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**THE DEVELOPMENT OF APPROPRIATE STRATEGIES FOR
THE PREVENTION OF CONSTRUCTION DISPUTES IN
GHANA**

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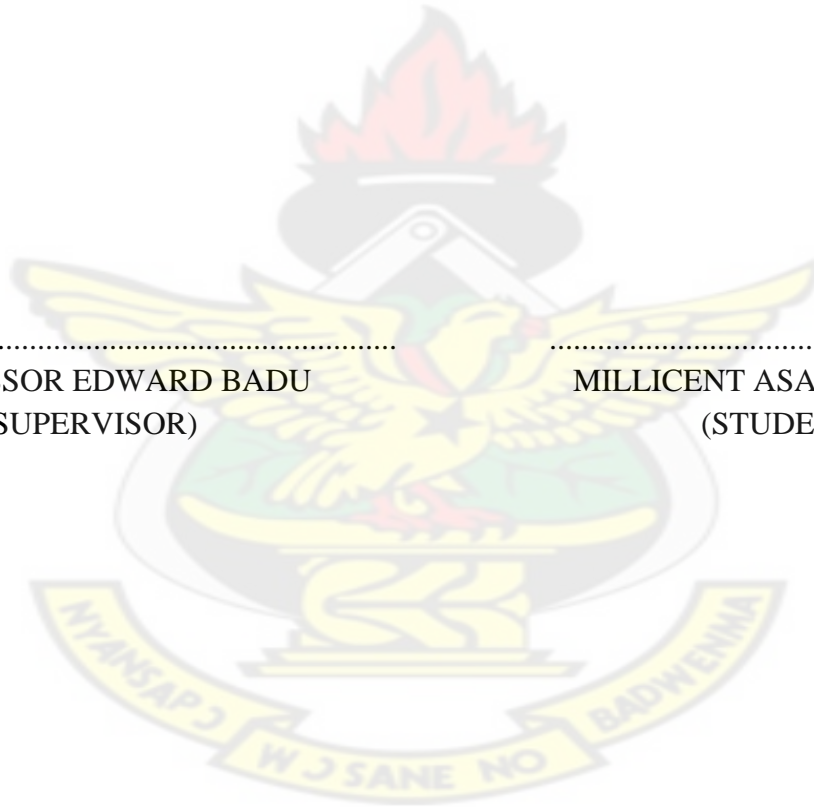
A PROJECT REPORT PRESENTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR A DEGREE OF MASTER OF SCIENCE IN
CONSTRUCTION MANAGEMENT

APRIL, 2009

DECLARATION

I hereby declare that, this project report is the result of my own work, except for the literature whose sources have been explicitly stated and that, this thesis has neither in whole nor in part been prescribed by another degree elsewhere.

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ABSTRACT

The rising cost, delay and the risk of legal action in construction disputes prompted the construction industry in countries such as the United Kingdom (UK), Saudi Arabia, Malaysia and the United States of America (USA) to look for efficient ways to prevent and manage these construction disputes. This is because, as construction projects become increasingly complex due to the complex set of contract documents governing parties, cost increases, margins tightens and clients expect perfection in the contractor's performance. The likelihood of disputes arising, therefore increases, with their resolution becoming very expensive in terms of time, personnel, finances, project delays and opportunity cost. Prevention of disputes therefore can eliminate unnecessary costs, delays; strained relationships among members of different parties involved and finally save time.

In Ghana, there has been lack of studies on construction disputes prevention. This study therefore aimed at developing appropriate strategies for dispute prevention on construction projects found in Ghana.

The success in preventing disputes requires knowledge of the circumstances that could lead to a dispute and the knowledge and ability to take an action when a dispute occurs. Hence the research sought to identify, evaluate and rank the most important, and frequent factors responsible for disputes on construction projects from the view point of clients, contractors and consultants in Ghana and to identify and further develop appropriate strategies for disputes prevention in Ghana.

The thesis begins with a review of the literature on the nature of the construction industry, what construction disputes are, their causes and ways of preventing them. The literature search established fifty six (56) probable causes of construction disputes. The research comprised a questionnaire survey supplemented with interviews with clients, consultants and contractors (mainly D1) with the aim of identifying causes of

construction disputes and the best ways of preventing these causes of construction disputes as early as possible in Ghana.

The data so gathered were analysed by the use of relative importance index, frequency index, Kendall's concordance testing, and the significant testing. Based on the analysed data, the survey identified thirty (23) out of the fifty six (56) factors gathered from literature, as the most significant factors which really cause construction disputes in Ghana.

The survey concluded that, indeed, problems such as construction disputes will naturally arise on construction projects and therefore should be a cause of concern in every project. As a result of this, the information obtained, provided guidance for strategies to be developed within the research to provide project leaders and all other stakeholders with a better approach for construction dispute prevention. These strategies were as follows:

- Making sure everyone gets paid;
- The early involvement of all stakeholders during the design phase of the project;
- Adequate contract documentation;
- Communicating problems or claims at the earliest opportunity and not ignoring problems as and when they occur;
- Proper records keeping; and
- Training of all who matter in executing the project.

DEDICATION

I wholeheartedly dedicate this research work to the Lord Almighty through whose guidance and protection I have been able to reach this far in my education.

Secondly, to the people who gave meaning to my life; my parents and my fiancé.

KNUST



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“I thank you, Lord, with all my heart” (Psalm 138:1a)

In works of this nature, it is very difficult indeed, if not impossible; to recollect all the sources of ideas used or adequately acknowledge debts where they are due. Any observed failure of such acknowledgement should not be taken as intellectual dishonesty or ungratefulness. Such ideas might have been completely absorbed in my thinking, that they become unnoticed as my own.

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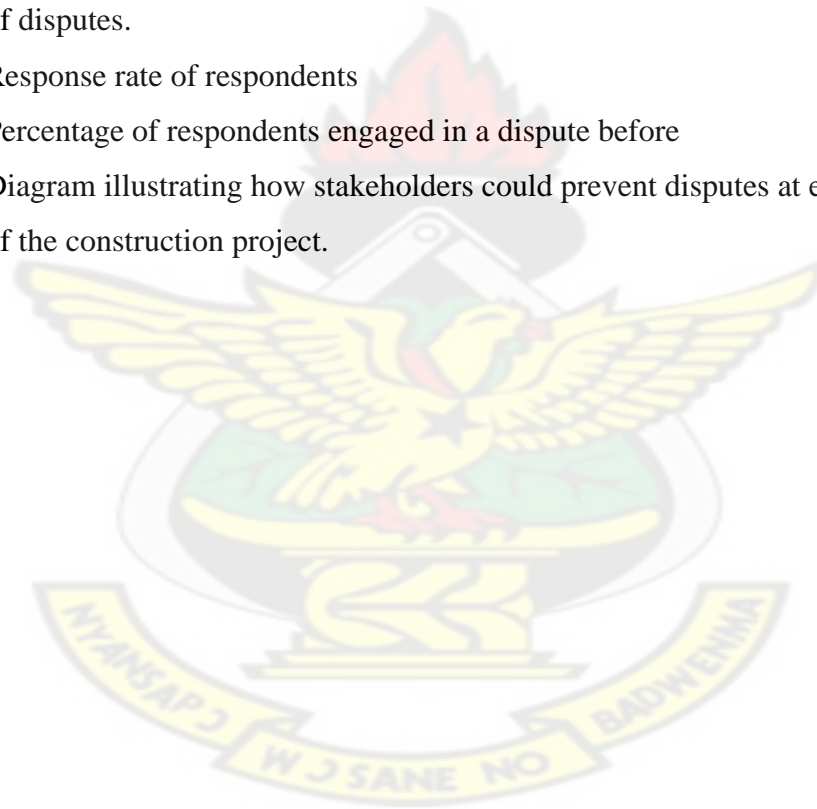
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CHAPTER ONE – INTRODUCTION TO RESEARCH

1.1 BACKGROUND

Construction projects are intrinsically complicated, hazardous and at the mercy of the unpredictable weather and also the most complicated of human enterprises. Hence, it is perhaps not surprising that something often goes wrong (Kwakye, 1997). For this reason, no construction project is free from problems such as delay, unexpected additional or extra work, defective work, cost overruns, structural failure and accidents. Inevitably so, too, do disputes. Generally, they do occur due to the failure of one or more project participants to fulfil their contractual obligations which impact negatively on construction projects.

Disputes are a reality in every construction project and occur due to so many reasons (Jannadia et al, 2000). Their frequent occurrence on projects all over the world have made relationships in the construction industry become increasingly strained, with its prevention, being more difficult than the industry realises. This has led most developed countries such as the United Kingdom (UK), United States of America (USA) to search for what really causes construction disputes and better alternatives of how best these disputes could be prevented and managed even though they are seen to be like an incurable disease. The use of the New Engineering Contract and the Dispute Review Boards introduced in these countries have proved successful but developing countries, of which Ghana is one, are still facing this problem.

In a traditional construction project, the Client, Consultants and the Main Contractor are the primary stakeholders. The Client invests capital and provides the economic power. The Consultant takes charge of the design and maintains effective and efficient progress on project. The Main Contractor provides services, skills, and knowledge towards achieving a successful project, that is, a project completed on time, on budget, and of the best quality. The direct relationships between these primary stakeholders are therefore a necessary interactive process to achieve a successful project. These primary stakeholders, in most instances arrive at a project as members of staff or crew of distinctly different companies having contrasting perceptions of the

project's requirements and conflicting objectives and this may sometimes lead to disagreements, which not addressed quickly can develop into a dispute.

Each of these stakeholders either has his own unique biases, incentives and information needs hence if any one of them endeavours to redefine his position to his own advantage, a dispute arises. When working relationships, communication, and the commitment to a successful job and each other are often not performed in good faith disputes also do occur. These stakeholders also look at construction disputes from different perspective which sometimes is due to their entrenched positions and conflicting objectives.

1.2 PROBLEM STATEMENT

Construction projects are complex and for this reason disputes are always present. For a lot of reasons, construction disputes have become increasingly common in the construction industry in Ghana (Kwakye, 1997). Resolution of these disputes, which vary in their nature, size and complexity in recent years, have become very expensive in terms of finances, personnel, time and projects delays (Michael, 1998).

When construction disputes affect deadlines, productivity and costs, they must be dealt with promptly to keep the project on schedule and the budget on target (Brennan, 2006). As a result of this, there is a need to develop strategies to prevent the risk of disputes from occurring in the first place and also to help avoid the unnecessary escalation of disagreements into contested disputes which might otherwise need to be resolved through a formal or informal dispute resolution in Ghana.

Disputes are not something which arise of their own accord and thus simply appear one day and are, of course, nobody's fault (Shoylekov, 2003). They do occur due to so many reasons and also the fact that the industry is an organization which deals with the organization of human resources, materials and procedures, with each project having numerous participants with different interests and approaches to the project. Locally among others, construction disputes have arisen due to the fact that standard documents are used without properly assessing them very thoroughly.

Given the expense and disruption caused to a contract or an on –going project and the damage to relationships between participants involved in a project, the researcher finds it suitable to really identify the important and the frequently occurring factors which are actually causing disputes on construction projects in Ghana from the perspective of the three main stakeholders. This would prepare the ground for identifying and further developing appropriate strategies to prevent disputes from occurring, allowing projects to continue with minimum delay and disruption.

1.3 JUSTIFICATION OF THE RESEARCH

The root causes of construction disputes if not identified and corrected early, brings unpleasant consequences to the parties involved. When these issues that trigger disputes on construction projects are also not addressed quickly, while they are manageable, the client, consultant and the contractor become stressed. In that, the Client's project will no longer meet the original goal and expectation, suffer from payments of high fees and also experience a delayed completion when it becomes involved in a protracted dispute. The Contractor on the other hand, will not be able to achieve the profit maximization objective as he/she will suffer financial loss from unpaid work and claims and ultimately payment of legal fees. The Consultant will also be affected by the additional efforts to resolve disputes or to defend himself against charges of errors and omissions and eventually loose his/her professional reputation (Pinnel, 1994).

In most cases, the cost of pursuing an action where disputes cannot be prevented or avoided early, very often grow to the extent that they exceed the amount of dispute (Kwakye, 1997). A review of existing literature has also revealed that, countries such as the United Kingdom (UK), Hong Kong, Malaysia, Saudi Arabia and the United States of America (USA) have much documented information on construction disputes- for example its causes, alternative methods for resolution and cases, to guide practitioners, but so far, this, has not happened in Ghana. This study therefore would contribute to the body of knowledge on causes of construction disputes and ways in which they can be prevented and reduced in Ghana.

The success in preventing construction disputes require knowledge of the circumstances that could lead to a dispute and the knowledge and ability to take an action when a dispute occurs. Thus, the need for this study, to help stakeholders on any project understand each other's views and work at preventing disputes in the first place through dispute prevention interventions.

1.4 RESEARCH QUESTIONS

The research questions which guided the study were as follows:

- What are the important and frequently occurring factors, which are actually causing disputes in the construction industry from the clients, contractors and consultants' perspective?
- What are the best and the most appropriate prevention strategies to be developed to prevent the occurrences of construction disputes in Ghana?

1.5 AIM

The aim of the research is to identify and develop the most appropriate prevention strategies towards reducing dispute occurrences on construction projects in Ghana.

1.6 OBJECTIVES

The above aim was achieved based on the following objectives:

1. To identify potential factors that cause disputes on construction projects in Ghana;
2. To evaluate and rank the importance and frequency of factors responsible for disputes on construction projects from the Clients, Contractors and Consultants in Ghana; and
3. To identify and develop strategies to prevent disputes occurrences on Ghanaian construction projects.

1.7 RESEARCH PROCESS

The approach adopted for this research is discussed in detail in Chapter Three. The discussion includes the research strategy, design and its justification, data collection and the sample design process.

Stage 1: Cursory Review of Literature

A cursory review of literature was undertaken and this informed discussions with relevant professionals and experts. This enabled the author to identify the problem and to finalize the objectives and aim

Stage 2: Detail Literature Research

The basic concern throughout the review was to identify the potential causes and triggers of construction disputes and appropriate ways of prevention if they arise. A detailed literature search was therefore conducted which covered text books, institutional and statutory publication, periodicals and trade/academic journals seminar and conference papers and browsing construction website for the first objective to be achieved. The research questions were then developed from the literature review.

Stage 3: The main study

The second and third objectives were achieved by the preparation of questionnaires which were administered to selected Clients, Contractors and Consultants. The questions developed centred on the areas mentioned in the above objectives. They were such that the respondents will not be required to formulate an answer which needs lengthier input for easy analyses of the results. The data so gathered were analysed by the relative importance index, frequency index, Kendall's concordance testing, and the significant testing.

The findings are presented in Chapters four. The research conclusions, recommendations based on the findings and recommendations for future research are also presented in Chapter five.

1.8 SCOPE OF THE STUDY

The research was conducted within the scope of the various stakeholders in the construction industry comprising Clients such as the Ministries, Departments, Agencies, Municipal, District Assemblies and Financial Institutions, D1 Building Contractors and Consultants comprising mostly Quantity Surveyors and Architects in the Greater Accra and Ashanti regions.

1.9 GUIDE TO REPORT

The study was organised in five chapters

Chapter One is an introduction to the research. The background and justification for undertaking the research are presented in the chapter. The key questions for the research are posed, leading to the statement of the aim and the objectives. The chapter briefly describes the research process (detailed discussion follows in Chapter three). An outline of the study is also presented.

Chapter Two looks at the nature of the construction industry and how it lends itself to disputes, causes of disputes, ways of prevention and their documentation. It also looks at causes of construction disputes from the viewpoint of various researchers.

Chapter Three describes the approach and discusses the methods used in achieving the objectives for the research. Methods and techniques used in data collection, analyses and interpretation are presented.

Chapter Four presents the analyses the responses obtained from the questionnaire and interviews. A general discussion of the results of the survey is also undertaken.

Chapter Five presents the main conclusions of the study and the achievement of the key research objectives. The recommendations made, based on the main findings are also presented in the chapter with some potential areas for future research.

Appendices comprise additional relevant information on the research that cannot be included in the main body of the study such as Questionnaires.

CHAPTER TWO - REVIEW OF CONSTRUCTION DISPUTES AND PREVENTION TECHNIQUES

2.1 INTRODUCTION

Chapter one focused on the introduction to the research. It introduced the background and justification for the research in preventing disputes on construction projects. This chapter reviewed the causes of disputes on construction projects as indicated by other researchers and ways in which these sources of disputes can be prevented and identified in their early stages, allowing the project to continue with minimum delay and disruption. Construction disputes techniques are also discussed to highlight how disputes can be properly prevented. The chapter concludes with a summary.

2.2 THE CONSTRUCTION INDUSTRY

Construction is a high stakes endeavour that produces long-term, unique, and complex building projects and infrastructure (Levy, 2007). Taking a building project from planning through design, construction, and occupancy involves a diverse array of stakeholders such as the project clients, which may be individuals, corporations, or government entities; architects; engineers; general contractors; subcontractors; suppliers; financing institutions; legal representatives; and others. These stakeholders bring varying and sometimes conflicting expectations to a project. They operate in an environment in which their control over a project shifts as the project progresses, and in which there are continual demands to deliver projects in less time and at lower cost.

Chin (2003) indicated that, the construction industry is a project - based industry with each project being unique hence notorious for its high levels of conflict and disputes. Failure by one party involved in this industry can affect all those engaged in a project and as work often takes substantial periods during which national economic circumstances can alter, it is therefore inevitable that dispute will arise. According to Steen (2002), this industry has also become known as one of the most adversarial and a problem-prone industry, with claims and disputes on construction projects frequently the rule rather than the exception. Cost overruns and schedule delays can be the

subject of expensive and protracted claims and litigation, and pose serious risks for all parties to a construction project. The construction industry in Ghana covers a complex and comprehensive field of activities involving many operative skills and conditions, which vary considerably from one project to another and as such dispute might arise at any point during the construction process. Generally, there is a low standard of contract formation and of contract administration in the construction industry, which lead frequently to unnecessary problems and disputes. The parties usually enter into a dispute as a result of differing expectations or misinterpretations of the contract documents.

This industry is considered by some to have been less adversarial in the 1960's than now (McGuinn, 1989). During this time the design and construction environment was such that amiable relationships generally existed between all of the project participants. In general, construction projects and processes were not complicated. The construction players were few and developed long-term relationships. Clients accepted the fact that undertaking construction projects contained inherent risks and, therefore, accepted a certain amount of errors. Claims were not prevalent and, amazingly, design and construction firms worked together to maximize project performance (McGuinn 1989). The focus of the construction industry was on teamwork and the overall success of the project.

According to Sakal (2004) the construction industry today is different. In that, strong relationships and trust between clients, contractors, and subcontractors has been replaced with growing distrust and conflict. He also noted that, the construction industry has continually fragmented into narrow specialty areas that have resulted in an ever-growing number of potential participants. This environment is difficult enough for the contractors and subcontractors, but when combined with the fact that clients now also expect perfection in the contractor's performance, it is not surprising that contract disputes and claims have become commonplace (Sakal, 2004).

