situations and regard it as they understood the positions of each other other's interests, yet feels discomfort of the opinion of the other member as he disagrees. Nevertheless, disagreements as postulated by Runde and Flanagan (2007) can positively affect innovations.

### **Level four – Discord**

The conflict starts to negatively affect the relationship among members when discord level of conflict is reached (Runde and Flanagan (2007). Criticism is a kind of discord conflict that blocks and avoids the members' feelings or interests.

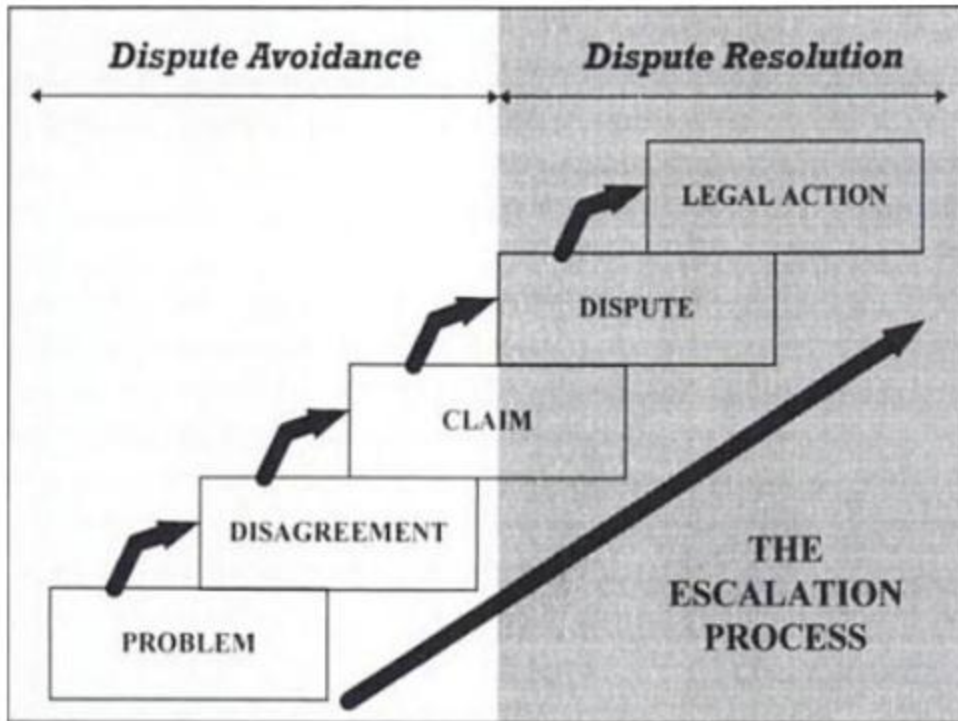
### **Level five – Polarization**

Polarization occurs critically when conflict has reached its level, which leads to damaged relationships and unresolved cases in most instances. Runde and Flanagan (2007) explained that members begin to invite other persons to join the conflict at this stage. The affected members

portrays destructive or abusive behaviours, often wars initiated among members at the worst stages of polarization.

## **2.12 Escalation of conflict**

Conflicts are observed to be inhabited or inherited by humans (Olu and Abosede, 2003). It is further stated that the energy and resources that are wasted by organizations in resolving conflicts among members remain a paradox. It is said that dispute resolution and conflict prevention together enhance the organizations' chances of achieving its goals. When conflicts result into disputes, projects are delayed and further failure is expected, leading to costs and time overruns. At the other end, disputes develop as a result of improperly managed conflicts due to certain principles in conflict management. Therefore, it is vital to amend differences among parties involved in conflicts before its results into disputes (Yiu and Cheung 2006, cited in Abdullah, 2012). It is further explained that series of circumstances of disagreements can lead to negative relationships among stakeholders.



**Figure 2.8: Conflict Escalation Process (Source Cox and Thompson, 1998: p250, adapted from Abdullah Mohammed Alshehri, 2012)**

### 2.13 Conflict Management

Conflict management has gained recognition due to its rapid state of events in the construction industry and hence critical skills are required by experience project managers to resolve conflicts that arise from the project (Akiner, 2014). Detecting the conflict and providing solutions to it remains a first stage of managing conflicts (Mata et Corby, 2000). Perhaps, the act of dealing with preferences, perceptions and interests to maximize effectiveness of organizations is also regarded as a way of managing conflicts. Beside, conflict management styles are differently possessed by managers at different levels of organizations. The required conflict management skills hugely depend on the styles of conflict management by the respective persons. Understanding the interests, attitudes and positions of individuals, conflict is at the verge of



being resolved. This further addresses and creates the need for others to be satisfied of the outcome of the conflict resolution. Maslow described that the inabilities of people to effectively manage conflicts can be puerilely and becomes unsatisfied for affected persons.

#### **2.14. Conflict Management styles**

Verma (1998) postulated that using procedural changes, authority changes, resources changes, and layout changes can resolve conflicts. Resolving inter-personal conflicts using avoidance problem-solving, give and take, as well as negotiation and collaboration techniques can help to resolve conflicts.

##### **2.14.1 Confronting**

Integration, problem-solving, win-win and collaboration styles of resolving conflicts as well as face-to-face meeting of involved parties are all forms of confrontational conflict resolution platforms (Ohlendorf 2001). It was further explained that the styles of managing confrontational conflicts should include direct and open communications among the affected parties (Kuhn and Poole, 2000). The Project manager uses a win-win system to make sure the parties involved meet each other and cooperate to reach a consensus to move everyone forward (Verma, 1998) and explained that confronting conflict involves exchange of views, which solved the conflict by finding alternatives that meet the required solution and Lee (2008) observed that collaboration as integrity which involves more interest in oneself and others, which manifest unobstructed views, communication interchange and evaluation of conflicting issue to reach a consensus. In this system everybody involved are satisfied at the end of the project as everyone wins (Cheung, 1999)

Smith (2002) detailed that in confrontation conflict management styles, the work and the individual in the group are respected and the style is defined as a problem-solving approach and it is settled by careful negotiations. Smith suggested that the following guidelines are followed when dealing with confrontation. Confronting the problem briefly by jointly deliberating the conflict and negotiate for result; open communication and comprehension of the other party's point of view are extremely beneficial as stated by Smith (2002). Lee went on to explain that integrating is the best practice in that its approach is free, because and all the necessary information are exchanged between parties and the different situations are carefully studied to reach an agreement

#### **2.14.2 Compromising**

Compromising is an approach that is considered to be “give and take”, that is a concern for self and others (Lee, 2008). Verma and Lee mentions that compromising is to bargain to solve the conflict at hand in which the result will favor both parties, and it always takes care of any for undisputable resolve. The compromising approach is concern for self and others. Lee observed that dividing the difference, exchanging concession or seeking equilibrium constant is the main attribute of compromising conflict in any organization.

Ohlendorf (2001) observed that compromising as an approach is give and take method which ensures that all parties involved in the conflict accept some degrees of satisfaction. These styles are good to be used among affected parties are required a win and remains deadlock. It can also be used when you are running out of time and there is urgent need to maintain the relationship. But in such a situation both parties gain something to lose something in order to ensure progress. It is always useful when time is important, and the protracted conflict should be avoided (Rahim,

2002). The style is cannot be applied in all complex issues and also when there is position power difference between parties involved.

### **2.14.3 Smoothing**

Smoothing is also regarded as an obliging or accommodating style of managing conflicts. The emphasis is placed on areas of agreements that are being downplayed (Rahim, 2002). Affected or involved parties can sacrificing their own goals in order to achieve satisfaction implies that smoothing kind of conflict resolution is not adequate to achieve results (Kerzner, 2003). The creation of obligation for trade-offs later requires the use of smoothing style of conflict management.

### **2.14.4 Forcing**

The forcing style of conflict resolution referred to as dominating, controlling or competing styles of conflict resolutions. Rahim (2002) provided explanation of forcing style to be the occurrence of conflicts among members with the view of one member emerging as winner, and the other member loses. Lee (2008) provided discussions on the intensity of conflict, tendency for a force conflicts as occurrence of further conflicts. The end results ensure that one member loses and other wins when there is a conflict (Verma 2008). It is used when a situation of high and low concerns are observed as indications that would ensure the process of win-lose to be implemented. (Kerzner 2003)

Ohlendorf (2001) supports this approach in managing conflicts in any organization that has production related goals such as in the construction industry. In such cases individual use this power scheme and attack which in effect accomplish his or her goal, but it has been seen not to be suitable at the relational level. Verma, (2008), in his view states that at the general condition

will create hard feelings for other team members in which the loser will retaliate in another form or way. (Rahim, 2002) concluded that this style is not good when team work is the solution to the pending conflict.