Stipanowich (1998) observed that, given the infinite complexities of delivering a building or infrastructure project, the multiplicity of organizations and individuals involved, and the magnitude of the money at risk, it is perhaps not surprising that the

construction industry has been characterized by an adversarial operating environment that generates disputes and claims. He also indicated that, disputes are estimated to arise in 10 to 30 percent of all construction projects, and that one in four construction projects do have a claim.

All the above shows that the industry is, indeed, fragmented and therefore, have brought about the conflicts and disputes that have plagued the industry like a chronic disease. The industry is fragmented in terms of the nature of work undertaken (Building or Civil engineering), the technologies it uses, its clients (private and public sector) and the large firms/companies (professional and contracting) involved. This fragmentation has resulted in a lack of coordination and integration between the different disciplines involved in various stages of the project procurement process and the construction process (Love et al, 1998). And as a result, failure of one or more of these individuals in the construction process, to fulfil their contractual obligation, results in claims, counter claims and disputes which has become inevitable in the industry.

2.3 AN OVERVIEW OF CONSTRUCTION DISPUTES

Construction projects have continually become much more dynamic in nature over the last four decades (Sakal, 2004). Often the environment in which construction projects are accomplished today involves completing complex, uncertain projects within tight budget and time constraints. The industry as a whole has become much more dynamic as illustrated by its continual fragmentation (McGuinn, 1989) which contributes specifically to increased complexity—more parts, more interfaces. In this dynamic environment, clients often attempt to reduce costs and reduce design/construction time while still demanding high quality finished products. Clients, also use contracts in an attempt to shed unbearable risk to contractors through the form of harsh exculpatory contract clauses. This subsequently leads to large contractors passing the same risk onto the shoulders of smaller subcontractors who are the least able to financially bear the risk. This attempt by project participants to protect themselves by shedding risk ultimately backfires and leads to adversarial relationships and costly litigious battles.

Given all these factors, it is not surprising that project performance is negatively affected and that conflicts often arise between the parties involved in construction projects. More often than not, these conflicts lead to heated disputes and, ultimately, litigious claims that are not only economically detrimental to project participants, but are disastrous for building trust and maintaining critical relationships. Even worse, as project performance decreases, risk in future projects is increased due to growing mistrust. This feeds a continuous vicious cycle where parties in the position of power attempt to shed more risk, teamwork continues to decrease, and project performance steadily declines (Sakal, 2004).

Construction disputes however, have existed as long as the recorded history of man's building structures and other projects. They have increased dramatically in number, complexity and cost - particularly in the most developed countries especially United States of America (USA) and the United Kingdom(UK), as projects become complex with ever increasing competing interest involved in project delivery (Canterbury Jr., 2007).

In an ideal environment construction projects would be team endeavours where the unique skills of each member are used to maximize project performance. Unfortunately, today, parties enter most projects guarded and suspicious of each other's motives before design and construction even begins. This is due to the fact that, instead of focusing on creating a good framework for developing good relations between the parties involved, contracts are generally legal shields, written in a biased manner to try to protect the one who drafts them. For the most part, this is due to an overall lack of trust of one another and as such, causes increased antagonistic relations between the client and contractor that are clearly not in the best interest of the project (Steen 1994).

Motsa (2006) indicated that construction projects are amongst the most complicated of human enterprises and as such, not free from problems such as disputes and that, so long as human nature is what it is, there will always be disputes and those disputes whatever their characters are, must be prevented, managed and resolved as early as practicable. According to Vorster as cited by Nystrom (1995), prevention of disputes is considered as a sound business practice and a very important management process

which enables project objectives in terms of time, cost and quality to be achieved. He also noted that, disputes prevention encompasses a shared, cooperative effort between potential disputants in pursuit of a common goal namely – success of the project so that potential disputes could be prevented as early as possible before they start.

Conflict resolution and dispute prevention are therefore, seen as the most important areas for the future of the construction industry curbing the problem of disputes. And that, time has come for professionals to come up with ideas on how to handle the situation to normal by ensuring that more attention is given to understanding why and how problems become differences of opinion, then disagreements, and finally escalate into disputes.

2.4 DISPUTE DEFINED

A review of the literature reveals confused usage of the basic terms: “conflict”, “claim” and “dispute”. These terms are sometimes used separately or in pairs and frequently without clear indication of the precise meaning of each. There is often a lack of clarity as to whether the researcher is referring to a claim or conflict or a dispute. In order to fully unearth the sources of construction disputes, these three terms need to be understood properly.

Gardiner and Simmons (1992) define conflict as any divergence of interest, objectives or priorities between individuals, groups or organizations. A claim is defined by Powell-Smith and Stephenson (1989) as an assertion of a right to money property or a remedy and can be made under the contract itself for breach of the contract, for breach of a duty in common law ; or on a quasi-contractual basis. A dispute is defined by Brown and Marriot (1993) as a class or kind of conflict, which manifest itself in distinct justifiable issues. It involves disagreement over issues capable of resolution by negotiation, mediation or third party adjudication.

The oxford dictionary also defines dispute as a misunderstanding between two parties, either contractual or non contractual. Kumaraswamy and Yogeswaran (1997) refer to

the United Kingdom Institution of Civil Engineer's arbitration procedure which states: "a dispute can be said to exist when a claim or assertion made by one party is rejected by the other party and that rejection is not accepted. Brown and Marriot (1993) also cite the definition given by D. Foskett QC in *the Law and Practice of Compromise*: An "actual" dispute will not exist until a claim is asserted by one party which is 'disputed' by the other. In a similar vein, Lowe et al. (1997) suggests that "Conflict exist where there is an incompatibility of interest. When a conflict becomes irreconcilable and the mechanisms for avoiding it are exhausted or inadequate, techniques for resolving the disputes are required". It is seen to be unavoidable fact of organizational life and can be managed possibly to the extent of preventing a dispute.

Combining these definitions with relevant terminology in standard forms of contract and recognized construction industry practice, it could be said that a conflict occurs at the same point in time as when a notice of claim is given and exist until the claim is resolved. It is, of course, theoretically possible that a claim submitted by the contractor and immediately accepted and agreed to, without amendment, by the Architect/Engineer would not necessarily give rise to conflict. Equally, it could be argued that a conflict comes into existence in the mind of the contractor at the point in time when he becomes aware that the relevant event has occurred and the potential claims situation exists, even though the Architect/Engineer may be unaware of it (Yates, 2003).

However, for all practical purposes and certainly of the purposes of this research work the definition of a dispute by Kumaraswamy and Yogeswaran (1997) which states that a dispute can be said to exist when a claim or assertion made by one party is rejected by the other party and that rejection is not accepted, is adopted. It is assumed that the genesis of claim and a conflict are synonymous.

The alternatives to solve disputes in the industry are becoming more and more expensive in terms of time, finances, personnel and opportunity costs. The visible expenses (e.g. attorneys, expert witnesses the dispute resolution process itself) alone are significant. The less visible costs (e.g. company resources assigned to the dispute, lost business opportunities) and the intangible cost (e.g., damage to business

relationships, potential value lost due to inefficient dispute resolution) are also considerable, although difficult or impossible to quantify (Michael, 1998, Pena-Mona, Sosa, and McCone2003).

Consequently, it is appropriate to identify the generating sources or the potential triggers of construction disputes, especially from the view point of the stakeholders (namely the client, consultant and contractor) to a construction project. This will help resolve conflicts as early as possible, reduce the risk of disputes occurring and also prevent /avoid disputes escalating into formal and informal costly resolution procedures.

2.5 CAUSES OF CONSTRUCTION DISPUTES

Disputes are a reality on every construction project (Steen, 2002). They may arise on a construction project for a number of reasons. They even arise on projects that have the best intentions. Even when every possibility of disagreement has been potentially eliminated, problems can still occur - such is human nature. Understanding how disputes arise on construction projects can be very helpful for anticipating situations that may become turbulent. While it may seem, at times, that anything can start a conflict and when not eliminated can result into a dispute, construction disputes will typically revolve around time and cost overruns, quality of workmanship, payment contract documentation, construction information and site supervision (Kwakye, 1997) .

Undoubtedly many construction disputes have their origin in the seeds sown by or in, the client's error (Hellard, 1987). This often happens when the client expects something unrealistic to be done such as the buildability of a complex design or the client taken possession of his building within a very short time not taking account unexpected delays and unforeseen setbacks. Hall (2002) indicated that, disputes do occur during the design and the construction phases of any project.

Hellard (1987) also suggested that, there are four sets of contractual relationships which are common in the construction program and thus when any of this relationship

get strained; minor issues can fester and grow into disputes with crippling consequences for the projects participants. These relationships are as follows:

- i. The relationship of the client to the designer;
- ii. The relationship of the designer to another design specialist(s);
- iii. The relationship of the client to the prime contractor; and
- iv. The relationship of the prime contractor to suppliers.

These four basic relationships have been studied over the years by interested individuals as well as professional committees of varied membership from all corners of the industry, along with private and public attorneys. The result of these studies has been the publication and wide usage of standard form contract documents which are published all over the world in different construction industries.

In a study by Levy (2007), it was shown that, the principal reasons for misunderstandings leading to disputes on construction projects in the United States of America were as follows:

- Plans and specifications containing errors, omissions and ambiguities or which lack proper degree of coordination;
- Incomplete or inaccurate responses or non-responses to questions or resolutions of problems presented by one party in the contract to another party in the contract;
- The inadequate administration of responsibilities by the client, architect/engineer, contractor, subcontractors or suppliers;
- An unwillingness or inability to comply with the intent of the contract or to adhere to industry standards in the performance of work;
- Site conditions which differ materially from those described in the contract documents;
- Unforeseen subsurface conditions;
- The uncovering of existing building conditions which differ materially from those indicated in the contract drawings situations that occur primarily during rehabilitation or renovation work;
- Extra work or change order work;
- Breaches of contract by either party in the contract;

- Disruptions, delays or acceleration to the work that creates any deviation from the initial baseline schedule; and
- Inadequate financial strength on the part of the client, contractor or subcontractor.

In a similar vein, Campbell (1997) also revealed that in the United Kingdom, construction disputes generally occur due to the following:

- Adversarial nature of contracts;
- Poor communication between the parties;
- Ineffective communication on site;
- The inability to understand terms of contract and expectations of the parties;
- Proliferation of subsidiary contracts and warranties including those with consultants;
- Fragmented nature of the industry;
- Improper contractual documentation;
- Tender systems and government policy on tendering encouraging low tenders followed by claims; the inability or reluctance to pay;
- Erosion of contract administrator's role as quasi-arbitrator in contracts; and
- Unforeseen effect of third party interests.

In another study by Osborn (1999) in the United States of America, the following were found to be the ten most deadly sources of construction disputes.

- The lack of focus up front, failure to choose the most appropriate delivery method;
- Failure to assemble the right project team;
- Failure to coordinate the project team and scope of works;
- Lack of workable change order process;
- Failure to understand local conditions;
- Inaccurate or too elaborate schedules;
- No periodic job meeting minutes or failure to keep minutes;
- No vision on dispute resolution; and
- The failure to recognize that quality wins.

Yates (2003) revealed that contractual incompleteness and consequent “post–contract” adjustments, asset specificity in terms of client’s investment in respect of purchase of land for the project and opportunistic behaviour in particular on the part of the contractor are the root causes of conflicts, claims and disputes in Hong Kong. In the United Kingdom, Nystrom (1995) indicated that the two leading causes of construction disputes that drive the litigation process in the industry were uncertainty and imperfect contracts.

Hall (2002) in his practice as a lawyer in the United Kingdom found out that, the common cause of construction disputes is ineffective communication which often happens because someone “drops the ball” by failing to communicate effectively with another concerning design issues, compensation and payment issues, scope of changes and the like, leading to legal disputes. According to Silver and Furlong (2004), the complex set of dependencies and interrelationships within a construction project, brings about delays and payment schedule problems which in their view are the two main sources of construction disputes.

Walton (2005) also indicated in his article “*Avoiding construction disputes, just a matter of price?*”, that most disputes have their root causes in one of the following:

- A clash of expectations, usually entrenched during the tender process, and not assisted by one party being overly opportunistic in contract negotiations, with the other being overly aggressive or perhaps optimistic, in pricing;
- Poor allocation of risk;
- Poor communication and contract administration; and
- The parties failing to identify and deal with issues properly as they arise.

Weddikkara and Abeynayake (2007) revealed that disputes in the construction industry in Sri Lanka are normally those that arise under contracts for the procurement of supplies and services and the installation of equipment, breaches of contract by any party to the contract, inadequate administration of responsibilities by the client or contractor or sub contractors, plans and specifications that contain errors, omissions and ambiguities and sudden tax and cost increases due to sudden economic changes.

Hellard (1987) also conducted a study into the sources of construction disputes and came up with some major factors that cause disputes in the industry. His finding encompasses almost all the factors other researchers found out in their various studies and papers.

These are illustrated in Figure 2.1 and are as follows:

i. The contract conditions

This consists of:

- Lack of perfection in the contract documents;
- Failure to count the cost; and
- The psychology of people in construction.

ii. The design deficiency

This consists of:

- The underground or subsurface problem, changed, and differing conditions;
- Poor and unfair allocations of risks;
- Defective Plans; and
- Construction Methods and specification performance.

iii. The construction process

iv. The consumer reaction

This consists of:

- The Public Client; and
- Warranties.

v. Time

From the list above, Hellard (1997) indicated that the underground or subsurface problem, changed, and differing conditions are a subset of design deficiency but in the researchers view, it should be a cause on its own since these conditions are almost

unforeseen when the documents are been prepared and do not just happen. For this reason, it will be treated as another major source of construction disputes below.

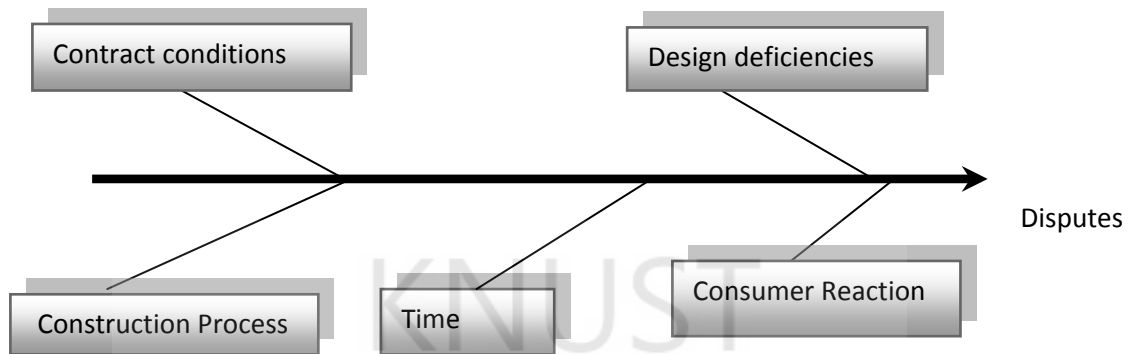


Figure 2.1: Fish bone diagram illustrating the potential causes of disputes according to Hellard (1997)

Source: Authors Construct, 2008

2.5.1 *The Contract Conditions*

The documents referenced as part of the contract typically sets out the general conditions or rules which are to be followed and the roles of those who will be governed by the rules” (Hellard 1987). These documents usually will include an invitation to tenderers, describing very briefly the project and the salient terms and conditions prospective tenderers must fulfil in order to file a responsive tender. It will also include a tender form for all tenderers to use, thus standardizing the responses of all officers so that evaluations can be rapidly and hopefully unerringly made.

Generally, there is a low standard of contract formation and of contract administration in the construction industry in Ghana, which lead frequently to unnecessary problems and disputes. The parties usually enter into a dispute as a result of differing expectations or misinterpretations of the contract documents.

a) Lack of perfection in the contract documents

Clients, Contractors, Consultants including Architects and everyone involved in construction readily recognize and are quick to admit publicly the very obvious fact that, a perfect set of contract documents simply does not exist (Hohns, 1979).

Contract documentation is the recording in formal documents of the contract terms and conditions of a contract (Kwakye, 1997). In construction projects, it embodies the entire written and drawn information such as conditions of contract, drawings, and bills of quantities and/or specifications.

To safeguard the clients' interest, the contract documentation should fully explain the offer and acceptance between the client and the contractor. It should also adequately describe the scope, quantity, quality and positions of the work and define the rights and obligations of parties. However, despite its important legal significance, it is a common source of complaint and dispute due to the fact that the contract documents sometimes do fail to treat and describe project information requirements adequately.

Drawings in the contract documents somehow do have mechanical errors or lacks a needed dimension or detail. Many have errors which stem from the human nature of the Architect and draftsman. Not only are there human errors, but other changes which are always occurring as projects undergo the design and construction process. Thus, certain selected equipment carefully specified becomes obsolete when something better comes along, since it is seen to be bigger or needs more power, there are changes in space usage to accommodate revised clients needs, something unforeseen occurs, the documents and work scopes must be adjusted and so forth.

According to Motsa (2006) the more complex the project, the more ramifications a change has and the shorter the period allowed for design, the more addenda's that are required, and the more the opportunity for error. No man may know or remember every place a certain detail was shown. Hall (2002) therefore states that "The larger the project, the more the people, the drawings, the thoughts, and the ideas. Consequently, the larger the project the more errors there are".

It is believed that contract documents are one of the major sources of disputes on construction projects (Hellard, 1997). This is because the documents may fail to disclose the complex nature of construction projects obligations or restrictions imposed on the contractor such as the presence of existing services and the limitation of space. This, in the researchers view, occurs in Ghana due to the unavailability of this information from the appropriate authorities and therefore not available to the architect for any disclosure. When this happens, the scope of works sometimes changes with an increase in costs making it a source of disputes when it is not communicated well to the affected parties.

b) Failure to Count the Cost

Dispute continually arises because someone failed to count the cost at the beginning when the cost should have been defined (Jessup *et al.*, 1963). Few contractors bring claim on projects which come in near or under the construction budgets. Few clients seek liquidated damages when projects are done on time or close to it. If the Architects designs are perfect such that it fulfils the sales representative's claims, disputes are few.

In Ghana contractors do fear to pursue claims whether they are valid or not due to the simple reason that they would not be given any other jobs by that particular client. Most often than not, a contractor who is clearly entitled to a valid contract adjustment via a claim will ignore the situation if the job comes out well enough to live with (Jessup *et al.*, 1963).

According to Essex (1996) disputes arise when the job is not properly executed or something did not go on well, and too often the reason for this, is the failure initially to figure the cost accurately. This failure to count the cost initially is not confined to just the contractor. It applies to the client who set out unrealistically to build a factory, as well as the Architect who sets out to design it for less than it will really cost either in design or construction.