#### **2.14.5 Avoiding**

Avoiding style is also called the withdrawal style. The postponement of conflict to a later time or withdrawing conflict is seen as avoiding style of conflict resolution (Verma, 2008). It is observed as provisional solution, yet the conflict continue to happen (Rahim, 2002). Avoiding style can be applied to resolve conflict when an individual to want gain attention with respect to time. Another advantage is to cause delay to an individual with the view to unnerving the other individual. This classification is deemed as passive response to conflict (Zikmann in Fenn and Gameson 1992).

#### **2.15 Role of Project Managers in Conflict Resolution**

Conflict resolutions are also practiced by project managers in the sense that they are in full control of the project from commencement to completion, including risk management associated with the projects. There were five personality types identified by Thomas and Kilmann (1970) in conflict degrees of assertiveness and cooperation. These include:

**The Accommodator:** this is when an individual satisfies another persons' interest by leaving his own. This person is because he is purely cooperative and not assertive. This style works successfully with rejecting the ego one individual and focusing on the relevance of the progress of work.

**The Competitor:** He achieves his interest in the on the weakness of other individuals. He is purely assertive and bases his operations on the premises of power. The emergency situations of events require the use of this style to make fast and urgent decisions, but it comes with its associated risks.

**The Avoider:** He remains the one evading or prolonging situation and never wanted conflict to be resolved among involved individuals. The delegation of controversial decisions, unlikeness of having a feel of one's challenges, acceptance of faulty decisions, all forms kinds of avoider styles of conflict resolution. When one needs victory over impossible situations, this style is appropriate, yet there is high approach of ineffectiveness and weakness.

**The Compromiser:** He gives up less than the accommodator, and more than the competitor. More so, he is expecting other members also to lose something in addition to his. When on is adamant of meeting a deadline against the midst of standstill of other events, this style is applicable.

**The Collaborator:** He satisfies every individual involved in the conflict by finding solutions. He further takes consideration of individuals' sayings, in addition to his assertiveness. This finally result in win-win relationships, and it a good practice to successfully manage conflict.

## **2.16 Dispute Resolution in the Construction Industry**

Construction contracts have been one of the commercial activities characterized with disputes due to its complex nature. Arbitration has been the commonest technique for the resolution of disputes in the construction industry. Arbitration to resolve disputes in the construction industry arises from the agreement of parties, either when disputes arise, or more often as a term of the conditions of contract.

The major mechanisms of dispute resolution are discussed below.

### **2.16.1 Negotiation**

The Negotiation may be with or without neutral adviser. Thus it may be direct or indirect.

In a Direct Negotiation the parties appoints a member of their team to lead and both parties do their negotiation with or without a neutral adviser. In some Negotiations (Indirect) the process involves a neutral adviser who sits in the cause of deliberations without taking active part whilst the parties engage themselves in the art of negotiation.

### **2.16.2 Mediation**

A third party known as Mediator is called upon to assist in finding common ground for compromise when negotiations fail between the parties. The mediator may be the neutral adviser during the negotiation or new person altogether. Agreement on mediation may be made at the contract stage prior to any dispute arising. Mediation is marginally more expensive than negotiation. However the advantages of mediation include informality, speed and economy and often lead to an agreed settlement between parties.

### **2.16.3 Conciliation**

Conciliation process is similar to mediation except that the conciliator draws up and proposes a solution himself, which represents what in his view, is a fair and reasonable compromise of the dispute. This is done after the conciliator has had discussions with the parties. Conciliation is more formal process than the both negotiation and mediation. It sometimes involves the employment of legal representatives, thus making it a more expensive process than the others. It is more regulated and a number of institutional rules are available for its administration.

#### **2.16.4 Mini-trial**

Under the mini-trial procedure, top management officials of each party voluntarily may present their best case and negotiate an expedited resolution to a pending board of Contract Appeals Case. The Mini-trial is designed to resolve disputes arising from matters of fact rather than matters of law and to take no longer than three or four days. The process also provides a neutral advisor who can assist the negotiators in understanding matters of law and assessing the merits of the claim.

#### **2.16.5 Claims Review**

A Claims Review Board (CRB) is an additional ADR method in Construction Contracts. The Board consists of three member committee formed at the commencement of a construction project. Each party appoints one member and the third member is appointed by the two members. Each member is issued with a complete set of contract documents including schedules, work drawings, minutes of meetings and other documents such as progress reports. Within the CRB procedure, the Board members visit the site periodically but at least three times annually, to keep informed of the construction activities, challenges and any development likely to lead to potential claim. At the end of each visit a report is submitted to both parties.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the procedure for the collection of data and techniques that is employed in the survey. Questionnaires were employed as research instrument in order to establish the views of the respondents in detailed manner.

#### **3.2 Research Approach**

The research approach that was employed is the quantitative research and uses a descriptive survey design based on questionnaire.

#### **3.3 Data Collection**

The collection of data was done through the collection of primary data. Primary data which turns to investigate a phenomenon by the use of administration of questionnaires and most research into conflict management relies on survey data (Kabiri, Hughes, and Schweber, n.d.). The literature review that was discussed in chapter two of this thesis was acquired through existing literature. The present literature such as conference papers, articles, and web sites of professional



bodies, were thoroughly searched for information on sources and causes of conflict, its effects and their management. And to address the question of the research, appropriate information needed to be collected in a manner permitted under such research. The data needed for the study as explained by Hussey and Hussey (1997) will be either collected as a secondary data or primary data. The primary data as discussed by Hussey and Hussey (ibid) are data gathered from the field and secondary data collection relates to findings from literature. The study employed both primary and secondary data collections.

### **3.4 Scope of Study Area**

The Greater Accra Region has Accra as its capital city and it occupies an area of 3,245 square kilometers, accounting for 1.4 per cent of the total land size of Ghana , thus enabling the region to be the smallest in Ghana area, yet the most populated region in Ghana due to the kind of economic activities. The Greater Accra region has about 87.4% of its total population living in urban centers and is the second most populated region, after the Ashanti Region, which has more people in it, with a population of 4,010,054 in 2010, accounting for 16.3 per cent of Ghana's total population (Population and Housing Census, 2010)

It has 16 districts namely the Accra Metropolitan, Tema Metropolitan, Madina Municipal, Ada East, La Dade Kotopon Municipal, Ada West, La Nkwantanang, Ledzokuku-Krowor Municipal, Adentan Municipal, Kpone Katamanso. The rest include Ashaiman Municipal, Ga West Municipal, Ga Central Municipal, Ga East Municipal, Shai Osudoku, Ga South Municipal and Ningo Prampram ([www.ghana.gov.gh](http://www.ghana.gov.gh)).

### **3.5 Study Population**

The construction industry remained the main focus for data collection for this study having different stakeholders including consulting firms, clients and construction firms in Ghana and specifically in the Greater Accra Region. The targeted respondent included architects, designers, engineers, project managers and surveyors in the construction industry of Ghana in the study area, as well as clients. A stakeholder that was present on the projects was be considered to represent the firm that has randomly been sampled for the study. Data was collected from both completed projects and the on-going construction.

### **3.6 Sampling Technique Determination of Sample Size**

A population of 810 registered firms was obtained for the research. Using Kreijcie and Morgan Table as a guide a sample size from the known population was established. The firms were coded and the sample randomly picked. And for any of the company that was picked, one professional was made to represent the company. In 2014, a study conducted by Flick indicated that sampling determination should results into arriving at sample size. When the population is very large, it will be unusual to carry out a study to examine the whole population. However, it can be inferred that the population sample can be chosen in order to attain the objective of the study. A total of 263 respondents were considered for this study. These numbers signified that the sample size shows the population and were considered on the grounds that they influenced construction and were viewed as the same for the entire expert.

### **3.7 Design of Questionnaire**

Closed ended questions were designed for this study. One technique used in collecting or gathering data for the purposes of research is the use of questionnaire survey. Questionnaires are highly structure way of collecting precise information as a reply to highly directed questions.

Scholars such as Assaf (1995) emphasizes that a questionnaires have the advantage of generalizing the data while at the same time granting respondents the freedom to express their views. Questionnaire survey are considered appropriate because is less expensive. This method of collecting data is a frequently used method in the social science field (Easterby-Smith et. al., 2008). The questionnaire is structured in five levels, that is, the demography level, causes of conflict level, effects of conflict level, and management level. Majority of the questions are close-ended with few open-ended questions. The open-ended questions were to tease out challenges to conflict management, which may be person-specific and particular in nature to the participant. The close-ended questions are very constrictive asking participants to measure issues of conflict on a five Likert scale

### **3.7.1 The Design of Questionnaire**

The structure questionnaires were thoroughly check to confirm it's unambiguous, lucid and well understood. This was achieved by pilot testing the sample questionnaire with three projects initially in Accra` and desk-checked to correct all ambiguity and repetitions. This was to make sure that responses from participants were in accordance with the purpose of the study. The researcher before administering the questionnaire brief participants about the study purpose and expectations. Anonymity and confidentiality of participants were guaranteed by the nature of the survey.