In construction, the estimates of the scope of works are calculated and committed in short periods of time and because of this, it is common that someone fails to count

something, and end up with a price that is too low. What is worse is that most of those in the industry simply do not have the money to pay for their errors. The one with the best intentions cannot pay for his error. Ironically, too, it would seem to some observers that those with the money to pay for their errors, lack the degree of attention needed to dig deep enough to square the account totally.

Construction pricing methods frequently do not take into account the erection process that will be ultimately required in sufficient detail (Stipanowich, 1998). The modern Architect does not want to tell how a job should be done or prescribe or reveal any sequential restrictions which are not strength related. Thus, work are priced under severe time pressure using established unit price calculated from the estimators experience and which to some extent many have been proven in ongoing or recent projects. The failure of a contractor to understand and / or correctly tender or price the work initially is a major reason for disputes.

c) The Psychology of People in Construction

Construction is not a science, it is an art. Construction involves real people, and the successful contract administrator, or disputant to a contract interpretation, is well served when he knows a little about the people involved (Hohns, 1979).

Construction people have certain recognizable traits or makeup to their personalities. They are referred to as gregarious people since they all want to belong to a crowd. “The herding instinct is very strong in the industry’s people (Motsa, 2006). All seek and need that sense of acceptance or approval. They have a need to emulate the leaders or their concept of the leaders of the profession. Words like belonging, imitation, loyalty, recognition, superiority, status are descriptive of the human elements of extroversion. They try to make the other party feel as if he belongs to the group and show him how resolution of the dispute will help him achieve or strengthen his membership in the group” (Carmicheal, 2002).

According to Carmicheal (2002) construction disputes and confrontations arise because the people involved have needs. From the contractor’s side the needs are usually money or profit related. The Architect has the ideas, his building or design

which might be his monument to himself, his reputation, his artistic temperament, his money, his insurance premium, and similar needs. The client has needs as well; political careers, corporate careers, the need to have the space for a certain day. When something unanticipated or not properly recognized interferes with the fulfilment process, goals and security are jeopardized and communications become strained. These strains seem always to be followed by demands, refusals, other more intense strains, entrenched positions, and loss of enormous amount of money.

Unfortunately, or perhaps otherwise, it is not in most people to recognize an error, particularly their own, and say I'm sorry and seek to make amends. In construction most are unable to pay for their mistakes, it is simple too expensive; and unfortunately, those who can afford to pay for the mistakes generally remember lots of other errors by the other party which even if already forgiven somehow must now be reconsidered (Motsa, 2006). Once confronted with a problem which is too expensive or complicated for ready resolution, the claim or dispute process begins. The researcher believes that, random thoughts, unconnected conditions and ideas, jumping from this to that; tends to confuse and conceal the paths necessary for problem solving. People therefore need to obey and do what they are supposed to do to prevent disagreements since it is believed that if a construction problem exists chances are that sufficient investigations and practicality will find people as the root cause.

In the quest of profit or career improvement, construction people have been known to be greedy, never satisfied, resentful, and quick to cover themselves, quick to improve themselves, legalists in one moment and rationalize in the next (Carmicheal, 2002). They are often over their heads, lazy, not inclined to do good, incompetent, yet protected by the needs of others and the system, indifferent, discouraged, surprised, sick, or about to get sick. People are therefore a prime cause of construction disputes, and the only solution to it as well. Figure 2.2 shows the potential causes of disputes under contract conditions.

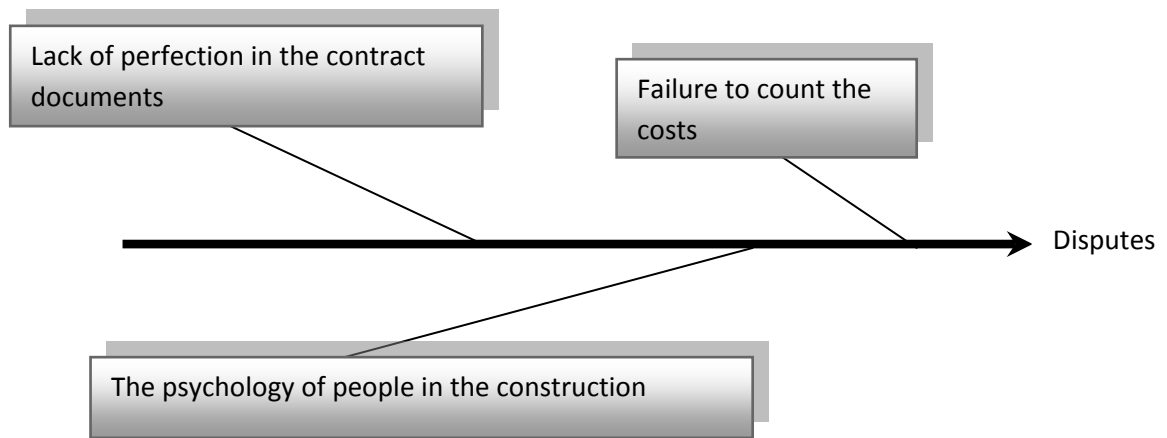


Figure 2.2: Fish bone diagram illustrating the potential causes of disputes in the contract conditions

Source: Authors Construct, 2008

2.5.2 *The Underground or Subsurface, Changed, and Differing Conditions*

A significant number of disputes involve the site work phase of the project (Levy, 2007). Even with numerous test borings and other geotechnical site investigations, conditions uncovered during excavation may be at variance with the conditions assumed by the information in the geotechnical survey. Tests borings accurately display the subsurface soil strata in the exact location where they have been taken, but other boring drilled just yards away may reflect totally different subsurface conditions. In fact, the cause of the underground problem can generally be traced to the handling, display, and interpretation of subsurface investigations. The location, depth, number, and types of borings or subsurface investigations are established by the engineer who needs the information in the building's foundation and its construction. These borings are typically done by a drilling contractor usually hired directly by the client, often on a competitive basis using specifications prepared by the architect, the structural engineer, or a soils engineer.

Generally, geotechnical reports are prepared at the request of the client and paid for by the client, thus, it can be stated that the reference in a disclaimer to an allowance- a contingency - is actually inserted for the clients benefit, not the contractor. The subsurface investigations are used for the design of the foundation; then they are typically offered to the contractor for its use in tendering and constructing the job and

it is in this latter use that the disputes begin. It is well known in the industry that variations in the earth's composition constantly occur underground and that each tendering contractor cannot adequately investigate the site to define the soil characteristics in the time period available for tendering. A standard clause in most geotechnical reports recognizes this condition and state. Example of a disclaimer is the one Levy (2007) gives below

Regardless of the thoroughness of a geotechnical engineering exploration, there is always the possibility that conditions will vary from those encountered in the test borings, or that conditions are not as anticipated by the architects (Levy, 2007).

Another disclaimer often included in the geotechnical report reads as follows:

The analyses and recommendations submitted in this report are based upon information revealed by this exploration. This report does not reflect any variations which may occur beyond the locations of the test borings and test pits. Since the nature and extent of variations may not become evident until during the course of construction, an allowance should be established to account for possible additional costs that may be required to construct the foundation as recommended herein (Levy, 2007).

Provisions in the researchers' opinion that requires the contractor to assume all the risks of delays and underground and subsurface conditions promote increased costs, adversarial relationships and eventually disputes. So, to move underground, subsurface risk over to the contractor a clever specification should be written. Contractors do consider geotechnical disclaimers as limiting their claim for additional costs incurred during excavation work. They should therefore carefully read through them thoroughly and give them the recognise attention.

Disputes over differing site conditions typically arise when large amounts of unanticipated rock or other adverse subsurface conditions are encountered during the excavation process. The parties examine the contract, plans and specifications to see who is responsible for the additional cost associated with the unforeseen site condition. The question which arises always is: *Does the contract shift the risk of the unforeseen site condition from the client to the contractor?* According to Wallace (2002), an unforeseen site condition can obviously delay site work and increase the scope of works on a project and when it happens who then bears the risk of paying the cost of the added work? This has somehow given rise to disputes on construction

projects. Claims for unforeseen site conditions are generally characterized as either Type 1 or Type 2 claims, which are discussed below:

- Type I claims are those in which the contractor alleges that the site conditions encountered are materially different from those indicated in the contract documents. If the contract documents make an affirmative representation about the conditions which are materially different from those encountered, a contractor may have a Type I claim for the expense which has been added to the project. Undoubtedly, the contract will require the Contractor to give the client notice of the unforeseen condition at the time it is encountered. If the contractor fails to give the owner such notice, the claim may be barred. The reason for the notice requirement is to give the client the opportunity to review the situation and possibly select another design or method that is less expensive than simply excavating the unforeseen condition (Wallace, 2002).
- Type II claims are those in which the contractor alleges that the site conditions encountered are materially different than those ordinarily found in that geographic area. Type II claims are pursued with less frequency than Type I claims because any naturally occurring condition in the ground is arguably foreseeable. A Type II claim could be supported more readily if an old foundation or oil tank was encountered. The key to a Type II claim is foreseeability, and it will be important for the contractor to have been diligent in its analysis of the required site work during the tendering process. The main difficulty for the contractor in this kind of claim is that he/she will be presumed to have certain knowledge because of his/her status as a professional (Wallace, 2002).

Unforeseen site conditions can sour relationships and create costly disputes. Contractors must therefore thoroughly document their claim of encountering conditions that differ materially from those anticipated by the information available in the geotechnical site investigation report to prevent any ensuing dispute. To reduce the risk of an unwelcome surprise, all the stakeholders should know the contract and the risk each of them are accepting. Where appropriate, consult with counsel to fully understand your obligations.

2.5.3 *The Design Deficiency*

The design deficiency which leads to a major dispute is generally beyond an error of omission (Motsa, 2006). To be significant, the design error usually must alter the means, methods, environment, duration, or the conditions of the construction process. Any number of factors can influence this.

The most common place in which design errors are made are in the foundations, in the construction of the frame and the enclosure, in the utilization of spaces such as method and materials and the required end result are specified, in project duration, and in connection with related performance by others on which the project in question must at some point rely. Some of the problems according to Hellard (1997) and Levy (2007) are as follows:

a. Poor and unfair allocations of risks.

Improper risk allocation frequently leads to disputes; typically this occurs when the owner uses contract language to unfairly shift risk to the contractor without appropriate compensation (Jannadia et al, 2000).

It is a common practice for consultants to prepare construction contract documents simply by adding to or deleting from a set of previously employed contract documents, and while this cut-and-paste method may save time in preparing the construction contract, it often leads to problems (Jannadia et al, 2000). Such practices increase the unforeseen risks for the contractor. It comes as no surprise that parties to a contract often include contract language designed to shift risk to the other party so that the bases for claims and disputes are eliminated (Steen, 1994). For example, making a contractor responsible for the impact of unanticipated site conditions may effectively preclude recovery of additional costs caused by such conditions. Similarly, contract dispute clauses can be drafted so that even the submission of a valid claim is made nearly impossible, a practice which actually encourages litigation. Such contract provisions, however, do not prevent disputes from occurring. Often, they only create fractious relationships among the parties involved in the project which often lead to disputes.

Construction project clients generally have two concerns when they shift unanticipated risks to a contractor. As a result of this risk transfer, the following may occur:

- The contractor will build a contingency into the price to cover the risk; or
- He will not have a contingency and will face financial problems.

Unfair shifting of risk, transferring of all responsibility on a party that is not generally expected to control that risk, can result in that party having to spend time and effort looking for ways to stay alive in the project, usually to the detriment of the project itself (Jannadia et al, 2000). Contractors should assess and display their risks to their advantage in any project they price. Usually the contractor makes an estimate on a job consisting of three elements:

- General conditions or field overhead;
- The labour and materials for the work the contractor may want to do with its own forces; and
- The subcontractor works.

Exposure to assuming responsibility for risk is largely found in the estimate techniques and summaries which make up the element of general conditions. Prudent estimator techniques in this area must be stressed since the estimate often records and binds the thinking of the contractor forever. In the present business world and in the theory of risk minimization, there is no place for a word like contingencies in estimate (Cheeks, 2000). The client, architect and contractors who are claim conscious, should forget the word contingency or should just be careful of the word contingency. They must endeavour to increase their fee rather than particularize on paper, controversial elements of cost which are no more profit minded than if they had based their price on new methods of construction cheaper than those in common use and then kept all the savings as added profit for itself.

b) Defective Plans

A major source of disputes in the design deficiencies is that categorized as defective plans” (Hellard, 1997). What therefore are defective plans? Most people involved with plans have a working idea of the definition of this phrase, but in reality no standard

exists locally or in nationally that precisely describes how to measure the defective plans.

Indeed, everyone who has worked with plans knows that no set of drawings is complete or without error. Somewhere dimensions are missing, elevations or grades are in error, a detail is missing, or a detail is shown but not needed. Not only are these types of errors common, but all who work with plans know that drawings can always be refined and upgraded. Plans can always be made better, they can be improved. Thus all plans are to some extent defective and everyone involved in building uses defective plans every day. The question in plan deficiency disputes is that plans become defective at the point when undue costs are generated from their use.

Plans are to be prepared with the normal standard of care found in the profession, but no precise standard exist. The Architect therefore has the advantage of its subjective knowledge of the intent of the plans. In some cases pressures from the client will be exerted for degree of performance in excess of the objective intent of the plans. This, plus poorly drawn plans, poorly drawn details, poorly prepared notes on drawings, and poor specifications may reach a point where in the opinion of one's peers, a level of acceptable performance has not been achieved.

In the case of errors of omission from a set of plans, the decision of adequacy on the part of the professional is much easier to make than those which bear on methods or performance levels to be met upon completion. If an engineer omits the exit lights totally, are the plans defective? Does the client have the right to rely on the boiler plate clauses requiring the contractor to meet all codes to overcome the lack of exit lights? Probably no, but then there is no fixed rule to answer these questions. The solution generally comes from the people genuinely willing to confront such situations daily and work out the answer.

Serious dispute can arise from defective plans. Experience has shown that major dollars can be lost by one party to a contract because of a drafting error. Although this type of error can be very expensive it may be common to the profession. In this case, the question is not the extent of damage but the degree of professionalism used or

lacking. Engineers and architects are cautioned not to judge themselves in disputes over plans they have prepared which are called or seemingly are defective. The mature Architect will acknowledge the existence of an error and do its utmost to mitigate the resultant costs of correction. The best reaction for an Architect in an errant position is therefore to move forward immediately, calm sensibly and openly to measure and solve the problem and simultaneously to create a record of interested, fair, genuine professionalism with concern for all involved in any obvious overruns.

The client and the contractor have the right to expect the Architect to produce a set of drawing plans which will allow the project to be built. The law says the client warrants to its contractor that the plans, if followed, will produce the desired results and the project is constructible. Thus if the error by the Architect prevents the contractor from reaching its ends, the question of ability and assessment of consequential costs exists (Jesup et al, 1963). And this when not communicated well enough can lead to serious disagreements, if not resolved early or in a timely manner may result in a dispute.

c) Construction Methods and Specification Performance

The last category of deficient design according to Hellard (1997) is the case in which the consultants including the architect has specified both method of construction and the result required and then refuses to accept one of these two requirements.

Examples of this problem are many but one that occurs very often is when the architect specifies that a certain waterproof coating be applied in two coats on some exterior surface under stringent conditions. The contractor applies the specified coating exactly the way it should, careful inspection is made by the Consultant as work proceeds, and then to the dismay of all, the waterproof coating leaks contrary to the specifications. Almost without exception, the work is rejected and the contractor told to do it over again. This, in the researchers' view, may be a potential trigger of dispute on the particular job since the end result did not meet what was expected.

“The problem, while very simple and obvious in the foregoing illustration, can quickly get very complicated and significant when detailed structural or mechanical sequences are set forth” (Mix, 1994). Sometimes specifications are carefully followed, inspected

before, during and after construction and finally all approved but at the end of the day, big cracks appear in the walls and floors or the painting starts to remove or after a little rainfall, dampness in walls begins to show. The principle is still simple: If the Architect tells the contractor how to do something, the architect cannot impose a result beyond the product of the specified means. This therefore does not mean that the architect will not try nor does it mean that the contractor can view its responsibility for workmanship lightly. Very often, the architect or engineer in his role as interpreter of the contract will find himself in the position of imposing the consequence on a contractor of an error for which the architect is at fault and will ultimately be found responsible.

The imposition of the consequence of the error on the contractor can mean penalties beyond all fair play such as financial failure, loss of personal health, even suicide. The question always will be “*Can the contractor recover or pursue punitive damages such as a capricious and arbitrarily act by an Architect?*” Again, there is no hard rule, but it would appear that the common law evolution process is now setting the stage for such punitive actions” (Horns, 1979). Some recent liberal giants who set the initial trends in law at lower levels have found that failure to act in while fully aware of the consequences even in a contract relationship is really a tort action and punitive damages are assessable.

The design professional's role during construction is to determine whether the work, when completed, will substantially conform to the requirements and specifications of the contract documents. They therefore do not have the right to extend their role to pronounce judgements about the adequacy or appropriateness of construction means and methods chosen by the contractor even though the specific construction means and methods selected by the contractor may materially affect the way the work is done, the cost of doing the work and the time within which the work will be performed. When this happens, serious disagreements do occur which encourages the contractor to assert claims for delays, extension of time or additional costs. At most times many of our Ghanaian contractors do not read the tender and contract documents which consist of the specifications that they have to work with. This sometimes brings about disagreements between the participants on the construction

project especially when a substandard work is challenged. Figure 2.3, illustrates the potential causes of disputes under design deficiencies.

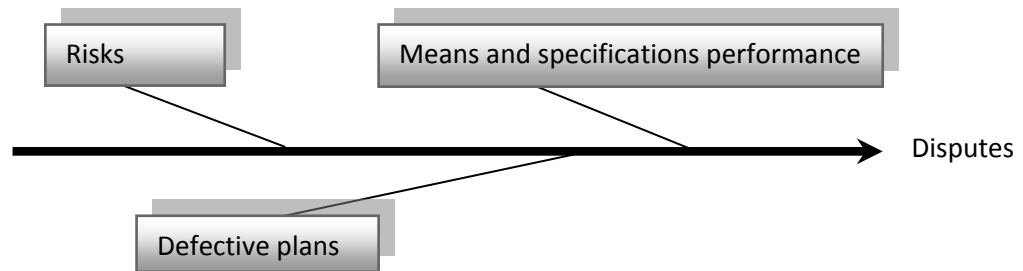


Figure 2.3: Fish bone diagram illustrating the potential causes of disputes through Design deficiency.

Source: Authors Construct, 2008

2.5.4 *The Construction Process*

The next spawning ground for construction disputes is found in the consequences of the construction process. “At most times it can be difficult to differentiate between a design error and the consequence of the process” (Hohns, 1979).