### **3.8 Measurements**

The study questionnaires administered were to measure the objectives of the research. The first measure was the causes of conflicts. A number of causes were identify in literature and were thus divided into two, namely contract-related causes and general causes. The initial measure was causes of construction conflicts. A number of items were acknowledged in existing writings as

causes and these were set into two (2): General sources of conflicts and conflicts arising from the Contract documents. Respondents were tasked to show the degree to which the items outcome in conflicts on five (5) point Likert scale where 1= Not at all, 2 = occasionally, 3 = sometimes, 4 = usually and 5 = always. And the next measure was the consequence or outcome of project conflicts; a number of items were tabled and respondents were tasked to assess the items on five point Likert scale where 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = always. The penultimate measure, was conflict managing approach be it competition, collaboration, compromise, avoidance, and accommodation. Respondents were tasked to specify the method or style through which conflicts are to be handled on a Likert scale where 1 = almost never, 2 = occasionally, 3 = sometimes, 4 = usually and 5 = almost always. And lastly the questionnaire sought to tease out experience by allowing participants to freely surmise their view on conflict issues.

### **3.9 Data Analysis**

#### **3.9.1 Data Processing and Analysis**

The questionnaires were checked for corrections and further clarifications from respondents to examine their state of having correct responses or answers from respondents. The Statistical Package for Social Sciences (SPSS Version. 20) and Microsoft Excel will be used to process the quantitative data. The data will be processed and presented into statistical tables and charts for interpretation and discussion. Although a number of software thus exist for such research computations, the researcher understands in SPSS and Excel made the two techniques the researcher's favoured picks. The SPSS was used to perform Spearman correlation analysis while relative importance indices were performed using Microsoft Excel including the charts that are

generated to depict findings. The package was applied in generating descriptive statistics and Spearman correlation analysis.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.1 Introduction**

This chapter entails the results of the field data, and it has been presented largely in tabular format. This chapter further makes inferences from the presentation of data and discusses the results in relation to other works. The total respondents selected for data response for this study was 263.

#### **4.2 Respondents Background Data**

The background data of the respondents was analyzed. The results (Table 1) show that, the males dominate (97.3%) the females (2.7%). This presupposes that, in the construction industry, the majority of workers constitute the males. This fact coincides with GSS (2016) data or statistics on construction workers which states that the male and female construction workers constitute 94% and 6% respectively. The education level of the respondents suggests that the majority (46.8%) form those with 1<sup>st</sup> degree, and those who have attained 2<sup>nd</sup> degree forms the minority (23.2%), which follows those with HND and its equivalent (30%). This implies that majority of construction workers have attained tertiary level of education and have acquired certain knowledge background and skills and experience on the job. Based on the job classifications of the respondents, the majority (24.7%), followed by (23.6%), and slightly followed by (23.2%) correspond to engineers, contractors and project managers. This presumes that construction workers hugely cover these job classifications. However, clients (1.9%) remained the least of the respondents. This is a substantial fact because clients mostly perform background duties until the need arises for this his or her presence. The level of experiences gained by the respondents deemed it that those with “less than 1 year” working experience (2.7%) remained the minority.

This explains that probably, they are new or starters in the construction industry. However, those with “1-5 years” working experience constituted the majority (46.8%). Again, this suggests that a large number of construction workers have gained little experience in the construction. This was revealed from the field to be associated with those who possessed “1<sup>st</sup> Degrees” and “HND/Equivalents”. Nonetheless, there are those with massive (27.4%) of working experience corresponding to those with “16 years and above”. This infers that this class of workers, with their experience can successfully manage conflicts that occur during execution of construction projects.

**Table 4.1: Respondents Demographic Background**

<b>Characteristics (%)</b>	<b>Frequency</b>	<b>Percentage</b>
<b><i>Gender</i></b>		
Male	256	97.3
Female	7	2.7
<b><i>Education Level</i></b>		
HND/Equivalent	79	30
1 <sup>st</sup> Degree	123	46.8
2 <sup>nd</sup> Degree	61	23.2
<b><i>Classifications</i></b>		
Contractor	62	23.6
Architect	39	14.8
Client	5	1.9
Project Manager	61	23.2
Engineer	65	24.7
Quantity Surveyor	13	4.9
Clerk of works	18	6.8
<b><i>Years of experience</i></b>		
Less than 1 year	7	2.7
1 – 5 years	123	46.8
6 – 10 years	27	10.3
11 – 15 years	34	12.9
16 years and above	72	27.4

Source: Field survey (2018)

### **4.3 Identification of various forms of conflicts in the Ghanaian construction industry**

#### **4.3.1 Identification of General Sources of Conflict**

The study sought to identify the sources of conflicts that are perceived to be general in the construction industry. The questions for responses were based on Likert scale format which 1- Not at all, 2-Occasionally, 3-Sometimes, 4-Usually and 5-Always. Analysis of variance was conducted with factor analysis. The purpose was to reveal the underlying conflict issues that



occur during construction projects. The components of factor analysis that the analysis was based on include descriptive output of the conflict issues; their correlations, the KMO and Bartlett's Test; the Total Variance Explained; the scree plot graph and the component matrix table. Table 2 illustrates the descriptive statistic of the general conflict issues and their respective mean scores and standard deviations computed, and the average score (**3.210**) was calculated to enable ranking in the highest order. Table 2 further shows that "Inadequate site investigations" (2.992); "Inaccurate design information" (3.129); "Project participants reluctant to deal promptly with changes and unexpected conditions - price escalation index" (2.989); "Ambiguous and contradicting instructions" (2.692); "Different perception of work quality" (2.859); "Delays in payments or (such as mobilization, part payment)" (2.871), and "Withheld or non-payments or disputes over payment" (3.186) all recorded mean values below the standard mean score (3.210). This implies that these conflict issues remain the minor or less encountered general conflict issues, and those that recorded high mean scores above the standard mean value remained the major general conflict issues that are encountered during construction projects.

**Table 4.2: Descriptive Statistics of General Conflict Issues**

<i>General conflict issues</i>	<b>Analysis N</b>	<b>Mean</b>	<b>Standard deviation</b>
		<b>(3.210)</b>	
Inaccurate design information <b>(1)</b>	263	3.129	0.9155
Inadequate site investigations <b>(2)</b>	263	2.992	0.8515
Delayed client response (decisions) <b>(3)</b>	263	3.179	1.1797
Inadequate communication among project teams <b>(4)</b>	263	3.506	0.9405
Unrealistic time targets and durations <b>(5)</b>	263	3.349	1.1288
Excessive change orders <b>(6)</b>	263	3.403	0.9793
Project participants reluctant to deal promptly with changes and unexpected conditions - price escalation index. <b>(7)</b>	263	2.989	1.2796
Slow progress and performance by Contractor <b>(8)</b>	263	3.521	0.9839
Ambiguous and contradicting instructions <b>(9)</b>	263	2.692	0.9886
Different perception of work quality <b>(10)</b>	263	2.859	1.0297
Delays in payments or (such as mobilization, part payment) <b>(11)</b>	263	2.871	0.7299

The use of substandard materials for construction <b>(12)</b>	263	3.247	1.0646
Withheld or non-payments or disputes over payment <b>(13)</b>	263	3.186	1.1423
Contractor submits unrealistically low bid to win the project <b>(14)</b>	263	3.619	0.8693
Poorly developed project plan and scheduling. <b>(15)</b>	263	3.582	0.9571

Source: Field survey (2018)

#### 4.3.2 Correlation Matrix of General Conflict Issues

The correlation matrix of the general conflict issues is illustrated in Table 3. The various indicators or issue with labels (1-15) depict the corresponding factors or issues (**see Table 2**). Table 3 further illustrates that there is a strong correlations among each factor with a value of (1.000). Moreover, negative value means there is negative correlation among factors, whereas positive value means there is positive correlation among factors. For instance, there is a negative correlation of (-0.007) between “Delayed client response (decisions)” **(3)** and “Inaccurate design information” **(1)**. Again, there is a positive correlation of (0.364) among “Inadequate site investigations” **(2)** and “Unrealistic time targets and durations” **(5)**. The assumption of correlation matrix is that, the bigger the value of a factor nearer to (1.000), the smaller its impact on its corresponding factor. For instance, “Withheld or non-payments or disputes over payment **(13)**” recorded (0.246) against “Poorly developed project plan and scheduling **(15)**”. This implies that “Withheld or non-payments or disputes over payment **(13)**” has greater effects on “Poorly developed project plan and scheduling **(15)**” during construction of projects when these two conflict issues are encountered.

**Table 4.3: Correlation Matrix of General Conflict Issues**

	1	2	3	4	5	6	7	8	7	10	11	12	13	14	15
1	1	0.109	-0.007	0.03	0.2	0.027	-0.09	-0.007	-0.141	0.133	-0.112	0.194	0.006	0.12	0.018
2	0.109	1	-0.154	0.029	0.364	0	-0.056	-0.086	-0.103	-0.275	0.14	-0.213	-0.073	0.017	-0.041
3	-0.007	-0.154	1	0.152	0.111	0.142	-0.095	0.225	-0.077	-0.146	-0.173	0.004	0.151	-0.172	0.05
4	0.03	0.029	0.152	1	0.102	0.047	0.122	-0.051	-0.197	-0.088	-0.071	-0.015	0.079	-0.077	0.206
5	0.2	0.364	0.111	0.102	1	0.072	0.019	-0.123	-0.06	-0.109	-0.042	-0.148	0.103	-0.055	0.026
6	0.027	0	0.142	0.047	0.072	1	-0.03	-0.064	-0.171	-0.182	-0.151	-0.239	-0.078	-0.223	0.005
7	-0.09	-0.056	-0.095	0.122	0.019	-0.03	1	-0.062	0.217	0.158	0.092	-0.118	-0.147	0.058	0.002
8	-0.007	-0.086	0.225	-0.051	-0.123	-0.064	-0.062	1	0.064	0.167	0.147	0.139	0.137	0.076	-0.043
9	-0.141	-0.103	-0.077	-0.197	-0.06	-0.171	0.217	0.064	1	0.223	0.156	0.312	0.095	0.214	0.146
10	0.133	-0.275	-0.146	-0.088	-0.109	-0.182	0.158	0.167	0.223	1	-0.014	0.22	-0.033	0.23	0.06
11	-0.112	0.14	-0.173	-0.071	-0.042	-0.151	0.092	0.147	0.156	-0.014	1	0.017	0.111	0.223	0.119
12	0.194	-0.213	0.004	-0.015	-0.148	-0.239	-0.118	0.139	0.312	0.22	0.017	1	0.238	0.094	0.151
13	0.006	-0.073	0.151	0.079	0.103	-0.078	-0.147	0.137	0.095	-0.033	0.111	0.238	1	0.095	0.246
14	0.12	0.017	-0.172	-0.077	-0.055	-0.223	0.058	0.076	0.214	0.23	0.223	0.094	0.095	1	0.203
15	0.018	-0.041	0.05	0.206	0.026	0.005	0.002	-0.043	0.146	0.06	0.119	0.151	0.246	0.203	1

Source: Field survey (2018)

### 4.3.3 KMO and Bartlett's Test

The significance of the conflict issues are shown with the test of Bartlett (Table 4). The significant value (0.000) means that there is normal descriptive assessment among factors. This is because these conflict issues are statistically skewed, that makes the conflict issues not to be considered for options. The Chi-Square value of 491.95 was obtained.

**Table 4.4: KMO and Bartlett's Test**

	KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.532
Bartlett's Test of Sphericity	Approx. Chi-Square	491.95
	df	105
	Sig.	0.000

Source: Field survey (2018)

### 4.3.4 Total Variance Explained

Table 4 indicates that 6 components (general conflict issues) were extracted out of the 15 factors. These can be seen under the 'Extraction sums of squared loading'. This means that these factors obtained total values higher than 1 during the extraction stage of the analysis and they met the standard, but all the factors were assessed under "Initial Eigen values". This presumes that those factors with lower values did not make the cut-off criterion. The variability sum or total of factors counted by the respective scales of the summary factors were indicated under the "% of variance" column. Therefore, the highest value (15.199) obtained was recorded by component 1, and the lowest was recorded as 7.05 for component 6.

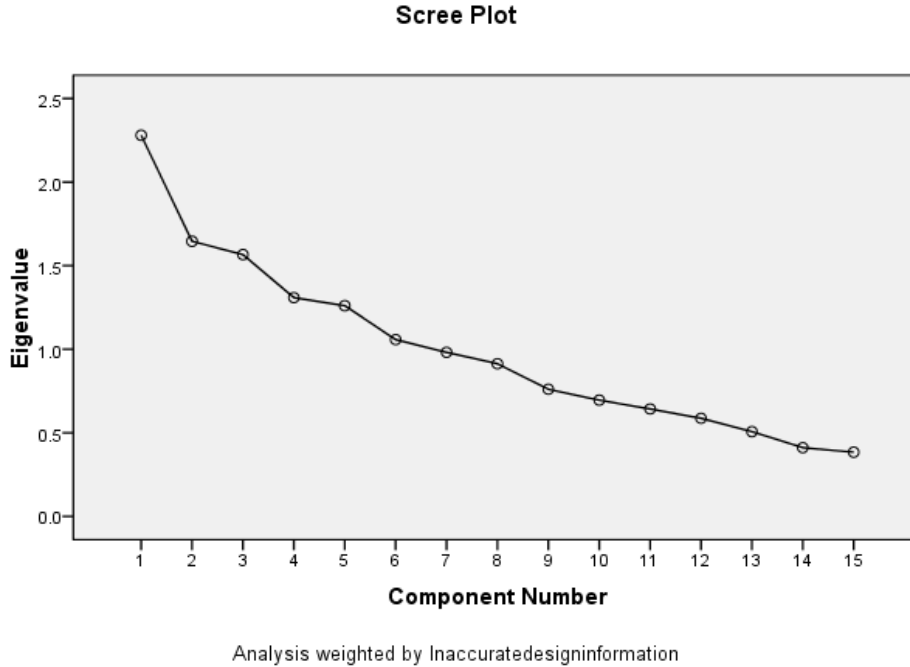
**Table 4.5: Total Variance Explained**

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Components	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.28	15.199	15.199	2.28	15.199	15.199
2	1.645	10.97	26.169	1.645	10.97	26.169
3	1.566	10.44	36.609	1.566	10.44	36.609
4	1.309	8.726	45.335	1.309	8.726	45.335
5	1.26	8.403	53.738	1.26	8.403	53.738
6	1.057	7.05	60.788	1.057	7.05	60.788
7	0.981	6.543	67.331			
8	0.913	6.087	73.418			
9	0.761	5.07	78.488			
10	0.695	4.636	83.125			
11	0.643	4.284	87.409			
12	0.587	3.913	91.322			
13	0.507	3.378	94.7			
14	0.411	2.74	97.44			
15	0.384	2.56	100			

Source: Field survey (2018)

#### 4.3.5 Scree Plot

The plotting of 15 components showing Eigen value on the Y-axis against Component Number on the X-axis is illustrated in the scree plot, with the 6 extracted factors plotted against the Eigen value.



#### 4.3.6 Component/Rotated Matrix

Component or rotated matrix of the 6 components extracted is indicated in (Table 6). The assumption is that, the bigger a value in a column, the extracted corresponding factors. Therefore, “Different perception of work quality” with (0.618) remained the first general conflict issue that encounter construction projects. Column 2 with (0.665) as the highest value corresponds to “Inadequate communication among project teams”; column 3 revealed “Excessive change orders” as the extracted factor with (0.596). Moreover, “The use of substandard materials for construction” with (0.376) was extracted from column 4. Additionally, “Slow progress and performance by Contractor” with (0.564) remained the extracted factor, and column 6 with (0.627) correspond to “Ambiguous and contradicting instructions” as the identified general conflict issue that are encountered during construction projects.

**Table 4.6: Component/Rotated Matrix**

<b>Component Matrix<sup>a</sup></b>						
	Component					
	1	2	3	4	5	6
Inaccurate design information	-.003	.203	.309	-.735	.213	.141
Inadequate site investigations	-.358	-.277	.646	-.087	-.243	.119
Delayed client response (decisions)	-.196	<b>.665</b>	-.170	.189	-.035	.360
Inadequate communication among project teams	-.205	.351	.221	.279	.500	.018
Unrealistic time targets and durations	-.343	.097	<b>.596</b>	-.136	.118	.314
Excessive change orders	-.488	.148	-.147	.109	.138	.040
Project participants reluctant to deal promptly with changes and unexpected conditions - price escalation index.	.142	-.381	-.008	.356	<b>.564</b>	.398
Slow progress and performance by Contractor	.307	.311	-.161	.043	-.399	<b>.627</b>
Ambiguous and contradicting instructions	<b>.618</b>	-.135	.032	.201	.060	.039
Different perception of work quality	.576	-.078	-.178	-.307	.347	.264
Delays in payments or (such as mobilization, part payment)	.332	-.254	.378	<b>.376</b>	-.372	.121
The use of substandard materials for construction	.587	.374	-.015	-.276	.004	-.216
Withheld or non-payments or disputes over payment	.266	.566	.317	.185	-.203	-.131
Contractor submits unrealistically low bid to win the project	.530	-.162	.367	-.083	.023	.050
Poorly developed project plan and scheduling.	.284	.337	.401	.310	.302	-.300
Inaccurate design information	Extraction Method: Principal Component Analysis.					
a. 6 components extracted.						