Some items that give rise to dispute in the construction process are failure to plan and schedule adequately, failure to follow a plan and schedule, disagreement over what material is really specified, disputes over what is really an equal, failure to supply adequate manpower, responsibility for lack of adequate subcontractor manpower, equipment changes that cause delay. Changes or modifications of scope that increase consequential costs beyond specified mark-up, failure by the client to fulfil its responsibilities on time, failure by the engineer to approve contractor submittals on time, over payment for work in place, conflicting variation orders and oral or written instructions, underpayment for work in place, lack of performance ability in one of the subcontractors and so on. Certainly the list is almost endless, but by trade practice and custom, the items thereon relate to someone’s failure to do that which was required by its contract, thus changing the basis expected and / or implied to be available to the extent that the means, environment, conditions, or duration of a project are significantly affected for any member of the process who feels sufficiently aggrieved to file a claim. Any one of these can cause a dispute.

The construction process dispute is recently being pursued under both contract and tort concepts of law. If an architect who does not have a contract with the contractor does not do its work in the time and manner set forth in the client-contractor contract or in the time and manner on which the contractor has a right to rely, i.e., duties well established by custom and the standard of care, the architect incurs a very real risk of being sued by the contractor in a tort action. Tort actions bring the added threat of punitive damages. This exposure to the design professional has never really been pursued until the last few years.

The construction process dispute and almost all disputes involving large amounts of money are time related (Hellard, 1997). Much focus is put on contract time; the contract documents usually set forth a definite number of calendar days or fixed final date for completion. There are times when more than one date is set forth in the documents especially when jobs are to be built in phases or where specific milestone portions of completion are necessary.

The second focus on time-related consequences is the juggling act a client goes through when, for example, he develops a \$100 million program which for the reasons of management is spread over say ten or more separate contracts, all of which depend on each other for start, mid job milestones, and interrelated finishes. In this type of situation, the pace of everyone involved can and usually does break down and causes the need for adjustments for delay damages making room for serious disagreements to begin.

2.5.5 *The Consumer Reaction*

The consumer can be any other of variety of people. He can be the client, private or public, or a corporate body. “The corporate client in a dispute situation always boils down somewhere to one person who at times is hard to find (Hellard, 1987). The consumer can be a tenant or he can be a purchaser of the building. He can also be a user who pays money to come into the building or comes to spend money or go to work. The aggrieved consumer can have no relationship with the contractor, architect or the client and still have a reaction to their endeavour.

a. The Public Client

The typical public client, such as a school board, division of hospitals, or municipal assembly, is not particularly set up or organized to display or assert its reaction to its new building or alteration project if it does not do what it was supposed to do. The adage “out of sight, out of mind” applies for most of the problems experienced, as this type of client takes over and uses a newly constructed facility. The maintenance and occupancy of the building are generally the responsibility of a set of other people other than those who were responsible for its design, creation, and construction.

No one knows who did not do what, or had agreed to do something else, or whatever. It is only infrequently that the architect passes out manuals which say that the building was designed to support such and such or so many kilowatts of electricity were to be consumed, and so on” (Ruskin, 1982). Instead the use of the building is something that is learned by chance by the people who take over and determine for themselves how they think the building should best be used. It is the real building which is put into use as programmed by the engineer.

It has been until recently that any emphasis has been placed on getting the contractor or the architect to pay for its mistakes. The prime move towards this idea has been the staggering cost to repair, replace, or alter a system that does not function acceptably let alone as it purported to. The complexity of today’s installations makes it necessary for a client who has not been well served by its contractor or architect to pursue one or both for relief.

b. Warranties

The contract will typically spell out the obligation of the contractors regarding guarantee. Many problems in warranty come about when the contractor is unable to duplicate the agreement it made with the clients, its suppliers, and its subcontractors. A typical national manufacturer of major equipment will offer a warranty for one year from start up, a period that does not coincide with the agreement between client and contractor (Battelle, 1995). Obviously, the client feels the contractor knew this and should have priced its tender to offer the warranty stated regardless of start-up caveats from the manufacturer, but most contractors do not do so and instead a squabble over the warranty periods occurs.

The client has no reason to give in on warranties and if does so, it has been outplayed. Clients, who accept buildings with problems that are known at that time of acceptance, accept the problems as well, unless the problem is noted as an exception (Hellard, 1997). This problem is called patent defects with an unknown defect being called a latent defect and is sometimes a wrong that no one could observe or properly realize. In the case of discovery of a latent defect, the client must give the contractor the opportunity to repair or correct the defect before he can go off and be relief in some preferable way.

The high degree of sophistication needed to understand how to run one of today's projects puts another burden on the client. Typically clients do not maintain the new building and its components as required by the operator's manual (Bachner, 1995). The implied warranty or right of reliance on buildings or parts thereof to do certain things has received a great deal of press and publicity. Certainly the client or user has a right to pursue recovery of damages if the project does not deliver what he really wants.

Figure 2.4, shows the factors that cause disputes under consumer reaction consisting of the public client and warranty.

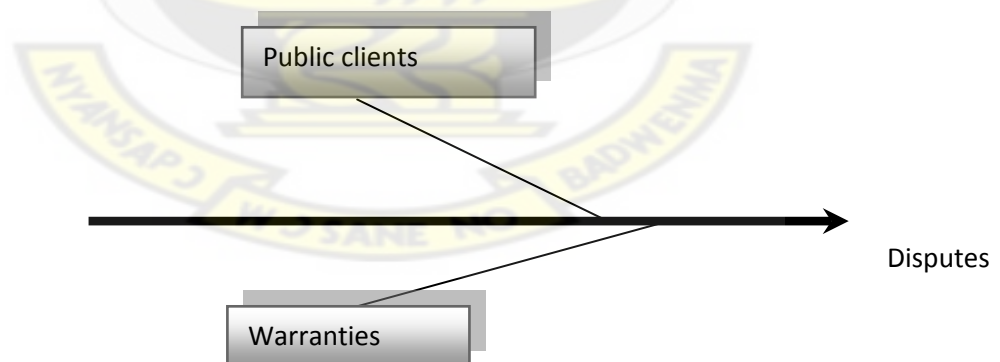


Figure 2.4, Fish bone diagram illustrating the potential causes of disputes through consumer reaction

Source: Authors Construct, 2008

2.5.6 *Time*

Those involved in a construction problem quickly learn that it is not the hard (or the nuts and bolts) dollars which are important; rather it is in the time related costs that the huge damages arise to all concerned. The client with the late facility has all sorts of extra costs or losses with which to contend in a delay posture; the contractor suffer the added costs of stretch-out, escalation of wages and other costs, and loss from their liability to focus management on new spheres of work. According to Hall (2000) time is the key and the use of time is planned by scheduling. Every construction job requires a schedule. Some require simple bar chart schedule, others require more detailed studies, and some require complex computer produced critical path method or construction manager control system programs. The latter techniques are very popular, and becoming more so to the extent that sophisticated scheduling techniques required for certain types of work. The bar chart is the usual standard when the Critical Path Method (CPM) schedule is not used.

Scheduling or proper planning by the contractor on how to handle his job in time will need planning programs. It helps the contractor to manage his project properly and complete his jobs on agreed time. This will then avoid any dispute that may occur due to delay because of poor planning, poor scheduling by the contractor. Late completion of construction projects can lead to claims and counter claims; and can damage the business relationship of the stakeholders to a contract.

Typically when projects suffer delayed completion, a defaulting contractor may attempt to avoid payment of damages for non completion by attributing the overrun on the contract program (Kwakye, 1997). In the case of an architect's failure to grant an extension of time when a delay has been caused by the client, contractor may argue defensibly that time is at large which, in simple terms means the completion date is no longer applicable and therefore the contractors contractual obligation is reduced to completion of the project within a reasonable time. But what constitute a reasonable time is subject to the law. Further more in addition to putting forward the above defense, the contractor may claim to have suffered direct loss and/or expense and, accordingly, claim financial reimbursement.

Serious disputes have occurred due to delayed works. Many contractors overlook this part of the project stage and see it as simple. Unfortunately it is one of the factors which cause disputes frequently on construction projects. Time therefore needs to be monitored to avoid any conflict between the contractor and the client.

2.5.7 Stakeholders

Generally, as indicated by the various authors from different countries, the sources of construction disputes as mentioned above revolve around design deficiencies, the contract documentation, ineffective communication, the construction process, consumer reaction, unpredictability of site conditions, time and so on. Notwithstanding this, Lowe et al. (1997), Campbell (1997), Hall (2000) and Carmicheal (2002) in their individual studies, observed that, the primary stakeholders (namely client, consultants and contractor) are the main reasons for disputes found on construction projects. In that, disputes are caused by the failure of one of them or other members of the building team such that they

- Fail to do their work correctly, efficiently and in a timely manner;
- Fail to express themselves clearly; or
- Fail to understand the implication of instructions.

These sources of disputes caused by stakeholders such as clients, contractors and consultants are as follows:

a) Clients

Lowe (1997) and Campbell (1997) identified the following factors as causes of construction disputes caused by clients:

- a) Poor briefing;
- b) Expectations at variance with contract documentation;
- c) Changes of mind during construction;
- d) Changes to standard contract conditions and additional non-standard conditions;
- e) Poor financial arrangements leading to late payments;
- f) Rigid budgets;
- g) Interference by administrators outside the contract process;

- h) Interference by client in contractual duties of the contract administrator;
- i) Failure to respond in timely manner;
- j) Poor communications amongst members of the team;
- k) Inadequate tracing mechanisms for request of information;
- l) Deficient management, supervision and coordination efforts on the part of the project managers;
- m) Lowest price mentality in engagement of contractors and designers;
- n) The absence of team spirit among the participants;
- o) Failure to appoint a project manager.
- p) Discrepancies / ambiguities in contract documents.

b) Consultants

Hall (2000) and Campbell (1997) identified causes of construction disputes caused by consultants as they are listed below:

- a) Failure to understand its responsibilities under the design team contract;
- b) Over design and underestimating the costs involved;
- c) Late information delivery and cumbersome approach to request for information's;
- d) Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
- e) Incompleteness of drawing and specifications;
- f) Design inadequacies;
- g) Lack of appropriate competence/Inexperience;
- h) Failure to define brief;
- i) Failure to define conditions of engagement and fees;
- j) Delay in settling claims;
- k) Incomplete information;
- l) Ambiguous specifications;
- m) Variations and late confirmation of variations;
- n) Lack of coordination of information from different sources;
- o) Under-certifying/under invoicing.

- p) Delay in Checking contractor's program and method statement;
- q) Unclear delegation of responsibilities; and
- r) Inexperience.

c) Contractors

Carmicheal (2002) and Campbell (1997) identified causes of construction disputes caused by contractors as follows:

- a) Inadequate contractors' management, supervision and coordination;
- b) Delay/ suspension of works;
- c) Failure to plan and execute the changes of works;
- d) Failure to understand and correctly tender or price the works;
- e) Lack of understanding and agreement in contract procurement;
- f) Reluctance to seek clarification;
- g) Inadequate CPM scheduling and update requirements;
- h) Inadequate site management;
- i) Poor programming;
- j) Poor workmanship;
- k) Disputes with subcontractors/suppliers;
- l) Late payment of subcontractors/suppliers;
- m) Manufacture of claims premeditated or at conclusion of contract; and
- n) Unforeseen items.

It is important to note that almost all the clients, consultants and contractors related factors listed above which were observed by Lowe et al. (1997), Campbell (1997), Hall (2000) and Carmicheal (2002) as the causes of dispute on construction projects, can be seen to be in the form of a design deficiency, time related, an unforeseen site condition, ineffective communication between parties, construction process problem and so on. Therefore clients, consultants and contractors do contribute significantly to disputes that arise on construction projects.

2.6 PREVENTION/AVOIDANCE OF CONSTRUCTION DISPUTES

The only good construction dispute is one that is prevented or avoided (Allen, 1993). Some disputes will require the dispute resolution provisions of the contract including arbitration or litigation. However, this should not deter the participants in a construction project from examining the means and methods to prevent/avoid or minimize disputes before or during the course of the project. This research report presupposes that the parties to the dispute have a collective and genuine interest in resolving, in good faith, the matter in a fair and cost effective way. It also presupposes that the nature of the dispute is not one that requires a legal interpretation or decision before it can be resolved which in many cases will require litigation therefore disputes can be prevented.

Researchers through literature have described ways in their opinion that will prevent the differences between the parties from arising or becoming a dispute. Their main reason was the need to prevent / avoid disputes as early as possible before resorting to the formal dispute resolution mechanisms in the contract or otherwise.

2.6.1 Construction Disputes Prevention Techniques

Given the expense and disruption caused to any contract when a dispute arises and the damage it has on various stakeholders' relationships, the importance of following disputes prevention techniques cannot be over emphasised (OGC, 2003). As a result, Kirk (2002) pointed out that, there is a need for putting appropriate mechanisms in place to identify conflict as early as possible to help prevent it from turning into a costly dispute. Therefore an ounce of prevention is better than cure.

Thornton (2007), revealed that nearly one-third of in-house counsel in United Kingdom businesses plan on increasing their spending on dispute prevention over the next three years. The survey identified that in-house legal departments are making dispute prevention a top priority and are now developing systems and processes to reflect this new attitude. Most construction firms already carry out some form of dispute prevention activity under the general label of 'risk management'. He also reported that most popular methods of dispute prevention in the industry are; early

negotiation (97%), pre-contract reviews (90%), risk audits (78%), training (71%), and compliance audits (71%).

According to Thornton (2007), dispute prevention can be split into two types; Management methods aimed at achieving better risk control and non escalation mechanisms. Management methods aimed at reducing risk include better planning, for example by ensuring that contract documents are clear and precise; utilising project and business structures which lessen the risk of disputes – partnering or integrated project teams are examples; using appropriate procurement methods; and generally emphasising the value of good management. Non escalation mechanisms aimed at resolving disputes before they escalate; for example – structured negotiation including tiered dispute resolution mechanisms within contracts, the use of dispute boards and project mediation. Some commentators have suggested that the selection of the construction contract itself will bring about the success of a project and reduce conflict.

Thornton (2007) also mentioned that, the most obvious method used to prevent disputes arising is through negotiation. It may be arguable whether negotiation is an example of dispute prevention or is a form of dispute resolution. Whatever label is put on it, negotiation is certainly aimed at preventing the full-scale conflict which is involved in both litigation and arbitration. Regrettably, the whole environment of the construction process often works against establishing the frameworks necessary for effective negotiation. Better training is therefore needed to make effective negotiators out of the typical project.

Brewer (2007) made known that dispute review boards, are increasingly being accepted on large scale projects as an important weapon in the dispute prevention armoury. He recommended that, dispute review board members should be appointed at the outset of a project by the stakeholders as individuals whose views and decisions will be respected. This way, the dispute board will be available to the stakeholders at short notice to prevent disagreements from escalating into disputes and to give either recommendations or decisions, depending on the defined role of the board, should disputes arise. Hence it may create an atmosphere in which the stakeholders are

obliged to be more realistic and factual in any representations that they make in the knowledge that sooner or later the board members may be asked to intervene. This process has in fact enjoyed great success in both preventing disputes and achieving early consensual resolution of disputes on virtually every project in which it has been used (Groton and Rubin, 2004).

Other researchers including Skeene and Shaban (2002), Pinnel (1994) and Yates (2003) also indicated that adequate contract documentation, early consideration and allocation of project risks, team building including the introduction of partnering approaches to establish common objectives, communication of potential problems or claims at the earliest opportunity, realistic assessment of the value and impact of a claim, education and early negotiations to be some of the other ways construction disputes can be prevented.

A. Adequate Contract Documentation

During the design phase of a construction project, an owner's ideas, concepts and project requirements are transformed into detailed plans and specifications that will be used by the contractor to construct the project (Raysman and Steiner, 2000). It is therefore important that a client, in conjunction with the architect/engineer, exercise the utmost care and consideration when making decisions early in the design phase to minimize the impact of any disputes on project progress. Proper planning and careful review of project plans and specifications can substantially minimize the likelihood of disputes and provide a basis for timely resolution of any problem that may occur. In reality, however, in view of the complexity of the construction process and time necessary for overall delivery, all but the smallest of projects are inevitably incomplete (Yates, 2003). As a result, there is the need for clients and their consultants to effectively reduce contractual incompleteness by complying with accepted construction industry “good practices” conventions and making sure that construction projects are tendered on the basis of a fully completed design, having no errors or omissions in tender documentation, and requiring no changes or variations during the construction phase. The Latham Report (Latham, 1994) contains the most comprehensive “good practices” recommendations made in recent years. Whilst this

report is directed at the United Kingdom construction industry, many of its findings are applicable to the construction industries of other countries such as Ghana.

B. Early Consideration, Allocation of Project Risks and Risk Assessment

The success of the project and the prevention of disputes depend heavily on the proper assessment and allocation of risk (CII, 1995a). Errors in risk assessment can lead to significant changes and rework, resulting in added costs and delays. Detailed project scope definition is a major component of risk assessment, in that scope changes pose a threat to the success of the project. Changes frequently lead to contractor claims, and while a certain number of changes are inevitable on a complex project, research experience indicate that thorough project scope definition prior to the start of detailed design avoids a large percentage of changes and their related impacts. A well-defined project scope allows the owner to effectively communicate its desires to the designer, who then has the information needed to design the project to meet the client's needs, goals, and expectations (Gibson and Pappas, 2003). As the costs and risks of construction continue to rise, more construction industry professionals are turning to a system that fairly distributes risk among all the parties involved, the architect/engineer, the client, the contractor and the sub-contractor(s). Fairness is an elusive concept, but the objective as defined here is to allocate the risk to the party best able to control it (Jannadia et al, 2000).

Many disputes on a construction project can be prevented if the risks and responsibilities of the parties are clearly defined, in unambiguous terms, so as to avoid any misunderstandings. In fact, ambiguities in contracts and unreasonable allocation of risks between project participants are among the leading causes of disputes in construction projects (Marston, 2000).

Factors that should be considered when allocating risk are:

- i. Identify the risks;
- ii. Determine which risks can be insured;
- iii. Determine which party can most easily and economically obtain cover for insurance risks;
- iv. Determine which party is best able to control and minimize the risks which cannot be insured;

- v. Let the employer accept as his own responsibility, and allow his budget for, all risks which are not insurable and which the contractor cannot influence (Sykes, 1996).

In order to prevent disputes, it is necessary to have some appreciation for the reasons that disputes may arise on a construction project and to consider the steps that can be taken to minimize the likelihood of such disputes. The careful consideration of potential disputes in the context of the terms and conditions of the contract can assist to identify potential problem areas that require attention. It will assist to prevent/avoid disputes if at the outset of the project the parties consider the potential reasons for dispute to ensure that the risks are properly allocated in the contract and to give attention to the means and methods to prevent/avoid the occurrence of the matter.

C. Team Building and Partnering

With the fragmentation of the construction industry and the low-bid environment used on public and many private projects, long-term relationships are very difficult to form. As a result, team building which is another dispute prevention technique can be instituted at the beginning of a construction project to help allow for better cooperation and coordination among the parties (Steen, 1994). One such process, partnering, has gained increasing popularity in recent years. It involves an extra contractual understanding among all parties to form a partnership of sorts to achieve mutually determined goals and objectives as well as to minimize disputes and claims. This agreement is often reached through a partnering work-shop, wherein all parties agree to take specific steps to work together, fairly allocate risk and responsibilities and recognize their common goal and a successful project.