Source: Field survey (2018)

#### 4.4 Identification of various forms of conflicts in the Ghanaian construction industry

##### 4.4.1 Identification of Contract Sources of Conflict

The study sought to identify the contract sources of conflict that are encountered during construction projects. The responses to the questions asked under this section followed the Likert scale format of 1-Not at all, 2-Occasionally, 3-Sometimes, 4-Usually and 5-Always. Factor analysis was performed as analysis of variance to extract or identify peculiar factors that are linked to create contract conflict issues in the construction projects. The descriptive output of the factors is illustrated in (Table 7) with mean scores and its average (3.268), as well as their respective standard deviation scores. The factors or components that obtained above the mean standard value (3.268) include: “Contract agreement unfair and lob-sided in favour of the client” (3.460); “Mismatched project risk allocation between stakeholders” (3.460); “Unassigned risks associated with the project” (3.559); “Contract does not fully address materials requirement” (3.567), and “Contract is ambiguous and unfeasible” (3.365).

**Table 4.7: Descriptive Statistics of Contract Conflict Issues**

<i>General conflict issues</i>	<b>Analysis N</b>	<b>Mean</b>	<b>Standard deviation</b>
		<b>(3.268)</b>	
Inadequate construction time or duration <b>(1)</b>	263	2.829	0.827
Changes of contract due to site and environmental condition <b>(2)</b>	263	2.913	0.498
Contract inapplicable to the type of project at hand <b>(3)</b>	263	3.023	0.720
Contract agreement unfair and lob-sided in favour of the client <b>(4)</b>	263	3.429	0.737
Mismatched project risk allocation between stakeholders <b>(5)</b>	263	3.460	0.859
Unassigned risks associated with the project <b>(6)</b>	263	3.559	0.656
Contract does not fully address materials requirement <b>(7)</b>	263	3.567	0.831
Contract is ambiguous and unfeasible <b>(8)</b>	263	3.365	0.971

Source: Field survey (2018)



#### 4.4.2 Correlation Matrix of Contract Conflict Issues

The correlation matrix of the general conflict issues is illustrated in Table 8. The various indicators or issue with labels (1-8) depict the corresponding factors or issues (see Table 7). Table 3 further illustrates that there is a strong correlation among each factor with a value of (1.000). Moreover, negative value means there is negative correlation among factors, whereas positive value means there is positive correlation among factors. For instance, there is a negative correlation (-0.022) between “Contract agreement unfair and lob-sided in favour of the client (4)” and “Changes of contract due to site and environmental condition (2)”. This suggests that “Contract agreement unfair and lob-sided in favour of the client” have greater influence on “Changes of contract due to site and environmental condition”. Likewise, there is a positive correlation (0.02) among “Inadequate construction time or duration (1)” and “Mismatched project risk allocation between stakeholders (5)”. This again implies that “Inadequate construction time or duration” greatly affects “Mismatched project risk allocation between stakeholders” when the two factors are encountered on the construction projects.

**Table 4.8: Correlation Matrix of Contract Conflict Issues**

Correlation Matrix(a)								
	1	2	3	4	5	6	7	8
1	<b>1.000</b>	0.204	0.148	0.065	0.02	-0.14	0.091	-0.036
2	0.204	<b>1.000</b>	0.059	-0.022	0.094	-0.153	-0.102	-0.107
3	0.148	0.059	<b>1.000</b>	-0.062	-0.122	-0.164	-0.143	0.048
4	0.065	-0.022	-0.062	<b>1.000</b>	0.603	0.362	0.57	0.015
5	0.02	0.094	-0.122	0.603	<b>1.000</b>	0.321	0.625	0
6	-0.14	-0.153	-0.164	0.362	0.321	<b>1.000</b>	0.527	0.044
7	0.091	-0.102	-0.143	0.57	0.625	0.527	<b>1.000</b>	0.052
8	-0.036	-0.107	0.048	0.015	0	0.044	0.052	<b>1.000</b>

Source: Field survey (2018)

#### 4.4.3 KMO and Bartlett's Test

The Bartlett test shows the significance of the factors, as well as a Chi-Square value of 423.507. The value of significance (0.000) presumes that the factors are by descriptive not normally distributive. The implication is that, these factors are not normally considered for options because they are statistically skewed.

**Table 4.9: KMO and Bartlett's Test**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.687
Bartlett's Test of Sphericity	Approx. Chi-Square	423.507
	df	28
	Sig.	.000

Source: Field survey (2018)

#### 4.4.4 Total Variance Explained

The total variance explained (Table 10) shows that 3 factors were extracted under the “Rotation Sums of Squared Loadings” out of 8 under “Initial Eigenvalues”. The values exceeding (1) were extracted after the extracted process with the highest value (2.558) and lowest (1.083).

**Table 4.10: Total Variance Explained.**

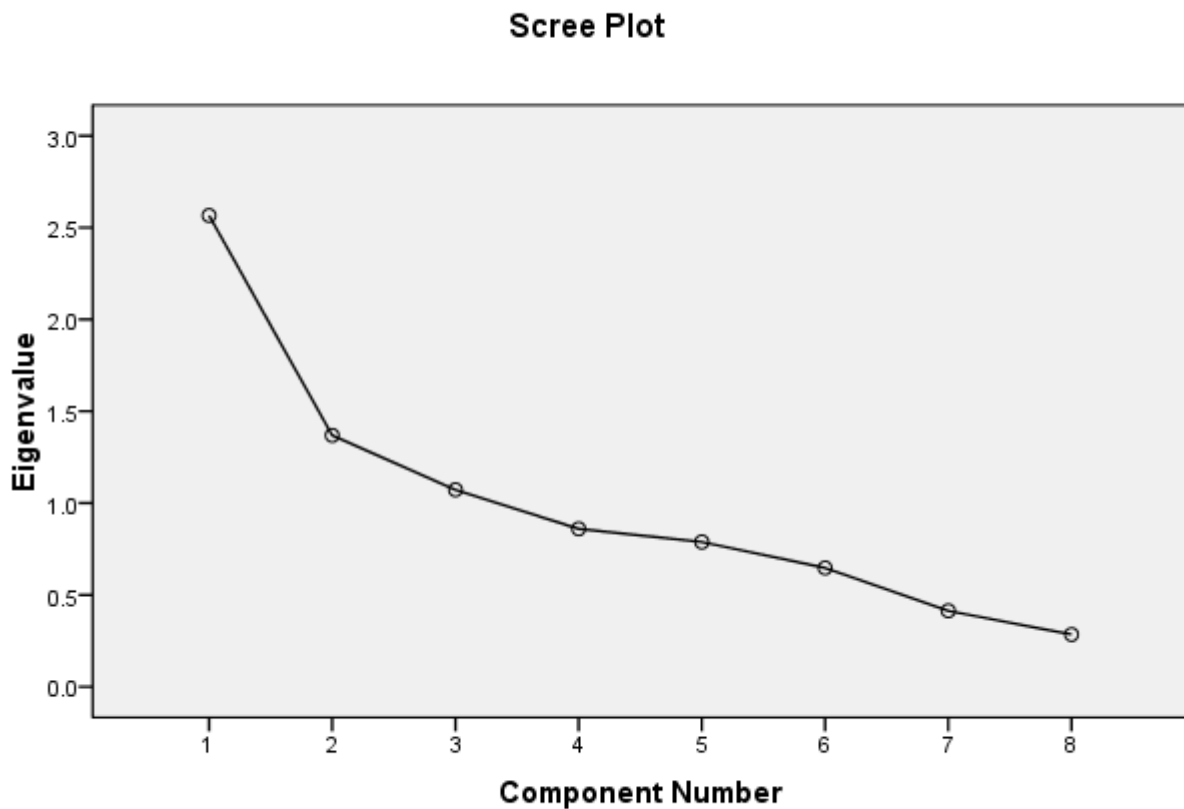
Total Variance Explained				
Component	Initial Eigenvalues			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total
1	2.566	32.075	32.075	2.558
2	1.369	17.109	49.183	1.395
3	1.072	13.404	62.587	1.083
4	.860	10.747	73.334	
5	.788	9.852	83.187	
6	.647	8.087	91.274	
7	.413	5.168	96.442	
8	.285	3.558	100.000	

Extraction Method: Principal Component Analysis.	
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Source: Field survey (2018)

#### 4.4.5 Scree Plot

The plotting of 8 components showing Eigen value on the Y-axis against Component Number on the X-axis is illustrated in the scree plot, with the 3 extracted factors plotted against the Eigen value.



Analysis weighted by Inaccuratedesigninformation

#### 4.4.6 Component/Rotated Matrix

The scenario under this section is based on the assessment of the highest value under a column and its respective factors. Table 11 indicates that “Contract does not fully address materials requirement” with (0.342) was extracted under column 1. The rest of the columns revealed that (0.543) and (0.734) were extracted for “Inadequate construction time or duration” and “Contract is ambiguous and unfeasible” respectively.

**Table 4.11: Component/Rotated Matrix**

<b>Component Score Coefficient Matrix</b>			
Contract Conflict Issues	Component		
	1	2	3
Inadequate construction time or duration	.043	<b>.543</b>	.105
Changes of contract due to site and environmental condition	-.007	.462	-.330
Contract inapplicable to the type of project at hand	-.062	.356	.506
Contract agreement unfair and lob-sided in favour of the client	.320	.089	.029
Mismatched project risk allocation between stakeholders	.324	.105	-.091
Unassigned risks associated with the project	.247	-.255	.019
Contract does not fully address materials requirement	<b>.342</b>	-.005	.051
Contract is ambiguous and unfeasible	.025	-.080	<b>.734</b>
Extraction Method: Principal Component Analysis.			
Rotation Method: Oblimin with Kaiser Normalization.			

Source: Field survey (2018)

#### 4.5 The Causes of Conflict Types Determination

The study sought to determine the types of conflicts that directly affect construction projects. The questions for responses were asked in Likert scale format, 1-Not at all, 2-Occasionally, 3-Sometimes, 4-Usually and 5-Always. Moreover, the average mean score, as well as the range score, standard deviation and relative importance index (RII) were computed for the factors. The table (Table 12) shows that a standard mean score (3.210) and (3.268) as well their respective standard range score (3.9) and (3.1) were calculated for “General conflict” and “Contract

conflict”. The assumption is based on ranking the factors to determine which one was more influential. The ranking was based on firstly screening for the various factors that recorded higher respective mean and range scores, and obtained higher RII score index as well under the two categories of conflicts (i.e. general and contract). Secondly, a ranking was performed for the two conflict categories to determine which one is best encountered during construction projects. Under the “General conflict”, “Unrealistic time targets and durations” was ranked 1<sup>st</sup> with (3.349) mean score. The 2<sup>nd</sup> ranked factor was “The use of substandard materials for construction” with (3.247) as a mean score. “Excessive change orders” with (3.403) was ranked 3<sup>rd</sup>. The 4<sup>th</sup> and 5<sup>th</sup> ranked factors were “Slow progress and performance by Contractor” and “Poorly developed project plan and scheduling” respectively with corresponding mean value of 4.0 each. This supposes that these factors were identified to be encountered the more during construction projects. However, the least ranked factors are equally encountered on construction projects. On the other hand, “Contract is ambiguous and unfeasible” was ranked 1<sup>st</sup> with (3.365) mean score and the 2<sup>nd</sup> ranked factor was “Mismatched project risk allocation between stakeholders” with mean score of (3.460). Therefore, “Contract conflict” was ranked 1<sup>st</sup> with (3.268) above the standard (3.229), and “General conflict” ranked 2<sup>nd</sup> with (3.210) below the standard (3.229).

**Table 4.12: Causes of Conflict Types Determination**

	Analysis N	Mean (3.229)	Range (3.7)	Standard deviation	RII	Ranking
<i>General Conflict</i>		(3.210)	(3.9)			(2 <sup>nd</sup> )
Inaccurate design information	263	3.129	4.0	0.9155	0.838	10 <sup>th</sup>
Inadequate site investigations	263	2.992	4.0	0.8515	0.725	11 <sup>th</sup>

Delayed client response (decisions)	263	3.179	4.0	1.1797	1.392	9 <sup>th</sup>
Inadequate communication among project teams	263	3.506	4.0	0.9405	0.885	6 <sup>th</sup>
Unrealistic time targets and durations	263	3.349	4.0	1.1288	1.274	1 <sup>st</sup>
Excessive change orders	263	3.403	3.0	0.9793	0.959	3 <sup>rd</sup>
Project participants reluctant to deal promptly with changes and unexpected conditions - price escalation index.	263	2.989	4.0	1.2796	1.637	12 <sup>th</sup>
Slow progress and performance by Contractor	263	3.521	4.0	0.9839	0.968	4 <sup>th</sup>
Ambiguous and contradicting instructions	263	2.692	4.0	0.9886	0.977	15 <sup>th</sup>
Different perception of work quality	263	2.859	4.0	1.0297	1.060	14 <sup>th</sup>
Delays in payments or (such as mobilization, part payment)	263	2.871	3.0	0.7299	0.533	13 <sup>th</sup>
The use of substandard materials for construction	263	3.247	4.0	1.0646	1.133	2 <sup>nd</sup>
Withheld or non-payments or disputes over payment	263	3.186	4.0	1.1423	1.305	8 <sup>th</sup>
Contractor submits unrealistically low bid to win the project	263	3.619	4.0	0.8693	0.756	7 <sup>th</sup>
Poorly developed project plan and scheduling.	263	3.582	4.0	0.9571	0.916	5 <sup>th</sup>
<b><i>Contract conflicts</i></b>		<b>(3.268)</b>	<b>(3.1)</b>			<b>(1<sup>st</sup>)</b>
Inadequate construction time or duration	263	2.829	4.0	0.827	0.684	8 <sup>th</sup>
Changes of contract due to site and environmental condition	263	2.913	2.0	0.498	0.248	7 <sup>th</sup>
Contract inapplicable to the type of project at hand	263	3.023	4.0	0.720	0.519	6 <sup>th</sup>
Contract agreement unfair and lob-sided in favour of the client	263	3.429	3.0	0.737	0.544	4 <sup>th</sup>
Mismatched project risk allocation between stakeholders	263	3.460	3.0	0.859	0.738	2 <sup>nd</sup>
Unassigned risks associated with the project	263	3.559	3.0	0.656	0.431	5 <sup>th</sup>
Contract does not fully address materials requirement	263	3.567	3.0	0.831	0.690	3 <sup>rd</sup>

Contract is ambiguous and unfeasible	263	3.365	3.0	0.971	0.943	1 <sup>st</sup>
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Source: Field survey (2018)

#### 4.6 Effects of Conflicts on Projects

The study sought to assess the effects of conflicts that hinder construction projects. Questions that pertain to this section were based on Likert scale format, 1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5-Always. Responses were analyzed with ANOVA one-way. Table 13 shows the significance, mean square, sums of squares, and difference (df) among group factors. The factor with significant value (0.000) implies that there is a strong relation among the groups of compared factors. Therefore, from Table 13, “Rework on the project”; “Loss or reduction of quality”; “Strains business relations between constructions project teams”; “Delays in project completion”; “Long standing litigation in court”; and “Wasted funds on incomplete project” all obtained a significant score of (0.000). This infers that there is a relationship existing among these factors.

**Table 4.13: ANOVA Statistics for Effects of Conflicts on Projects**

ANOVA						
<i>Effect of conflict on projects</i>		Sum of Squares	df	Mean Square	F	Sig.
Rework on the project	Between Groups	42.870	4	10.718	21.925	.000
	Within Groups	126.119	258	.489		
	Total	168.989	262			
Reduces productivity at site	Between Groups	11.969	4	2.992	4.761	.001
	Within Groups	162.145	258	.628		
	Total	174.114	262			
Diversion of resource in respect of management time allocated to resolving conflict	Between Groups	3.439	4	.860	2.397	.051
	Within Groups	92.516	258	.359		
	Total	95.954	262			
Damaged reputation of project team	Between Groups	5.837	4	1.459	1.828	.124
	Within Groups	205.904	258	.798		

	Total	211.741	262			
Delays and inefficiencies in construction	Between Groups	6.165	4	1.541	4.130	.003
	Within Groups	96.284	258	.373		
	Total	102.449	262			
Loss or reduction of quality	Between Groups	42.947	4	10.737	8.946	.000
	Within Groups	309.654	258	1.200		
	Total	352.601	262			
Strains business relations between construction project teams	Between Groups	39.834	4	9.958	12.424	.000
	Within Groups	206.805	258	.802		
	Total	246.639	262			
Delays in project completion	Between Groups	22.318	4	5.580	5.399	.000
	Within Groups	266.617	258	1.033		
	Total	288.935	262			
Termination of contract	Between Groups	10.555	4	2.639	3.407	.010
	Within Groups	199.802	258	.774		
	Total	210.357	262			
Cost of overrun	Between Groups	9.077	4	2.269	4.179	.003
	Within Groups	140.102	258	.543		
	Total	149.179	262			
Long standing litigation in court	Between Groups	7.366	4	1.841	9.662	.000
	Within Groups	49.174	258	.191		
	Total	56.540	262			
Wasted funds on incomplete project	Between Groups	17.187	4	4.297	9.334	.000
	Within Groups	118.767	258	.460		
	Total	135.954	262			

Source: Field Survey (2018)