The United States of America Army Corps of Engineers developed the partnering process in the 1980s in order to fundamentally change the manner in which contractual parties relate to each other – creating a cooperative team approach rather than the more historically common adversarial approach. Partnering is a voluntary process, and joint costs are typically shared by the stakeholders. Partnering agreements do not modify any existing contractual requirements regarding notice, changes, submittals, etc. Partnering includes working together as a team, developing a

common set of project goals that the combined project team supports, open communication and access to information, empowering participants to resolve issues at the lowest appropriate organizational level, reaching decisions and solving problems quickly and by consensus, and maintaining the relationship throughout the project (AAA, 1996). The clear definition and documentation of needs is a critical success factor for the partnering process (AAA, 1996) – one of these needs is a detailed scope definition package, which represents a significant component of the overall project risk. A partnering mindset precludes the unfair allocation of risk. Well-written contract clauses clarify expectations and set a positive initial tone for the relationship. The goal of the prevention of construction disputes is to resolve a large percentage of conflicts within the project organization. This will reduce the cost, time, and disruptive impacts of project disputes.

The basic requirements of a successful partnering program are described as follows:

- i. The tender and contract documents must state that partnering principles will be applied;
- ii. The top people in each company must take the initiative and lead by example;
- iii. The initial partnering meeting, or workshop must be properly planned and conducted;
- iv. The partnering agreement must be negotiated and signed by all the companies who are engaged on the project;
- v. The agreement must state whether the claim notification procedures in the contract are still required; and
- vi. The application and operation of the partnering agreement must be monitored and reviewed (Campbell, 1997).

For the most part, partnering is a concept to create an attitude on the project of harmonious relations with the expectation that this attitude will assist to avoid the adversarial approach to disputes and project delivery. Although partnering may initially require more manpower and effort, its benefits can be invaluable, creating a more harmonious, less confrontational process and, on completion, a successful project free of litigation and claims. Partnering allows the parties to move from an adversarial relationship to cooperative team work, from a win-lose strategy to a win-

win plan, from a stressful project to a satisfying one, from a litigation focus to solutions and accomplishments, and from finger pointing to a hand-shake mind-set; it also allows bureaucratic inertia to dissolve and risk-taking to be endorsed (Harbark et al, 1994).

D. Communication of Potential Problems or Claims at the Earliest Opportunity

The longer a potential problem or claim is allowed to go on the more likely it is to escalate and the less likely it is that the matter will be resolved without a dispute. The advance warning of a potential problem or claim has the advantage of preventing/avoiding a surprise by the other side and it enables the parties at the earliest opportunity to consider solutions to prevent/avoid or minimize the impact of any potential claim.

One approach expressly provided for in the Engineering and Construction Contract, standard form, prepared by the Institute of Civil Engineers (1995) in the United Kingdom is a procedure called the “early warning” meeting (Campbell, 1997). This process requires the owner or the contractor to give the other “an early warning as soon as they become aware of any matter that can give rise to an increase in price, delay completion or impair performance of the work” and to demand the attendance of the other party at an “early warning meeting”. Any party may invite other interested parties such as the consultant or subcontractors to the early warning meeting subject to other party’s right to veto their attendance. The “early warning” meeting does not change the basic responsibility of the parties for the problem under the contract. Rather, it provides a contractual duty to raise and consider potential problems at the earliest opportunity.

E. Realistic Assessment of the Value and Impact of the Claim

Although a realistic assessment of the claim may not guarantee its resolution, an unrealistic assessment is almost certain to result in a dispute. In fact, it is not unusual to incur a significant amount of time, effort and expense to deal with unsubstantiated or inflated claims during the examination for discovery processing construction litigation or arbitration. In any event, a realistic claim presented with the necessary

supporting documentation and information to satisfy the consultant or other party may prevent a dispute. Like most construction contracts, provides the Consultant (project architect or engineer) with the first opportunity to resolve disputes by making a finding in respect of matters in which the Consultant has authority under the contract. Disputes presented to the Consultant do not happen in a vacuum (Skeene, 2002). Careful attention to collecting the information (including the observations of those directly involved and documents necessary to prove to the Consultant the validity of the claim may provide the Consultant with sufficient information to recommend to the other party that the matter be resolved by agreement. This may prevent the necessity to formally refer the dispute to the Consultant under the contract for a finding.

In order to properly assess the entitlement and quantum of the claim, legal or technical assistance may be required. This advice should be sought early to assist in the presentation and negotiation of the claim. When the client is made aware of or receives notice of a potential claim by a contractor, the client immediately should make an initial review of all of the circumstances and related events involving the potential claim. Often, a contractor's problem can be resolved quickly by objectively evaluating the contractor's concern and applying "the rule of reason" before the problem escalates into a full-blown dispute. In this way, early evaluation of the facts involving the potential claim can focus the issues and increase the likelihood of a prompt, good faith, negotiated settlement. Consideration of a net position to resolve the matter will enable the appropriate compromises to be made early in the process.

F. Education

Disputes may be prevented by an upfront investment to educate those responsible for the administration of the contract on the rights and obligations of the parties involved in the project (Allen, 1993). A thorough understanding of the contractual relationship extends beyond the client and the contractor. It should include other stakeholders such as the consultant, subcontractors, surety and insurer. Garber (2007) during his annual meeting with the invited attorneys in the United States of America, suggested that, individuals with the authority to market a company's services should be educated about the importance of realistically representing the firm's abilities, so as not to encourage unrealistic client expectations or promise unrealistic results.

Similarly, individuals with the authority to contract on behalf of the firm should be educated about the importance of appropriate project specific and general condition terms in the client-design professional agreement and the exclusion of certain provisions, such as express warranties and broad form indemnification. In addition, these individuals should be educated about the nature and scope of the firm's respective insurance coverage and the specific types of services or projects that may pose a risk of uninsurability, thereby exposing corporate or personal assets to professional or other liabilities.

Firm employees involved in the actual performance of services should be trained on the continuing importance of educating the client about realistic expectations of the design professionals' performance and the fair allocation of risk between the owner and contractor in the preparation of the construction general conditions. In addition, these employees should be trained in the prompt identification and response to problems that may arise in the field during construction or in other client contacts. Because field personnel are likely to learn of such problems first, they are in the best and most effective position, after consultation with management or supervisors, to address the problems in a timely and low-key manner.

Design professionals should consider requesting experienced outside advisors, insurance or legal, who are knowledgeable about professional liability matters to participate in regularly scheduled educational seminars addressing early intervention and response. A firm's personnel may change, roles may be altered, and new developments in successful risk management may emerge that require periodic refreshers. The educational process is iterative, evolving, and continuous.

Disputes can be prevented if the persons administering the contract know the types of claims that may be covered by an insurer under a surety under a Performance Bond. In addition, an understanding of the duties of an insured to an insurer or the obligee to the surety can prevent/avoid disputes that may provide a financial solution to the claim. For example, it is important that any material variation of the contract or underlying risk assumed by the surety or insurer is communicated and their consent obtained in order to prevent/avoid subsequent dispute.

Many construction disputes begin with the onsite personnel of the parties. It will assist in preventing/avoiding disputes if the initial on-site decision makers have been educated on how to address a potential problem. For example, a potential dispute can result from an inflexible or intransigent attitude towards resolution. The following approach should be considered:

- a) Any action which results in an entrenched position must be discouraged. When a problem starts to develop into a claim the contract procedures should encourage people to listen to the other person and answer the points which have been raised.
- b) Many disputes arise because both sides are concentrating on developing their own cases, rather than trying to understand the reasons for the other person taking particular attitude. Proper understanding requires discussion, rather than an exchange of written statements (Campbell, 1997)

In addition, providing basic training on negotiating techniques may assist the negotiators to take an approach which favors an amicable resolution.

G. Negotiations

The Tenth Edition of *Webster's Collegiate Dictionary* defines negotiation as the process of "confer[ing] with another so as to arrive at the conclusion of some matter." Most construction industry disputes are prevented and settled, sooner or later, through negotiation. However, because construction industry disputes are often dynamic and involve the interests of many stakeholders, and negotiation not a purely standardized process, it is often hard to know when and how to get started. Negotiation is a consensual process (Garber, 2007). Success is dependent on voluntary, good faith efforts by all stakeholders to reach negotiated conclusion. The stakeholders, including the consultant should make every reasonable effort to anticipate problems that could develop into a claim and to raise such matters for consideration by the parties before it becomes a dispute under the contract. The involvement of an experienced, knowledgeable, impartial and credible consultant can be invaluable in anticipating and preventing potential disputes. In addition, the stakeholders may wish to consider the use of a "step negotiating" process as an express term of the contract.

The step negotiation process is one that will require the parties to refer the dispute to a higher level of authority that may not personally be responsible for the problem. The step negotiation approach can serve to get the dispute in the hands of the person with the real decision making authority or perhaps the person that will suffer the financial consequence if the dispute escalates. It also tends to alleviate any personality conflicts that may exist between on-site personnel directly involved in the matters giving rise to the problem. In any event, it is important to have the right personalities with the appropriate level of authority negotiating the resolution of the dispute at the earliest opportunity. It is also important to appreciate that there is an art to conducting successful negotiations which requires the representatives negotiating to have an appropriate level of negotiating skills.

H. Thinking outside the box / Thinking ahead

There is no dispute prevention strategy that can be scripted for every dispute on a construction project (Skeene and Shaban, 2002). They indicated that, disputes vary and not all may be suited for the dispute resolution mechanism that may be provided for in the contract. They therefore recommended that, parties should be prepared to consider potential solutions or options that may not be referred to in the contract such as the use of a reservation of rights or mitigation agreement. Such arrangements allow the parties to agree, to an interim solution, on a without prejudice basis, and to defer the resolution of the dispute to a later time. By deferring the claim to a later time when the actual expense or costs associated with the claim is known, the parties may be more amenable to prevent the dispute.

On some projects, there are early indications of potential problems, such as on a publicly tendered project when the tenderer to whom the contract is awarded has a reputation for low tenders and claims (Garber, 2007). In such a situation, it is important that the consultants not adopt a laid-back attitude. Recognizing the enhanced potential for disputes, the consultants should assign an experienced, skilled project manager to educate and prepare the client for the possibility of contractor claims. The consultants including the architect should also clearly articulate project requirements at the pre-construction conference. The pre-construction meeting, like

the pre-tender meeting, represents an important opportunity to influence and refine client and contractor expectations.

Garber (2007) also suggested that during project execution, the consultants should be proactive in checking the contractor's compliance with all general condition requirements and should completely document all pertinent developments and communications with the contractor in a timely manner. He also recommended that, timely responses to the contractor's inquiries or other communications often prevent/avoid or reduce the potential for disputes and that the key to prevent conflicts from tuning into costly disputes, is to be pro-active in anticipating and addressing potential or actual problems.

2.7 SUMMARY

This chapter revealed confused usage of the basic terms: conflict, claim and dispute. The definition of a dispute by Kumaraswamy and Yogeswaran (1997) was adopted for the purposes of this research report and states that a dispute can be said to exist when a claim or assertion made by one party is rejected by the other party and that rejection is not accepted. It was highlighted within the chapter that research on construction disputes has increased especially in the United States of America , the United Kingdom, Malaysia and Hong Kong, as projects become complex with ever increasing competing interest involved in project delivery.

In the United States of America, researchers like Levy (2007) and Osborn (1997) found out in summary that, the unpredictability of site conditions, the failure to chose the appropriate project delivery, the failure to assemble the right project team, design deficiencies, ineffective communication between parties involved in any construction project and the construction process as the most deadly causes of construction disputes. In the United Kingdom, the chapter revealed that researchers such as Campbell (1997), Hall (2002), Hellard (1987), Walton (2005), Nystrom(1995) and Carmicheal (2002) found out causes of construction disputes which were similar to the ones found in United States of America, including others like unrealistic clients

expectation, poor contract documentation, delays, warranties and so on. In the case of Malaysia, Motsa (2006), found out that the most significant causes of construction disputes are design deficiencies, poor communication, deficient and poor management by consultants, ambiguities in contract documents contractors failure to understand and correctly tender or price the works, inadequate site supervision and contractors failure to seek clarification and failure to plan and execute the changes of works. Yates (2003), found out that imperfect contract documentation, clients investment in respect of purchase of land for the project and the opportunistic behavior in particular on the part of the contractor as the root causes of construction disputes in Hong Kong.

The chapter also revealed that construction disputes need to be prevented as early as possible so that enormous amount of money in the industry could be saved and to enable work move on with minimum disruption. Skeene and Shaban (2002), Campbell (1997), Pinnel (1994), Yates (2003), Jannadia et al, (2000) and Garber (1991) suggested some techniques to prevent construction disputes. These construction disputes preventing techniques as indicated in this chapter were; education, better technical contract documentation, early consideration and allocation of project risks, team building including the introduction of partnering approaches to establish common objectives, communication of potential problems or claims at the earliest opportunity, realistic assessment of the value and impact of a claim, thinking ahead and early negotiations .

The purpose of this research is to develop appropriate strategies to prevent disputes on construction projects in Ghana. The literature review spelt out many causes of construction disputes and prevention techniques from different researchers. There is, therefore, the need to test whether these causes as the researchers mentioned are the same or are even occurring in Ghana and to identify strategies to prevent these causes from occurring. The next chapter, therefore, reviews the method available for collecting, analysing and interpreting data to meet the objectives of the research.

CHAPTER THREE - RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter Two reviewed the literature on the potential causes of construction disputes and the probable ways of prevention. The review led to the proposition of the key research questions. The research questions focussed on the potential causes of construction disputes in Ghana and how these causes could be prevented as early as possible before they escalate into disputes. The aim of the research was, therefore, to develop appropriate strategies to prevent disputes on Ghanaian construction projects. The objectives, necessary to achieve the aim of the research, were then developed.

This chapter explains the procedures of this study. A list of potential causes of disputes and ways of prevention were collected from the review of the literature and developed into a survey questionnaire. The availability and selection of appropriate research design, strategy and method that would address the key questions raised are presented in the chapter.

3.2 RESEARCH STRATEGY/APPROACH

A quantitative strategy was adopted in this research due to the fact that quantitative research follows a deductive approach in relation to theory and is concerned with the design measurement and sampling (Naoum, 2002). The strategy employs the use of statistical techniques to identify facts and casual relationships. Quantitative research is also objective in nature and based on testing a hypothesis or theory composed of variables (Naoum 2002). Frechtling and Sharp (1997) as cited by Naoum (2002), characterised the common data collection techniques used in quantitative research as questionnaires, tests and existing databases. Hard and reliable data are often collected in quantitative research and, therefore, emphasises on quantification. The samples collected are often large and representative. This means that quantitative research results can be generalised to a larger population within acceptable error limits.

The question which this research sorts to explore was to find out the causes of disputes on Ghanaian construction projects from the perspective of consultants, clients and contractors. The study also sorts to identify the important causes of construction disputes and how frequent each cause occurs on Ghanaian construction projects. This

then, would form a basis for appropriate strategies to be developed for disputes prevention on Ghanaian construction projects.

3.3 RESEARCH DESIGN AND ITS JUSTIFICATION

Researchers collect evidence when they ask for someone's opinion. Further attempts are then made to determine the prevailing opinion within a particular group.

A survey study was deemed appropriate for this research for three reasons:

- Survey research involved data collection from a group, generalizing the result of study to predict the attitude of the population of interest;
- The survey questionnaire may be structured to elicit information from the population of interest in a systematic and unbiased manner; and
- They permit statistical analysis of data and generalisation to a larger population, which makes them suitable to construction management research.

3.4 SAMPLE DESIGN PROCESS

The purpose of the sample was to gain information about the population by observing only a small proportion, i.e. the sample size.

3.4.1 Population Definition

The selection of the respondents was limited to only the D1 Building Contractors, Consultants comprising mostly Quantity Surveyors and Architects and Clients in the Greater Accra and Ashanti regions. The choice of this class of building contractors was made on the basis that they are well established firms with their offices quite easily to be located and are exposed to disagreements, conflicts and disputes by virtue of the type and size of projects they handle. Clients consisted of public and private individuals, e.g. Ministries, Departments Agencies, District Assemblies, Financial institutions, etc.

The decision to focus on these two regions was based on the list obtained from the Association of Building and Civil Contractors which showed about 54% of D1 building contractors are located in Accra and Kumasi, 28% in Central and Volta regions and 18% representing the remaining regions. In addition, the limited time

available for the study and financial constraints did not allow the researcher to travel to the other regions.

3.4.2 Sampling Techniques Used

The non-probability and probability sampling technique were used in the study. In probability sampling, the decision as to whether a particular element is included in the sample or not, is governed by chance alone. The technique allows each individual to be chosen randomly by chance.

Purposive sampling which is an example of the probability sampling technique was used in identifying the key respondents namely Clients, Contractors and Consultants. This was because the researcher required certain categories of respondents who had been involved in a lot of construction projects and therefore had encountered some amount of disagreements on construction sites with other stakeholders to answer the questionnaires.

Purposive sampling was also used in the selection of Contractors for the study. This resulted in D1 contractors from the Greater Accra and Ashanti regions to be selected since the researcher believed that they were representative to the population of interest and could give practical and convincing answers to the questions asked. The random sampling technique, as a means of selection, was used to obtain the sample size for Consultants.

Snowball sampling technique, which is an example of a non - probability technique was used to get the number of clients for the study due to the different types of clients available such as the Ministries, Departments, Agencies, Municipal, District Assemblies and Financial institutions. This sample technique is used to initially contact a few potential respondents who are then asked to give names of persons or organisations with the characteristics sought for so that the sample size will be reduced with less costs. As a result of this, the D1 contractors and the consultants who were consulted gave the names of clients they deal with. The list obtained from them was sorted out and the names of 30 clients were obtained and targeted for the research.

3.4.3 Sample Size Obtained

According to Israel (1992) there are several approaches used in determining the sample size. These, include using a census for small populations, imitating a sample size of similar studies, using published tables, and lastly applying formulas to calculate a sample size. For this study the first and the latter were applied.