#### 4.7 Conflict Management styles in Solving Conflict on Construction Projects

The study sought to determine the procedures that enable conflict issues to be resolved during construction projects. The responses to the questions that was asked under this section was based on Likert scale format of 1-almost never, 2-occasionally, 3-sometime, 4-usually, 5-almost always. The summaries of the responses were computed for the mean score, range score, standard deviation, and relative importance index (RII). Factors within each category were first ranked based on their respective standard mean and range scores. Finally, the ranking of the laid down



procedures were conducted (Table 14), as well as the Kendall's Coefficient of Concordance (W) (Table 15) which shows the significance of the procedures (0.000). The ultimate concern is the ranking of the determinants of laid down procedures based on the ranking of the categories. It was revealed that “Compromise” was ranked 1<sup>st</sup> with mean score of (3.99) above the standard (3.06). The 2<sup>nd</sup> ranked laid down procedure was “Collaborating” with (3.68) also above the standard mean score. “Accommodating” with mean score of (3.66) was ranked 3<sup>rd</sup> to “Avoiding” ranked 4<sup>th</sup> with recorded a mean score of (1.93) far below the standard (3.06). The last (5<sup>th</sup>) ranked laid down procedure was “Forcing” which also obtained average mean score (1.83) far below the standard (3.06)

**Table 4.14: Conflict Management styles in Solving Conflict on Construction Projects**

<b>Determination of Laid Down Procedures in Solving Conflict on Construction Projects</b>	Total	Mean <b>(3.06)</b>	S.D	Range <b>(3.12)</b>	RII	Ranking
<b><i>Forcing</i></b>		<b>(1.83)</b>		<b>(3.8)</b>		<b>5<sup>th</sup></b>
I push my own point of view at the expense of other views	263	3.13	0.916	4	0.838	1 <sup>st</sup>
I search for gains	263	1.67	1.049	4	1.101	2 <sup>nd</sup>
I fight for a good outcome for myself	263	1.41	0.750	3	0.563	5 <sup>th</sup>
I do everything to win	263	1.49	1.132	4	1.281	3 <sup>rd</sup>
I sometimes use my power to win a competitive situation	263	1.46	1.274	4	1.623	4 <sup>th</sup>
<b><i>Collaborating</i></b>		<b>(3.68)</b>		<b>(2.0)</b>		<b>2<sup>nd</sup></b>
I allow peace to reign, so give in to the team members decision	263	1.40	0.964	3	0.929	5 <sup>th</sup>
I yield to my team’s decision on the project at the expense of goal	263	4.61	0.792	2	0.628	2 <sup>nd</sup>
I agree that I may be wrong	263	3.71	0.659	2	0.435	4 <sup>th</sup>
I sacrifice my concern to satisfy my team members	263	4.84	0.543	2	0.295	1 <sup>st</sup>
Jointly work with others to come up with consensual approach to work	263	3.83	0.381	1	0.145	3 <sup>rd</sup>
<b><i>Compromise</i></b>		<b>(3.99)</b>		<b>(2.67)</b>		<b>1<sup>st</sup></b>
I try to realise a middle-of-the-road	263	4.84	0.543	2	0.295	1 <sup>st</sup>

solution						
I try to ensure that the interests of both parties are taken-on board in solving the problem	263	3.75	0.648	2	0.42	4 <sup>th</sup>
Conflict is decided by a give-take agreement	263	4.14	0.348	1	0.121	2 <sup>nd</sup>
I strive whenever possible towards fifty-fifty compromise	263	3.69	0.775	4	0.6	6 <sup>th</sup>
I emphasise that we have to find a compromise solution	263	3.73	0.881	4	0.776	5 <sup>th</sup>
Solutions are based on interests and not position, so that no single individual benefits more than others – splitting the difference	263	3.83	0.588	3	0.346	3 <sup>rd</sup>
<b>Avoiding</b>		<b>(1.93)</b>		<b>(3.6)</b>		<b>4<sup>th</sup></b>
I ignore the issue when the cost of confronting it far outweighs the benefits	263	1.56	0.967	4	0.934	5 <sup>th</sup>
I ignore the problem when it can lead to destruction	263	1.69	1.139	4	1.296	3 <sup>rd</sup>
I ignore the situation in order to protect an established relationship	263	1.65	0.933	3	0.871	4 <sup>th</sup>
I ignore the issue when it is tangential or symptomatic of other issues	263	2.36	0.811	3	0.658	2 <sup>nd</sup>
No adopted position is taken when solving a problem	263	2.38	0.786	4	0.617	1 <sup>st</sup>
<b>Accommodating</b>		<b>(3.66)</b>		<b>(3.6)</b>		<b>3<sup>rd</sup></b>
I submit to outcomes when it is even against my concern	263	3.76	0.821	3	0.673	2 <sup>nd</sup>
Concerns or desires of other individuals are of much concern or prioritized	263	2.97	0.667	3	0.445	5 <sup>th</sup>
Proposals and opinions of other individuals are well considered when deciding on a problem	263	4.24	1.199	4	1.437	1 <sup>st</sup>
I excuse others to forestall peace	263	3.58	0.941	4	0.885	4 <sup>th</sup>
I take responsibility when there is a problem	263	3.76	0.658	4	0.433	3 <sup>rd</sup>

Source: Field survey (2018)

**Table 4.15: Test of concordance for Determination of Laid down Procedures in Solving Conflict on Construction Projects**

N	263
Kendall's W <sup>b</sup>	0.962
Chi-Square	112.024
Df	50
Asymp. Sig.	0.000
a. Kendall's Coefficient of Concordance	

Source: Field survey (2018)

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter briefly summarizes the research findings; provide conclusion based on the findings and recommends on the study.

#### 5.2 Summary of Findings

The demographic background of the respondents revealed that the male construction workers (97.3%) superseded the female construction counterparts with (2.7%). The education levels of the respondents revealed that those with 1<sup>st</sup> degree remained the majority (46.8%), and followed by those with 2<sup>nd</sup> degree (23.2%). It was revealed that majority (24.7%) of construction workers constituted “Engineers”, slightly followed by “Project managers” with (23.2%) and “Clients” with (1.9%) constituted the least category of construction workers. The years of working experience revealed that majority (46.8%) were those who have worked for “1-5years”, followed by those with (16+years) of working experience recording (27.4%), and those with “less than 1year” of working experience obtained (2.7%) as the least category of workers.

The identification of the various forms of conflicts that are encountered during construction project was performed with factor analysis. The analysis revealed that for “*General conflict*” issues, 5 out of 13 factors were extracted. These included: “Inadequate communication among project teams” obtained a highest value of (0.665); “Excessive change orders” (0.596); “The use of substandard materials for construction” (0.376); “Slow progress and performance by Contractor” (0.564); and “Ambiguous and contradicting instructions” (0.627). On the other side, the “*Contact conflict*” revealed that 3 out of 8 factors were extracted after the analysis. These

were “Contract does not fully address materials requirement” with (0.342); “Inadequate construction time or duration” (0.543) and “Contract is ambiguous and unfeasible” (0.734).

The causes of the conflict issues that hinder construction projects were based on ranking of the factors. It was revealed that under the “General conflict”, “Unrealistic time targets and durations” was ranked 1st with (3.349) mean score. The 2<sup>nd</sup> ranked factor was “The use of substandard materials for construction” with (3.247). “Excessive change orders” with (3.403) was ranked 3rd. The 4th and 5th ranked factors were “Slow progress and performance by Contractor” and “Poorly developed project plan and scheduling” respectively with corresponding mean value of 4.0 each. On the other hand, “Contract is ambiguous and unfeasible” was ranked 1st with (3.365) mean score and the 2<sup>nd</sup> ranked factor was “Mismatched project risk allocation between stakeholders” (3.460). Therefore, “Contract conflict” was ranked 1st with (3.268) above the standard (3.229), and “General conflict” ranked 2nd with (3.210) below the standard (3.229).

The assessment of conflict management styles were performed based on ANOVA by one-way as analysis of variance. It was revealed that “Rework on the project”; “Loss or reduction of quality”; “Strains business relations between constructions project teams”; “Delays in project completion”; “Long standing litigation in court”; and “Wasted funds on incomplete project” all obtained a significant score of (0.000).

The laid down procedures for resolving conflict issues regarding construction projects were based on ranking of mean scores, in relation to the RII score index. It was revealed that “Compromise” was ranked 1<sup>st</sup> with mean score of (3.99) above the standard (3.06). The 2<sup>nd</sup> ranked laid down procedure was “Collaborating” with (3.68) also above the standard mean score. “Accommodating” with mean score of (3.66) was ranked 3<sup>rd</sup> to “Avoiding” ranked 4<sup>th</sup> with

recorded a mean score of (1.93) far below the standard (3.06). The last (5<sup>th</sup>) ranked laid down procedure was “Forcing” which also obtained average mean score (1.83) far below the standard (3.06).

### **5.3 Conclusion**

The study revealed that on the basis of “General conflicts”, the identified conflict issues included: “Inadequate communication among project teams”; “Excessive change orders”; “The use of substandard materials for construction”; “Slow progress and performance by Contractor” and “Ambiguous and contradicting instructions” are the major sources of conflicts in the construction industry. On “*Contact conflict*”, the study revealed that “Contract does not fully address materials requirement”; “Inadequate construction time or duration” and “Contract is ambiguous and unfeasible” were identified to be encountered during construction projects.

The study further revealed that under the “*General conflict*”, “Unrealistic time targets and durations”; “The use of substandard materials for construction”; “Excessive change orders”; “Slow progress and performance by Contractor” and “Poorly developed project plan and scheduling” were determined as the causes that hinder construction projects. On the other hand, “Contract is ambiguous and unfeasible” and “Mismatched project risk allocation between stakeholders” were also determined as cause of conflict issues under “*Contract conflict*”. Therefore, “Contract conflict” issues were revealed to be highly associated with construction projects than “General conflict”.

Moreover, the study revealed that “Rework on the project”; “Loss or reduction of quality”; “Strains business relations between constructions project teams”; “Delays in project completion”; “Long standing litigation in court”; and “Wasted funds on incomplete project”

were identified as the effects of conflicts on construction projects based on the assessment of the conflict management styles that result into conflicts.

The study revealed that “Compromise”, “Collaborating”, “Accommodating”, “Avoiding” and “Forcing” in the order of importance were determined as the laid down procedures for resolving conflict issues on construction projects.

## **5.4 Recommendations**

The study recommends that:

1. Consultants should ensure that a clear line of communication is establish between all parties. This will enhance the flow of information to all stakeholders and will also allow all issues raised on the project to be fully addressed by the respective team members. Use of modern telecommunication technology should be used encouraged in addressing gaps in the medium of communication. Proper documentation of project reports such as progress, status reports and site meeting minutes should be followed to avoid conflicts that may arise from contradictory instructions given by team members.
2. Detailed designs should be checked by both the consultant and contractor to reduce the excessive change orders during the construction stages of the project. This will help in avoiding cost over runs and delay in project completion. Detailed specification of work and materials should be stated clearly and completely in the bill of quantities. Contract should be clear and specific and should address all the needs of the project.
3. Contractors have to ensure that, they present detailed program of works and schedule of activities to enhance tracking of the progress of works. Furthermore, they are to ensure the use of skilled labour and professionals to achieve quality work and timely completion of work.

4. Supervision of works of the contractor should be taken seriously at every stage of the project to avoid remedial works. This is because remedial works eventually reduces the quality, project completion time delays.
5. Acceptable conflict management practices should be adhered to in resolving conflicts. Conflict contingency plans should be part of the contract, detailing all the available procedures in addressing conflicts. Conflict should not be left unresolved, this will prevent strains in business relations and delays in completion of projects.



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## APPENDICE

### APPENDIX A: Research Questions

#### *An Assessment of Conflict Managing Styles in Construction Projects in Ghana (A case study of Greater Accra Region)*

These questions are designed to gather information purposely for academic exercise. Please do spend part of your time and answer the questions as candid as possible. You may answer the following questions by ticking (✓) in the relevant block or writing your answer in the space provided. You are assured of confidentiality and anonymity of personality.

PART 1: Background Data: Please tick the appropriate box

1. In which of the classification below are you?

- |          |                          |                          |                          |  |
|----------|--------------------------|--------------------------|--------------------------|--|
|          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
|          | Contractor               | Architect                | Client                   | Project Manager <input type="checkbox"/> |
| Engineer | <input type="checkbox"/> | Quantity Surveyor        | <input type="checkbox"/> | clerk of works <input type="checkbox"/>  |
| Other    | <input type="checkbox"/> |                          |                          |  |

specify.....

2. Your gender? Male ☐ Female ☐

3. What is your highest level of education?

O'Level/A'level/SHS ☐ HND/Equivalents ☐ 1<sup>st</sup> Degree ☐ 2nd degree ☐  
Other, please specify .....

4. How long have you been working in the construction industry?

Less than 1 year ☐ 1 – 5 years ☐ 6 – 10 years ☐ 11 – 15 years ☐ 16 years above ☐



### Explanation of Motivation

Conflict occurs when one party perceives that its interests are being opposed or negatively affected by another party. This result in incompatibility, disagreement or dissonance among construction projects teams. You are to help assess the following statements and how they occur, affect and practiced in construction project.

**1. Sources/Causes of conflict (1-Not at all, 2-Occasionally, 3-Sometimes, 4-Usually, 5-Always)**

a) General Sources

<b>Causes of conflict</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Inaccurate design information					
Inadequate site investigations					
Delayed client response (decisions)					
Inadequate communication among project teams					
Unrealistic time targets and durations					
Excessive change orders					
Project participants reluctant to deal promptly with changes and unexpected conditions - price escalation index.					
Slow progress and performance by Contractor					
Ambiguous and contradicting instructions					
Different perception of work quality					
Delays in payments or (such as mobilization, part payment)					

The use of substandard materials for construction					
Withheld or non-payments or disputes over payment					
Contractor submits unrealistically low bid to win the project					
Poorly developed project plan and scheduling.					

b) Contract conflicts

<b>Causes of conflict</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Inadequate construction time or duration					
Changes of contract due to site and environmental condition					
Contract inapplicable to the type of project at hand					
Contract agreement unfair and lob-sided in favour of the client					
Mismatched project risk allocation between stakeholders					
Unassigned risks associated with the project					
Contract does not fully address materials requirement					
Contract is ambiguous and unfeasible					

2. Effect of conflict on projects (1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5- Always)

<b>Effect on project</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Rework on the project					
Reduces productivity at site					
Diversion of resource in respect of management time allocated to resolving conflict					
Damaged reputation of project team					
Delays and inefficiencies in construction					

Loss or reduction of quality					
Strains business relations between construction project teams					
Delays in project completion					
Termination of contract					
Cost of overrun					
Long standing litigation in court					
Wasted funds on incomplete project					

3. How do you handle conflict when they occur? Please tick (Note that a higher score show the greater use of a style) 1-almost never, 2-occasionally, 3-sometime, 4-usually, 5-almost always

How often do you do these in dealing with conflict	1	2	3	4	5
<b>Forcing</b>					
I push my own point of view at the expense of other views					
I search for gains					
I fight for a good outcome for myself					
I do everything to win					
I sometimes use my power to win a competitive situation					
<b>Collaborating</b>					
I allow peace to reign, so give in to the team members decision					
I yield to my team's decision on the project at the expense of goal					
I agree that I may be wrong					
I sacrifice my concern to satisfy my team members					
Jointly work with others to come up with consensual approach to work					

<b>Compromise</b>					
I try to realise a middle-of-the-road solution					
I try to ensure that the interests of both parties are taken-on board in solving the problem					
Conflict is decided by a give-take agreement					
I strive whenever possible towards fifty-fifty compromise					
I emphasise that we have to find a compromise solution					
Solutions are based on interests and not position, so that no single individual benefits more than others – splitting the difference					
<b>Avoiding</b>					
I ignore the issue when the cost of confronting it far outweighs the benefits					
I ignore the problem when it can lead to destruction					
I ignore the situation in order to protect an established relationship					
I ignore the issue when it is tangential or symptomatic of other issues					
No adopted position is taken when solving a problem					
<b>Accommodating</b>					
I submit to outcomes when it is even against my concern					
Concerns or desires of other individuals are of much concern or prioritized					
Proposals and opinions of other individuals are well considered when deciding on a problem					

I excuse others to forestall peace					
I take responsibility when there is a problem					

## MORGAN'S TABLE FOR SAMPLE SIZE

Population Size	Confidence = 95%				Confidence = 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1000	278	440	606	906	399	575	727	943
1200	291	474	674	1067	427	636	827	1119
1500	306	515	759	1297	460	712	959	1376
2000	322	563	869	1655	498	808	1141	1785
2500	333	597	952	1984	524	879	1288	2173
3500	346	641	1068	2565	558	977	1510	2890
5000	357	678	1176	3288	586	1066	1734	3842
7500	365	710	1275	4211	610	1147	1960	5165
10000	370	727	1332	4899	622	1193	2098	6239
25000	378	760	1448	6939	646	1285	2399	9972
50000	381	772	1491	8056	655	1318	2520	12455
75000	382	776	1506	8514	658	1330	2563	13583
100000	383	778	1513	8762	659	1336	2585	14227
250000	384	782	1527	9248	662	1347	2626	15555
500000	384	783	1532	9423	663	1350	2640	16055
1000000	384	783	1534	9512	663	1352	2647	16317
2500000	384	784	1536	9567	663	1353	2651	16478
10000000	384	784	1536	9594	663	1354	2653	16560
100000000	384	784	1537	9603	663	1354	2654	16584
300000000	384	784	1537	9603	663	1354	2654	16586

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