The total number of registered consultants was 65. The sample size was determined using the formula (Kish, 1965).

$$n = \frac{n^1}{1 + \frac{n^1}{N}}$$

Where **n** = sample size

$$n^1 = \frac{s^2}{v^2}, s^2 = p(1 - p)$$

N = Total population = **65**

s = Maximum standard deviation in the population elements

p = proportion of the population elements that belong to the defined category
i.e. p = 0.5 (95% confidence level)

v = standard error of the sampling distribution i.e. v = 0.05

Hence solving for **n¹**

$$s^2 = p(1 - p) = 0.5(0.5) = 0.25$$

$$v^2 = 0.05^2 = 0.0025$$

$$n^1 = \frac{s^2}{v^2}, n^1 = \frac{0.25}{0.0025} = 100$$

$$\begin{aligned} n &= \frac{n^1}{1 + \frac{n^1}{N}} \\ &= \frac{100}{1 + \frac{100}{65}} \end{aligned}$$

$$n = 39$$

The sample size formulae like the one used above, provides the minimum number of responses to be obtained. From previous works done, researchers such as Cochran (1963), and Israel (1992) commonly add 10% to the sample size to compensate for

persons the researcher is unable to contact and a 30% increase on the simple size to compensate for non response. The sample size for the consultants was therefore increased by 40% accordingly as follows:

$$n = 39, \frac{140}{100} \times 39 = 55$$

Thus a total of sixty five (65) questionnaires were personally sent (in the case of those offices which were easily located) and those whose offices could not be reached were telephoned for directions. This number of questionnaires was sent out to allow the size to be larger than the required (n=55) for a desired level of confidence and precision and also since the difference between the population (N) size and the sample size (n) was not much.

The population sizes (N) for the clients and D1 contractors targeted for this study was 30 each, as a result the use of census for small populations was used to obtain the sample sizes of the D1 contractors(n=30) and Clients(n=30). This census approach according to Israel (1992) eliminates sampling errors and provides data on all individuals in the population. In addition, the approach allows virtually the entire population to be sampled, in small population to achieve a desirable level of precision. In all the sample sizes targeted for the study were **65, 30, and 30** for consultants, clients and contractors respectively, making the total of 125.

3.5 DATA COLLECTION

In order to achieve the objectives of identifying major construction disputes associated with the Ghanaian construction industry, the study focused on contractors, clients and consultants in the industry. This was because these contact groups are those who are directly confronted with these issues as they occur in the industry.

Based on the objectives and the research questions a questionnaire was developed to obtain as extensive, a collection of data as practicable, from these clients contractors and consultants. A structured questionnaire was therefore prepared and self administered to the various respondents. The questionnaire consisted of closed ended questions. For the purpose of the study, the questions were grouped under three

categories. The first series of questions related to respondent's profile. This was intended to find out the background and experience of respondents. The second group of questions related to the potential causes of disputes and the third section, related to probable methods of construction disputes prevention.

A 5-point ranking system and a three-level scale of low, moderate, and high were utilized where the respondents were asked to indicate from the list of 56 potential causes of construction disputes, how important each cause is and how frequent that cause occurs.

3.6 RESPONSE RATE

Sixty-five (65) questionnaires were issued to the consultants comprising largely of QS firms and a total of 50 were received representing 77% rate of return. Thirty (30) questionnaires were also issued to the D1 contractors and a total 27 were received representing 90% rate of return. Finally 20 answered questionnaires were received from the clients' organization representing 67% rate of return. All these are represented in figure 3.1 below.

Table 3.1 Response rate of respondents

Contact groups	Questionnaire issued	Responses	% of Response
CLIENTS	30	20	67
CONTRACTORS	30	27	90
CONSULTANTS	65	50	77
TOTAL	125	97	77.6

Total number of questionnaires issued: **125**

Gross total response: 97

Overall response rate: $\frac{97}{125} \times 100 = 77.6 \cong 78\%$

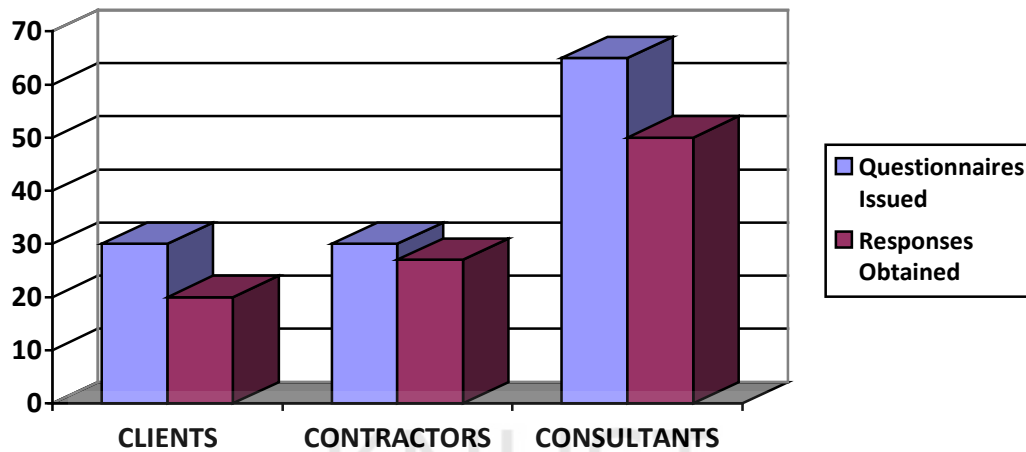


Figure 3.1: A graph illustrating Response rate of the three groups of respondents

3.7 RESPONSES TO QUESTIONS

The questions were answered as clearly as possible. The respondents were not under any pressure to rush through the questions as they had enough time to answer (one to two weeks). Discussions were also held with some of the respondents to obtain further information and reasons for their answers.

3.8 METHOD OF ANALYSES

The statistical methods which were used in analyzing the data obtained from the three groups of respondents on the causes of construction disputes and the various ways of preventing them included the following:

- **Significant Testing (P-Value Approach):** Significant test (at 95% confidence interval) was conducted on each of the factors which aided in identifying the significant factors that causes construction disputes from the clients, consultants and contractors.

- **Relative Importance Index (RII)** = $\frac{\sum W}{A \times N}$: Where,

W = the weighting given to each cause by respondents, ranging from 1 to 5,

A = the highest weight (i.e. 5 in the study)

N = the total number of samples

This was used in ranking the significant factors in terms of degree of importance.

- **Frequency Index (F.I)** = $\frac{3n_1+2n_2+n_3}{3(n_1+n_2+n_3)}$: where **n₁** is the number of respondents who answered “high”, **n₂** the number of respondents who answered “medium” and **n₃** the number of respondents who answered “low”.

The frequency index formula was used to rate the frequency of occurrence for each cause according to three ordinal scales: high (3), medium (2), or low (1). This method of analyses was used to find out the causes which were really occurring on construction projects. This is because a cause may be important but not occurring that much on Ghanaian construction projects.

- **Agreement Analysis:** A Kendall rank correlation coefficient (**W**) which is a non-parametric statistic was used for assessing or evaluating the degree of similarity/agreement between the three sets of ranks to the same set of the probable causes of construction disputes in Ghana. This tool was used to enable the researcher find out whether there is a trend of agreement among the respondents.

$$W = [\sum_{i=1}^k (R_i - R)^2] / n(n^2 - 1)/12]$$

$n(n^2 - 1)/12$ = the maximum possible squared deviations, i.e. the numerator which will occur if there were perfect agreement among k sets of ranks, and the average ranking were

1, 2, 3...n;

R_i = the rank assigned by an individual judge to one factor.

$$0.0 \leq W \leq 1.0$$

k = the number of sets of ranking (3)

n = the number of factors to be ranked (56)

R = average of the ranks assigned to the nth factor being ranked.

- ***Spearman Correlation:*** This inferential statistics method was also used to find out whether the differences in the rankings of the three groups of respondents on the probable ways of prevention of construction disputes were statistically significant or not.

3.9 DIFFICULTIES AND PROBLEMS ENCOUNTERED

During the course of the study obtaining information was rather difficult as most of the people contacted were too busy and careful to provide information.

The researcher also had difficulty locating the offices of some consultants and contractors as there were no sign posts and name plates to indicate the exact locations. Some consultants whose offices were to be identified by street names and house numbers proved very difficult. Fence walls of offices of some consultants have been re-painted without the numbers re-written on them. Some of the phone numbers given were out of service making it difficult to contact some of them.



CHAPTER FOUR – SURVEY RESULTS, ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

The purpose of this study is to develop appropriate strategies to prevent disputes on construction projects. In order to achieve the purpose of study, a methodology consisting of a review of literature and a survey of the main construction practitioners to obtain the real causes of disputes on Ghanaian construction projects, was depicted. This chapter therefore presents the survey results, analyses of the results and findings of the study.

4.2 SURVEY RESULTS

Questionnaires were sent to 125 persons, consisting of clients, consultants and contractors of which 97 responses were received for a response rate of 78%. The responses were further analyzed to determine the profile of respondents, the most important causes of construction disputes and ways of preventing these causes of disputes from the perspective of the clients, contractors and consultants. The respondents position, experience in the industry, whether the respondents have had any form of disagreements, conflict and disputes on construction projects and the origination of such disputes were some of the major areas of concern.

4.2.1 *Demographic variables*

According to Table 4.1 below, the survey shows that 56.7% of the questionnaires were filled by Quantity surveyors, 9.3% by Project Managers, 7.2% by Architects, 10.3% by Principal Consultants, 1.0% by Managing Directors, 9.3% by the Main Contractors and 6.2% by Others (Project Engineers, Clerk of works). The above information indicates that respondents who are often confronted with disagreements, conflicts and disputes handled a lot of the questionnaires. An overwhelming majority of 77.3% of the respondents had more than 5-years of experience in the construction industry. It was necessary to find out the working experience of the respondents so as to be able to obtain practical and convincing answers to the questions asked. 79.4% of respondents were found to have been engaged in a dispute (Refer to Figure 4.1), making the assertion that disputes are a

reality on construction projects indicated by some researchers is true. The survey also showed that 48.5% of disputes that often occur on Ghanaian construction projects were originated from Contractors while 27% of these disputes were originated from Consultants.

Table 4.1 Profile of Respondents

	CLIENTS		CONTRACTOR		CONSULTANTS		Overall % response
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Position							
Quantity Surveyor	10	50%	15	55.6%	30	60%	56.7
Project Manager	5	25%	2	7.41%	2	4%	9.3
Architect	2	10%	-	-	5	10%	7.2
Principal Consultant	-	-	-	-	10	20%	10.3
Managing Director	-	-	1	3.7%	-	-	1.0
Contractor	1	5%	8	29.6%	-	-	9.3
Others	2	10%	1	3.7%	3	6%	6.2
TOTAL	20	100%	27	100%	50	100%	100
Years of experience in the industry							
Less than 5 years	5	25%	7	26%	10	20%	22.7
5-10years	4	20%	10	37%	18	36%	33
10-15years	7	35%	7	26%	12	24%	26.8
Above 16years	4	20%	3	11%	10	20%	17.5
TOTAL	20	100%	27	100%	50	100%	100
Have you had any dispute on a project							
Yes	15	75%	22	81.5%	40	79%	79.4
No	5	25%	5	18.5%	10	21%	20.6
TOTAL	20	100%	27	100%	50	100%	100
Origination of the disagreement, conflict and the dispute							
Contractor	12	60%	1	3.7%	34	68%	48.5
Client	-	-	5	18.5%	14	28%	19.6
Consultant	7	35%	20	74.1%	-	-	27.8
All of the above	1	5%	1	3.7%	2	4%	4.1
TOTAL	20	100%	27	100%	50	100%	100

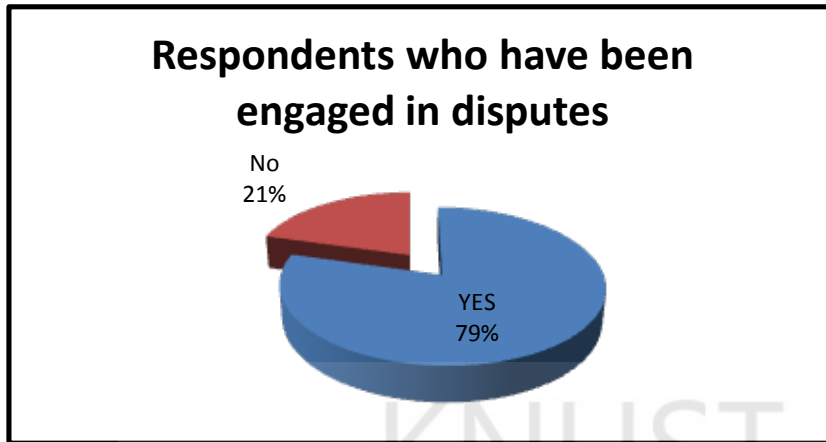


Figure 4.1: shows the percentage of respondents who have been engaged in disputes

In summary, the demographic variables show that the respondents were experienced in the construction industry with 79% of them engaged in a form of a dispute. This gives an indication that, respondent's had a good familiarity with construction work and all the problems associated with it.

4.2.2 Determination of Significant Factors that causes construction disputes in Ghana.

For a factor to be considered as significant or important, the significance test method was conducted. The test involved the formulation of a null and alternative hypothesis, evaluation of the test statistic and determination of the probability (z) of observing a value of the test statistics.

The null hypothesis, H_0 , is stated as:

“A factor among the 56 potential causes of disputes is NOT significantly important in causing disputes on construction projects in Ghana”

The alternative Hypothesis H_a is stated as:

“A factor among the 56 potential causes of disputes is significantly important in causing disputes on construction projects in Ghana”

Based on the ranking made by each group of respondents, the summation of weighting of each potential cause was computed for use to perform the significant test to enable the

relevant ones to be selected. An evaluation of the test statistic (X_s) was done and the p-value of observing a value of the test statistic was also determined. The P-value was taken to be the smallest value at which the significance level ($\alpha = 0.05$) could be present and still have been able to reject the H_0 .

The five point ranking (i.e. 1, 2, 3, 4, &5) have a mean (μ) of three (3) with a standard deviation of 1.58. The probability of observing the sample mean or larger if $\mu = 3$ and standard deviation (δ) =1.58 was computed. The test statistic was by Central Limit Theorem, approximately normally distributed with a $\mu = 3$ and δ / \sqrt{n} where n is the number of responses for that factor. The p-value therefore, was obtained using the equation below:

$$P[x \geq \mu] = P \left[z \geq \frac{x - \mu}{\delta / \sqrt{n}} \right] \dots \dots \dots \text{(For positive values of z)}$$

$$P[x \leq \mu] = 1 - P \left[z \geq \frac{x - \mu}{\delta / \sqrt{n}} \right] \dots \dots \dots \text{(For negative values of z)}$$

The **z** was determined through the evaluation of the test statistics at a significance level of 0.05(95% confidence level).

$$\begin{aligned} z &= 0.5 - [\alpha/2] \\ &= 0.5 - [0.05/2] \\ &= 0.475 \end{aligned}$$

A test statistic less than **z** causes rejection of H_0 thus, the H_0 was rejected when the P-value was considered to less than 0.475.

All P-values which are greater than 0.475 are accepted while those less than 0.475 are rejected (95% level of confidence).

From the standard normal distribution table, values of **z** are read.

4.2.3 Calculation of the test statistic

The test statistic was obtained by the application of equation 4.2 below.

$$\left[z = \frac{X - \mu}{(\sigma / n^{1/2})} \right] \dots\dots\dots(4.2)$$

Where:

- | | |
|----------|---|
| X | = the weighting for a factor divided by n |
| z | = the computed value of the test statistics |
| μ | = mean of point rankings |
| σ | = standard deviation of the point rankings |
| n | = number of respondents of each factor |

(Nkyi, 2008)

4.2.4 Clients

Table 4.2 shows the factors which clients identified as significant causes of construction disputes in Ghana.

1. Disruptions and delays by the contractor that create deviation from initial programme of works
2. Award of contracts to incapable contractors ;
3. Unclear and incomplete description of items in the bills of quantities ;
4. Government policy which encourages low evaluated tenders followed by claims;
5. Poor financial arrangements by the clients leading to late payments;
6. Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural ,architectural, mechanical and electrical designs;
7. Variations and late confirmation of variations ;
8. Failure of the client to honour payments as and when due ;
9. Poor interpretation of specifications ;
10. Contractor's failure to read the contract documents ;
11. Design professional's failure to remain within the clients project budget and design objectives;
12. Changes or modifications of scope that increase consequential costs beyond initial cost;

These were the twelve (12) factors identified by the clients as the most significant causes of construction disputes and were among the causes Levy (2007) found in the United States of America and Campbell (1997) in the United Kingdom.

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4.2.5 Contractors

It is also clear from Table 4.3 that contractors found thirteen (12) factors as the most significant factors that causes disputes in Ghana.

1. Unconfirmed oral instructions;
2. Award of contracts to incapable contractor ;
3. Failure of the client to honour payments as and when due;
4. Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
5. Inaccurate valuation of variations and works in progress;
6. Ineffective communication between the parties on the project;
7. Deficient management, supervision and coordination efforts on the part of the project managers;
8. Conflicting instructions;
9. Poor financial arrangements by the clients leading to late payments;
10. Unclear and incomplete description of items in the bills of quantities;
11. Discrepancies /ambiguities in the contract documents;
12. Site conditions which differ materially from those described in the contract documents (especially unforeseen underground conditions);
13. Failure to use specified materials, skilled operatives and recognised methods;

All the factors identified by the contractors are factors that were consistent in literature.

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4.2.6 Consultants

From consultants, as shown in table 4.4, the following, were the significant or important factors the causes disputes on Ghanaian construction projects.

1. Failure of the client to honour payments as and when due
2. Unclear and incomplete description of items in the bills of quantities
3. Government policy which encourages low evaluated tenders followed by claims
4. Ineffective communication between the parties on the project
5. Poor financial arrangements by the clients leading to late payments
6. Contractors failure to plan adequately and to follow planned schedules
7. Contractors' failure to price properly for the works
8. Contractors failure to read the documents;
9. The absence of team spirit among members of the project team
10. Disruptions and delays by the contractor that create deviation from initial programme of works

Factors relating to payments problems, miscommunication and inadequate contract documentation and others were seen to be the issues that cause construction disputes on Ghanaian construction sites.

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4.2.7 Significant factors causing disputes on construction projects

On using the significant testing, the most important/significant factors that causes construction disputes in Ghana are as follows

1. Failure of the client to honour payments as and when due;
2. Unclear and incomplete description of items in the bills of quantities;
3. Government policy which encourages low evaluated tenders followed by claims;
4. Ineffective communication between the parties on the project;
5. Poor financial arrangements by the clients leading to late payments;
6. Contractors failure to plan adequately and to follow planned schedules;
7. Contractors' failure to price properly for the works;
8. Contractors failure to read the documents;
9. The absence of team spirit among members of the project team;
10. Disruptions and delays by the contractor that create deviation from initial programme of works;
11. Unconfirmed oral instructions;
12. Award of contracts to incapable contractor ;
13. Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
14. Inaccurate valuation of variations and works in progress;
15. Deficient management, supervision and coordination efforts on the part of the project managers;
16. Conflicting instructions;
17. Discrepancies /ambiguities in the contract documents;
18. Site conditions which differ materially from those described in the contract documents (especially unforeseen underground conditions);
19. Failure to use specified materials, skilled operatives and recognised method
20. Variations and late confirmation of variations
21. Poor interpretation of specifications
22. Design professional's failure to remain within the clients project budget and design objectives
23. Changes or modifications of scope that increase consequential costs beyond initial cost

4.2.8 *Ranking of the causes of construction disputes from all respondents*

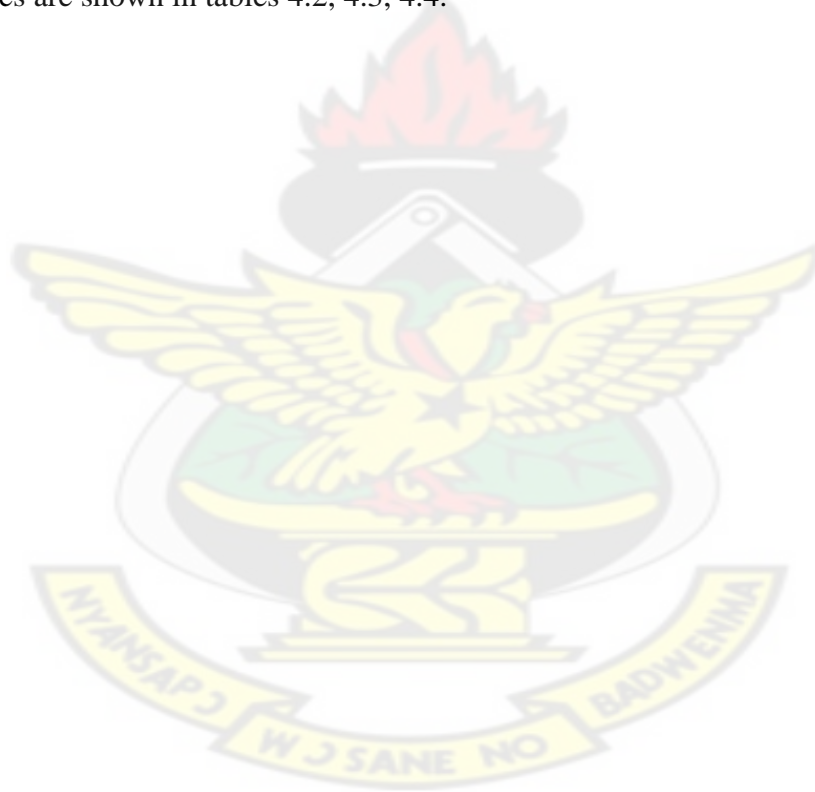
To determine the relative ranking of the significant causes of each group of respondents and the possible ways of dispute prevention, the following formula (Tam et al, 2000) was used:

$$\text{Relative Importance Index (RII)} = \frac{\sum W}{A \times N}, \text{ where,}$$

W = the weighting given to each cause by respondents, ranging from 1 to 5,

A = the highest weight (i.e. 5 in the study), **N** = the total number of samples.

The values are shown in tables 4.2, 4.3, 4.4.



4.3 *Frequency Index*

The respondents after indicating the most important causes of disputes on Ghanaian construction projects were then asked to rate the frequency of occurrence for each cause according to three ordinal scales: high (3), medium (2), or low (1). “The frequency index” for each cause was derived from the frequency index formula.

Table 4.5 summarises the frequency of occurrence indices and the ranks for each of the potential causes of construction disputes as perceived by all the three contact groups of respondents. From this table it can be clearly seen that the ten (10) most frequent causes of disputes on Ghanaian construction projects from the combined perspective of all the three contact groups (namely clients, contractors and consultants) are:

1. Poor financial arrangements by the clients leading to late payments (frequency index = 0.842);
2. Failure of the client to honour payments as and when due (frequency index = 0.766);
3. Unclear and incomplete description of items in the bills of quantities (frequency index = 0.763);
4. Contractor's failure to read the contract documents (frequency index = 0.756);
5. Contractors' failure to price properly for the works (frequency index = 0.742);
6. Ineffective communication between the parties on the project (frequency index = 0.732);
7. Government policy which encourages low evaluated tenders followed by claims (frequency index = 0.726);
8. Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs (frequency index = 0.715);
9. Award of contracts to incapable contractors (frequency index = 0.711); and
10. Variations and late confirmation of variations (frequency index = 0.694).

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4.4 COMMENTS/DISCUSSIONS

The following are comments on the significant causes of construction disputes from the Clients, Contractors and Consultants:

- ***Failure of the client to honour payments as and when due***

The first most important cause of disputes on Ghanaian construction projects was the failure of clients to honour payments when due with a frequency index of 0.766. This was not surprising since many of the respondents mentioned this problem as one of the causes of disputes on projects in Ghana. A contractor expects to be paid for work done and accordingly in construction contracts, contractors are paid only for work properly executed. Depending on the size and duration of the contract, payment may be made either at the end of the contract or intermittently through interim valuation.

- ***Unclear and incomplete description of items in the bills of quantities***

Another important cause of disputes on Ghanaian construction projects is the unclear and incomplete descriptions of items in the bills of quantities. The respondents were of the view that this problem makes contractors and subcontractors unable to interpret what is written very well and hence sometimes they do what is not required from them. It is ranked the third most frequent cause of disputes on Ghanaian construction projects.

- ***Poor financial arrangements by the clients leading to late payments***

Late payments by clients to contractor or any other worker can severely hinder the work progress of any project making it a source of construction dispute. Delay in progress payments and final payments affect the cash flow of contractors and ultimately affect the project as a whole as many contractors are not able to continue with the execution of the project. As a result of this, 58.7 percent of the respondents ranked it as the first most frequent cause of disputes which occurs on Ghanaian construction projects

- ***Ineffective communication between the parties on the project***

Ineffective communication between the parties involved on a particular project was ranked the third most important cause of disputes on construction projects in Ghana, with

a frequency index of 0.732. Ineffective communication or miscommunication between the various parties in a design/construction effort usually occurs even though the parties involved are well intended. The respondents mentioned that this problem often happens when someone fails to communicate effectively with another concerning design issues, compensation and payment issues, scope changes issues and the like, leading to legal disputes. In Ghana this problem present itself in different forms especially when instruction is effected merely by issue of revised drawings without any explanation of the nature and extent of variations on the drawings. Hall (2002) observed that many causes of disputes are a result of miscommunication and many, if not all, can be avoided through better communication-whether through more effective contract writing, oral presentation and/or people communication skills.

- ***Award of contracts to incapable contractors***

Having an effective and capable contractor is paramount to ensure that work sequence is accomplished according to work programme for the project to be finished on time. 64 percent of respondents indicated that, incapable contractors are often awarded contracts for the execution of particular projects. The respondents also ranked this source as the ninth most frequent cause of construction dispute and alluded to the fact that this happens as a result of clients' pressurizing consultants to make sure a particular contractor gets the job and also due to consultants recommending contractors who are their friends, partners, family members and so on. Some of these contractors turn up to be incapable of executing the job hence making this problem to be ranked fourth in terms of importance of a cause likely to bring about a dispute.

- ***Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs***

This problem does occur quite frequently on projects hence its frequency index of 0.715. From the interviews the researcher conducted, it was found out that some contractors in Ghana rarely have sufficient time to thoroughly scrutinize the entire tender documents during the hectic process of tendering. And as such, in most cases,

the contractor may uncover only the most glaring drawing mistake at tender time and surprisingly would not find any minor or major discrepancies until the construction is underway.

Contractors response indicated that, upon discovery and notification of the design professionals, the response might be, “Well, the tender document required that you must notify us, in writing, when errors were discovered prior to submitting the tender, otherwise you are considered to be fully responsible” If this certainly happens and with such a response, most project managers would really have problems to deal with. Sometimes the questions which arise out of this problem are: doesn’t the contractor have the right to assume that the plans and specifications submitted by the clients architect/engineer are reasonably complete for the tendering process? And, if there are major discrepancies, shouldn’t they be able to rely on everyone’s good faith to find an equitable solution to correct major errors and omissions? If answers to these questions and other issues pertaining to this problem are not communicated properly a dispute can easily erupt. This problem was among the ten most deadly sources of construction disputes in the United States of America as observed by Levy (2007) and in Malaysia by Motsa (2006).

- ***Unconfirmed oral instructions***

Unconfirmed oral instructions from client to consultant and from consultant to contractor can pose a major hindrance to work. A common example of this problem occurs when an architect goes to the project site and issue out an instruction to the contractor to either effect a change or to stop doing a particular thing. The effects of these oral instructions at most times, are associated with cost and can cause rework due to construction errors. As a result of this if the oral instructions are not channelled through the appropriate person/authorities for them to be documented and approved could cause problems between the people involved.

- ***Disruptions and delays by the contractor that create deviation from initial programme of works***

This problem caused by contractors is sometimes due to their inadequate funding for the works to be executed, equipment shortage which refers to frequent breakdown of major equipment, shortage of spare parts, improper service and maintenance, slack use of machinery or deliberate sabotage by operators, late suppliers of materials, coordination problem with subcontractor and so on. A delay therefore, in the works without any tangible reason from the contractor could cause serious problems between the contractor and the client.

- ***Deficient management, supervision and coordination efforts on the part of the project managers ;***

Close management of a construction project during its construction phase is essential to the achievement of the specified standard relating to quality. On construction projects, conflicts do arise when contractors fail to supervise the works properly and also when project managers fail to supervise the work of every participant on the project.

Deficient management and supervision on the part of project managers' may lead to non payment of defective works, production of sub -standard work and so on. When this occur, a defaulting contractor usually blames the project manager for poor supervision and in the quest of the project manager defending himself against these accusations over poor supervision and its effects, relationships becomes strained .

- ***Contractor's failure to read the contract documents***

Clients and consultants consented to the fact that contract documents do sometimes contain ambiguities and that most of these ambiguities are usually resolved by reasonable parties taking a reasonable approach but when reasonableness does not prevail, one party pursues a hard line. This source of construction disputes was therefore ranked as the fourth most frequent cause of disputes on Ghanaian construction projects with a frequency index of 0.756. This confirms the assertion that a section of Ghanaian contractors do not really read the documents for them to know what they entail so when a problem ensues they are found wanting. The respondents also pointed out that some of

the contractors are illiterate and do not consult or employ professionals for help. Disputes therefore can be prevented under this problem, when contract documentation is carefully, adequately and accurately prepared and consistent through.

4.5 AGREEMENT ANALYSIS

To investigate the agreement of the rank correlation between the three groups of respondents, a non - parametric statistical method, the Kendall's coefficient of concordance (W) was used for assessing agreement among the clients, consultants and contractors on how they ranked the 56 causes of disputes.

$$W = [\sum_{i=1}^k (R_i - R)^2] / n(n^2 - 1) / 12]$$

$$W = 8969.929 / 14630$$

$$W = 0.62 \text{ (Table 4.6)}$$

The value of coefficient of concordance (W), express the degree of agreement amongst the three groups of respondents in their opinion on the potential causes of construction disputes. A coefficient of W = 1 indicates a perfect agreement and zero (0) indicates no agreement. Intermediate values of W indicate a greater or lesser degree of agreement among the various responses.

The value of W obtained from calculation is 0.62. This result therefore shows that there is a good level of agreement beyond chance alone amongst the respondents consisting of clients, consultants and contractors hence there is no bias on how they ranked the 56 causes of disputes.

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4.6 OTHER ISSUES FROM QUESTIONNAIRES

These consisted of other significant causes of construction disputes in Ghana by respondents which were not captured in the questionnaires.

4.6.1 Other causes of construction disputes in Ghana

Other causes that were given by respondents' as contributing to the causes of disputes on Ghanaian construction projects are:

- Failure to remove unspecified materials from the site;
- Failure to protect the works adequately;
- Parties not heeding to any of the clauses in the conditions of contract;
- Clients refusal to pay extension to prelims;
- Clients/consultants refusal to pay fluctuations beyond extended completion period, although further delays were caused by the client;
- Over deduction of Advanced mobilization and materials;
- Specified materials in short supply;
- Clients/consultants refusal to pay for full value of Insurance and Bonds were priced competitively;
- Unrealistic vetting of contractors valuation;
- Political influence on award of contracts;
- Uncooperative attitude of both parties during discussions of conflict areas and disagreements; and
- The tendency of supervisors to consider contractors as enemies rather than partners in development.
- The imposition of nominated sub - contractor on the main contractor.

4.6.2 Results on the probable ways in which disputes can be prevented

Clients' view

From Tables 4.7, it can clearly be seen that the five (5) most important ways (in order of importance) in which disputes on Ghanaian construction projects could be prevented from the clients point of view are as follows:

1. Adequate contract documentation;
2. Realistic assessment of the value and impact of a claim on project budget;
3. Anticipating and Recognizing the enhanced potential for disputes and preparing to address them;
4. Team building including the introduction of partnering approaches to establish common objectives; and
5. Communication of potential problems or claims at the earliest opportunity.

Table 4.7 CLIENTS RESPONSES ON THE METHODS OF PREVENTING CONSTRUCTION DISPUTES

	CLIENTS	Degree of relative importance quoted by the respondents					total number of respondents	$\sum W$	RII = $(\sum W/S*N)$	Rank
		1	2	3	4	5				
1	Early negotiations	1	4	6	4	5	20	68	0.68	9
2	Adequate contract documentation	0	1	2	7	10	20	86	0.86	1
3	Designing contract conditions that are fair to all parties (allocating projects risks fairly to all parties)	1	3	3	5	8	20	76	0.76	6
4	Team building including the introduction of partnering approaches to establish common objectives	1	2	2	7	8	20	79	0.79	4
5	Communication of potential problems or claims at the earliest opportunity	1	2	3	6	8	20	78	0.78	5
6	Realistic assessment of the value and impact of a claim on a project budget	0	2	2	6	10	20	84	0.84	2
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract	2	0	6	6	6	20	74	0.74	8
8	Setting up of Dispute Review Boards prior to the start of construction	3	5	2	3	7	20	66	0.66	10
9	Choosing the appropriate project delivery method (procurement system)	1	3	4	4	8	20	75	0.75	7
10	Anticipating and Recognizing the enhanced potential for disputes and preparing to address them	1	2	1	7	9	20	81	0.81	3

Contractors view

From Tables 4.8, it can clearly be seen that the five most important ways (in order of importance) in which disputes on Ghanaian construction projects could be prevented from the contractors point of view are as follows:

1. Adequate contract documentation;
2. Communication of potential problems or claims at the earliest opportunity;
3. Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract;
4. Anticipating and recognizing the enhanced potential for disputes and preparing to address them; and
5. Realistic assessment of the value and impact of a claim on project budget.

Table 4.8 CONTRACTORS RESPONSES ON THE METHODS OF PREVENTING CONSTRUCTION DISPUTES

	CONTRACTORS	Degree of relative importance quoted by the respondents					Total number of respondents	(ΣW)	RII= $\Sigma W/S*N$	Rank
		2	2	4	8	11				
1	Early negotiations	2	2	4	8	11	27	105	0.7778	6
2	Adequate contract documentation	0	2	2	8	15	27	117	0.8667	1
3	Designing contract conditions that are fair to all parties (allocating projects risks fairly to all parties)	1	5	3	7	11	27	103	0.7630	7
4	Team building including the introduction of partnering approaches to establish common objectives	2	3	7	5	10	27	99	0.7333	9
5	Communication of potential problems or claims at the earliest opportunity	0	1	4	9	13	27	115	0.8519	2
6	Realistic assessment of the value and impact of a claim on a project budget	1	0	7	10	9	27	107	0.7926	5
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract	0	2	4	7	14	27	114	0.8444	3
8	Setting up of Dispute Review Boards prior to the start of construction	1	10	6	3	7	27	86	0.6370	10
9	Choosing the appropriate project delivery method (procurement system)	0	6	4	9	8	27	100	0.7407	8
10	Anticipating and Recognizing the enhanced potential for disputes and preparing to address them	1	2	3	8	13	27	111	0.8222	4

Consultants view

From Tables 4.9, it can clearly be seen that the five most important ways (in order of importance) in which disputes on Ghanaian construction projects could be prevented from the consultants are as follows:

1. Communication of potential problems or claims at the earliest opportunity
2. Anticipating and recognizing the enhanced potential for disputes and preparing to address them
3. Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract
4. Team building including the introduction of partnering approaches to establish common objectives
5. Adequate contract documentation

TABLE 4.9 CONSULTANTS RESPONSES ON THE METHODS OF PREVENTING CONSTRUCTION DISPUTES

	CONSULTANTS	Degree of relative importance quoted by the respondents					Total number of respondents	(ΣW)	$RII = \frac{\Sigma W}{S*N}$	Rank
1	Early negotiations	8	7	8	16	11	50	165	0.6600	10
2	Adequate contract documentation	4	6	11	14	15	50	180	0.7200	5
3	Designing contract conditions that are fair to all parties (allocating projects risks fairly to all parties)	4	5	20	8	13	50	171	0.6840	8
4	Team building including the introduction of partnering approaches to establish common objectives	5	6	9	13	17	50	181	0.7240	4
5	Communication of potential problems or claims at the earliest opportunity	3	6	9	13	19	50	189	0.7560	1
6	Realistic assessment of the value and impact of a claim on a project budget	4	6	11	16	13	50	178	0.7120	6
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract	5	6	9	10	20	50	184	0.7360	3
8	Setting up of Dispute Review Boards prior to the start of construction	5	6	11	16	12	50	174	0.6960	7
9	Choosing the appropriate project delivery method (procurement system)	3	10	15	10	12	50	168	0.6720	9
10	Anticipating and Recognizing the enhanced potential for disputes and preparing to address them	4	6	7	15	18	50	187	0.7480	2

All respondents

From Table 4.10, the five most important ways of preventing construction disputes in Ghana that were identified, according to the three contact groups, are:

1. Adequate contract documentation
2. Communication of potential problems or claims at the earliest opportunity
3. Anticipating and recognizing the enhanced potential for disputes and preparing to address them
4. Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract
5. Realistic assessment of the value and impact of a claim on a project budget

TABLE 4.10 RESPONSES ON THE METHODS OF PREVENTING THE CAUSES OF CONSTRUCTION DISPUTES BY ALL RESPONDENTS

	ALL RESPONDENTS	Degree of relative importance quoted by the respondents					Total number of respondents	$(\sum W)$	RII= $\sum W/S*N$	Rank
		1	2	3	4	5				
2	Adequate contract documentation	4	0	15	29	40	97	383	0.7897	1
5	Communication of potential problems or claims at the earliest opportunity	4	9	16	28	40	97	382	0.7876	2
10	Anticipating and Recognizing the enhanced potential for disputes and preparing to address them	6	10	11	30	40	97	379	0.7814	3
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract	7	8	19	23	40	97	372	0.7670	4
6	Realistic assessment of the value and impact of a claim on a project budget	5	8	20	32	32	97	369	0.7608	5
4	Team building including the introduction of partnering approaches to establish common objectives	8	11	18	25	35	97	359	0.7402	6
3	Designing contract conditions that are fair to all parties (allocating projects risks fairly to all parties)	6	13	26	20	32	97	350	0.7216	7
9	Choosing the appropriate project delivery method (procurement system)	4	19	23	23	28	97	343	0.7072	8
1	Early negotiations	11	13	18	28	27	97	338	0.6969	9
8	Setting up of Dispute Review Boards prior to the start of construction	9	21	19	22	26	97	326	0.6722	10

4.6.3 Spearman Correlation

After obtaining these results as shown in the tables above, the Spearman rank correlation coefficient which is a non-parametric test was used to measure the difference in ranking between any two of the three contact groups. This was used to highlight as accurately as possible whether there is a significant difference in the rankings.

Microsoft Excel 2007 was used in determining the correlation. All calculations were made directly by Excel and the output or results were given. The rankings of the individual groups are shown in Table 4.11.

Table 4.11: Rankings of Each Group of Respondents

	WAYS OF PREVENTION	CLIENT RANK	CONTRACTORS RANK	CONSULTANT RANK
1	Early negotiations	9	6	10
2	Adequate contract documentation	1	1	5
3	Designing contract conditions that are fair to all parties(allocating projects risks fairly to all parties)	6	7	8
4	Team building including the introduction of partnering approaches to establish common objectives	4	9	4
5	Communication of potential problems or claims at the earliest opportunity	5	2	1
6	Realistic assessment of the value and impact of a claim on a project budget	2	5	6
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract	8	3	3
8	Setting up of Dispute Review Boards prior to the start of construction	10	10	7
9	Choosing the appropriate project delivery method(procurement system)	7	8	9
10	Anticipating and Recognizing the enhanced potential for disputes and preparing to address them	3	4	2

According to Table 4.12, the rank correlation coefficient for the 10 probable ways of preventing construction disputes are 0.552 for contractors and consultants, 0.442 for consultants and client and 0.515 for contractors and clients. This indicates that the contractor and the consultant agree more on the rankings of ways of preventing construction disputes in Ghana more than the client and the consultant and the client and the contractor.

Table 4.12 showing the rank correlation coefficient (Using Microsoft Excel 2007)

	CLIENT	CONTRACTOR	CONSULTANT
<u>CLIENT</u>	1	0.5151515	0.4424242
<u>CONTRACTOR</u>		1	0.551515152
<u>CONSULTANT</u>			1

4.7 COMMENTS/DISCUSSIONS

The following are comments on the five (5) most important ways of preventing construction disputes from the view point of clients', contractors and consultants in Ghana.

a) Adequate contract documentation

Not all disagreements can be resolved quickly, but attempts to do so could be greatly enhanced when complete and accurate documentation relating to the dispute has been prepared and assembled along the way. A contract document which is adequate, accurate and consistent throughout saves construction time facilitates the effective utilization of contractor's resources and thus, prevents disputes. From the tabulated responses given by the 97 respondents, as recorded in table 4.14 above, it was observed that 71 percent of the 97 respondents agreed that the provision of adequate contract documentation is the first most important way of preventing disputes on Ghanaian construction projects (RII= 0.7897). These respondents were on the view that the client in conjunction with the consultant should exercise the utmost care and consideration when preparing the contract documents during the design phase to minimize the impact of any dispute on project progress. They also indicated that proper planning and careful review of project plans and specifications can substantially minimize the likelihood of disputes and provide basis for timely resolution of any problem that may occur.

b) Communication of potential problems or claims at the earliest opportunity

The longer a potential problem or claim is allowed to go on the more likely it is to escalate and the less likely it is that the matter will be resolved without a dispute. This was the reason why seventy (70) percent of the respondents ranked the communicating of a potential problem or claim at the earliest opportunity as the second most important way of preventing construction disputes in Ghana. The respondents indicated that construction projects rarely are completed without encountering some problems not anticipated or anticipated by the client, consultant or the contractor such as errors in the construction plans, site conditions differing from what were expected and so on. As a result giving an advance warning of a potential problem or claim has an advantage of avoiding surprise by the other side and enables the parties at the earliest opportunity to consider solutions to avoid or minimize the impact of any potential claim.

c) Anticipating and recognizing the enhanced potential for disputes and preparing to address them.

Before construction works begins, the parties involved should foresee possible future disputes and prepare to address them. Seventy two (72) percent of the respondents ranked this method as the third most important way of preventing disputes on Ghanaian projects. The respondents were of the view that on some projects, there are some early indications of potential problems and as such every one involved should not adopt a laid-back attitude in addressing such problems when they occur. Parties therefore should therefore foresee problems and think ahead by establishing procedures to make, organize and retain complete and accurate records concerning the progress of work so that such reports would be used to adequately, effectively and efficiently address the problems before positions harden.

d) Education

The construction industry is an industry of contracts, and in order to deal with inevitable conflicts that occur due to misunderstanding of contracts obligations, there is a need for a thorough understanding of one's right and obligations under the contract. Disputes therefore may be minimized by an up front investment to educate all those involved in every aspect of the project execution. As a result of this 65 percent of the respondents

quoted education as the forth important way of preventing disputes on Ghanaian construction projects. These respondents indicated that a thorough understanding of the contractual relationship extends beyond the client and the contractor and therefore the other stakeholders such as the consultant, subcontractor, insurer, subcontractors etc. should be included in the education process. They also observed that many construction disputes begin with the on site personnel of the parties and to be able to prevent disputes the initial onsite decision makers should be educated on how to address a potential problem.

e) Realistic assessment of the value and impact of a claim on a project budget

A realistic claim presented with the necessary supporting documentation and information to satisfy the consultant or other party may prevent a dispute. This method was ranked as the fifth most important way of preventing disputes on Ghanaian projects with a relative importance index of 0.7608. It was in the view of the 66 percent of the respondents who quoted this method as an important way of preventing dispute that, when a client is made aware of or receives notice of a potential claim by a contractor, the client must immediately make an initial review of all the circumstances and related events involving the claim and its effect on his budget so that problems would be solved at the early stages to prevent them escalating into full-blown disputes. Some of the respondents also commented that, in order to properly assess the entitlement and quantum of the claim, legal or technical assistance should be sought as early as possible.

The following are the other ways of prevention disputes on Ghanaian construction projects that were named by the respondents which were not mentioned in the questionnaires. They are as follows:

1. A proper co-ordination and dissemination of project information;
2. An introduction of quality assurance on projects;
3. A non- interference of the contractors proposed programme by the client;
4. The required services of a project manager;
5. Prompt payments of work done; and
6. Doing away with selection systems based on strictly the lowest evaluated tenderer offer.

4.8 SUMMARY OF FINDINGS

The survey achieved an overall response of 77.6%. It also showed that 79% of the respondents had been engaged in a dispute. This results obtained confirms Kwakye's (1997) and Levy (2007) statements that "construction projects are generally complex and for this reason, disputes are always present and therefore a common feature of the construction industry".

The survey found a good degree of agreement ($W = 0.62$) amongst the three groups of clients, contractors and consultants in the rankings of the causes of disputes on Ghanaian construction projects.

On using the significant testing, 23 factors out of the 56 factors obtained from literature were identified as the most important causes of disputes on construction projects in Ghana according to all respondents

The frequency index analysis identified 10 factors to be the frequent factors that causes construction disputes in Ghana. Five (5) best ways of prevention disputes were also identified.

The spearman correlation method of analysis which was used indicated that there is a positive correlation between the contractors and consultants on how they ranked the methods of prevention of construction disputes.

CHAPTER FIVE - RESEARCH CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the conclusions of the study and recommendations made to address the main findings obtained from the analysis in the light of the objectives of the study. The objectives of this research was to identify the important and the frequently occurring factors which were actually causing disputes on construction projects in Ghana from the perspective of the three main stakeholders and to identify and develop the most appropriate prevention/avoidance strategies towards reducing dispute occurrences on construction projects in Ghana.

The strategies developed to help prevent disputes on construction disputes and specific recommendations made are also presented in the chapter. The chapter concludes with recommendations for further research.

5.2 CONCLUSIONS

Given the expense and disruption caused to a contract or an on –going project and the damage to relationships between participants involved in a project, the objectives of the study was to find out the most important, frequent and severe factors which actually causes disputes on construction projects in Ghana from the perspective of the three main stakeholders and to identify and develop appropriate strategies to prevent/avoid disputes from occurring.

At the end of the study, the results of the survey gave an indication that, indeed, problems naturally arises on construction projects because of multiple stakeholders, human imperfections, and communication difficulties and thus disagreements will certainly arise because a project participant may fail to perform, respond properly and timely, communicate or understand construction information. Therefore, eliminating these problems or even reducing their magnitude can save project clients not only money, but the time and stress involved in having to deal with such problems.

As a result of this, it can be concluded from the study that the most significant /important factors that causes disputes on Ghanaian construction projects were:

- Failure of the client to honour payments as and when due;
- Unclear and incomplete description of items in the bills of quantities;
- Government policy which encourages low evaluated tenders followed by claims;
- Ineffective communication between the parties on the project;
- Poor financial arrangements by the clients leading to late payments;
- Contractors failure to plan adequately and to follow planned schedules;
- Contractors' failure to price properly for the works;
- Contractors failure to read the documents;
- The absence of team spirit among members of the project team;
- Disruptions and delays by the contractor that create deviation from initial programme of works;
- Unconfirmed oral instructions;
- Award of contracts to incapable contractor ;
- Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
- Inaccurate valuation of variations and works in progress;
- Deficient management, supervision and coordination efforts on the part of the project managers;
- Conflicting instructions;
- Discrepancies /ambiguities in the contract documents;
- Site conditions which differ materially from those described in the contract documents (especially unforeseen underground conditions);
- Failure to use specified materials, skilled operatives and recognised method
- Variations and late confirmation of variations;
- Poor interpretation of specifications;
- Design professional's failure to remain within the clients project budget and design objectives; and

- Changes or modifications of scope that increase consequential costs beyond initial cost

The most frequent factors that cause disputes are:

- Poor financial arrangements by the clients leading to late payments;
- Failure of the client to honour payments as and when due;
- Unclear and incomplete description of items in the bills of quantities;
- Contractor's failure to read the contract documents;
- Contractors' failure to price properly for the works;
- Ineffective communication between the parties on the project;
- Government policy which encourages low evaluated tenders followed by claims;
- Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
- Award of contracts to incapable contractors; and
- Variations and late confirmation of variations.

This result is collaborated by studies carried out in Malaysia, Hong Kong, the United Kingdom and the United States of America where the main causes of construction disputes were found to be related to issues bothering on payments procedures and schedules, ineffective communication, inadequate contract documentation and poor supervision.

The study also revealed that, the main stakeholders to any construction project are beginning to appreciate the effects of disputes on construction projects. As result of this,

- prompt payments of works;
- adequate contract documentation;
- communication of potential problems or claims at the earliest opportunity;
- anticipating and recognizing the enhanced potential for disputes and
Preparing to address them; and
- Education can be concluded to the best ways of preventing disputes on construction projects in Ghana.

It can also be concluded from the results that there is no apparent bias on the part of the three groups of respondents in the way they ranked the causes which were important and frequent and thus a good degree of objectivity can be ascribed to their observations.

5.3 RECOMMENDATIONS

The nature of the dispute cycle is such that, it starts with a problem and develop into a difference of opinion, which can easily escalate to disagreements, conflicts and finally into a dispute. Project stakeholders must therefore realize that they have to break this cycle and resolve problems in a timely manner.

From the above conclusions, the study recommends the following approach to help break this cycle and prevent/avoid disputes on construction projects in Ghana. Other specific recommendations are also made.

5.3.1 Recommended strategies to prevent disputes

The following are considerations suggested as part of any strategy to prevent construction dispute in Ghana. They are; making sure everyone gets paid, the early involvement of all the design professionals during the design stage, provision of adequate contract documentation, communicating problems or claims at the earliest opportunity and not ignoring problems, proper records keeping, and Training.

a) Making Sure Everyone Gets Paid

Clients should ensure that they have adequate funds to pay the contractors, consultants and subcontractors as when due. Both contractors and clients should also match payments to the progress of works and make sure that workers on the job are really getting paid.

According to Kwakye (1997), a healthy cash flow is vital for a contractors business. It is therefore, important that effort is spent in the preparation of all interim valuations in order to arrive at a figure which truly reflects the contractor's cost of production and as such stakeholders should do well to adhere to the provisions given in the Contract.

b) The early involvement of all stakeholders during the design stage.

Clients and all the design professionals should be involved early during the design phase to enable the architect come out with a more accurate concept of the clients requirements. Clients should also provide a comprehensible and thorough brief to the design team to enable them remain within their project budget and design objectives while the overall design is evolving and maturing. A proper coordination of all civil, structural, architectural, mechanical and electrical designs will then be achieved. The various design consultants should also communicate effectively between them since relaying a change made by one designer to the other and its impact on the final design is a good strategy for reducing variations. There is a need of Value engineering to be done as part of this approach. This is because value engineering's potential is greatest when the process begins in pre-design. This is because this technique allows client, all design professionals, end-users of the facility and others who matter, to be involved directly and their input sought into the integrated project team.

Issues arising during the design phase are predictable causes of disputes on construction projects in our local industry hence transparency and clarity during this phase of a project through the involvement of all who matter will eventually result in designs that are buildable with detailed plans which are properly dimensioned for the preparation of better and accurate Bills of Quantities.

c) Adequate contract documentation

During the design phase of a construction project, clients' ideas, concepts and projects requirements are transformed into detailed plans and specifications that will be used by the contractor to construct the project. It is important that the client in conjunction with the consultant exercise the utmost care when preparing the contract documents.

The wording in the contract documents should be clear and reflect the intention of the parties involved so that clients will not use any contract language to unfairly shift risk to the contractor without appropriate compensation but will make sure that risks are properly allocated to the party best able to manage and carry the risk. The contract should

also be well balanced and fair to all parties with responsibilities of the parties clearly defined, in unambiguous terms so as to avoid any misunderstanding.

The various sections of the contract documents should also be properly arranged and specifications written without any ambiguities and made as specific as possible taken into consideration materials available on the market and our local environment. Clients and consultants should also carefully review all the projects plans and specifications since it can substantially prevent or minimize the likelihood of disputes and provide a basis for timely resolution of any problem that may occur. In addition to this, they should also establish an independent contract document review team that will review the projects documents as a whole. This team should look for ambiguities and inconsistencies in the project document. This is because persons not involved in the preparation of the original documents may provide a fresh look and be better able to identify deficiencies in the documents than those who prepared them.

d) ***Communicating problems or claims at the earliest opportunity***

Once the contract is in place, a good contract management is the key to the prevention of construction disputes as early as possible. This includes monitoring of early detection of any problem. All stakeholders should therefore give an advance warning of any potential problem or claim at the earliest opportunity. Members of the project team and the other stakeholders should also be proactive by putting every skill to bear for early identification of contentious issues and its subsequent removal. Periodic and regular meetings should be held where aggrieved parties can be heard so that problems and tensions can be solved quickly.

e) ***Proper records keeping***

Before the works begin, the parties should foresee possible future problems and establish procedures to organise and retain complete and accurate records concerning the progress of work. This proposed strategy can also be seen as planning for the worst to happen. Contractors and consultants should therefore document every thing by taking

photographs of the works as it progresses, carefully documenting all discussions particularly on site project meetings and recording all instructions received and actions taken on those instructions.

Contractors should also make sure that their records are complete and properly organised so that each can be retrieved when needed. Systematic record keeping by all parties should continue even when there is no sign of trouble since daily recording provides a regular, ongoing record of observations and evaluations of events bearing on the project. Many disputes are related to the failure to establish 'facts'. A good site diary where all relevant information is recorded will therefore be a prime source of facts when a matter is in dispute and will help resolve problems as quickly as possible.

d) *Training/Education*

Contractors should be trained periodically on the dispute cycle and their effects on projects and the economy as a whole. Project team members should also be trained to improve their people skills to help reduce the chance of misunderstanding each other thereby preventing disputes at the earliest opportunity. Initial on-site decision makers should be educated on how to address a potential problem.

Consultants should be encouraged to update their skills in modern construction and project management practises to help them manage and supervise works as closely as possible. Organizations like the Ghana Institute of Surveyors, Ghana Institute of Architects and the Ghana Institute of Surveyors should organize such courses for the consultants.

5.3.2 Specific recommendations

Lowe et al. (1997), Campbell (1997), Hall (2000) and Carmicheal (2002) in their individual studies on causes of construction disputes found out that the primary stakeholders (namely client, consultants and contractor) to any project are the main reasons for disputes on construction projects.

At the end of the study, the researcher also found out that, indeed, people (such as client, consultants and contractor) are a prime cause of construction disputes, and therefore the only solution to it as well. As a result of this, some specific recommendations were made to each of them to help prevent disputes early. These recommendations are as follows and graphically illustrated in figure 5.1.

i. Client

It is recommended that Clients should:

- Provide a good and clear brief to the design team;
- Set up independent contract review team to review the contract document as a whole;
- Appoint the appropriate project team to monitor the progress of works and carry out supervision; and
- Have adequate funds for the project to make payments as and when due.

ii. Consultant

It is also recommended that Consultants should:

- Carefully, adequately and accurately prepare contract documents which are consistent throughout. They can achieved this by :
 1. Identifying responsibilities and allocating risks to the party best able to control it;
 2. Providing specifications which are clearly written, reflecting the skills, materials and plant readily available and finally relating to the specific project. Refrain from simply adding to or deleting specifications from sets of previously employed documents and using them;
 3. Preparing contract bills of quantities using adequate tender information so that there is accuracy in both descriptions and quantities;
 4. Properly drafting clauses to address disputes and claims at relevant stages in a project; and
 5. Under take a close supervision of the works as it progresses.

iii. Contractors

It is also recommended that Contractors should also do the following to help prevent disputes:

- Only tender for works you have expertise to do;
- Do not accept any job when you sense that the job is going to be more trouble than it's worth. Use foresight rather than hindsight;
- Employ qualified staff;
- Pay attention to what is written in the contract and never skim over it without reading all of the terms and understanding what they mean. Ask for help from the professionals you have employed when the need arises;
- Start with a clear understanding of the scope and quality of works to be performed and what your client's expectations are;
- Never start a construction project without complete, clear plans and specifications;
- Price the work to ensure that documentation errors do not cost you in both real money and time wasted in arguments and disputes;
- Maintain good communications with all throughout the project;
- Put all variation orders, no matter how small, in writing;
- Ensure that all variation instructions are confirmed in writing and the cost is determined and approved, where possible, prior to undertaking the work;
- Keep good records of everything that occurs both on and off the site that has any influence on that project; and
- Plan works on site carefully, pursue them diligently and construct them correctly by following specifications provided.

iv. Ministry of Water Resources, Works And Housing

It is finally recommended that the ministry should:

- Streamline the registration and classification of Building contractors. Thus, contractors capacity must be well verified by the registering bodies so as to ensure that they can meet the minimum technical and managerial standards worthy of executing projects successfully with or without direction.

The strategies recommended and the specific recommendations made, when accepted and adhered to, will enable project managers and other stakeholders to address problems in a timely manner, thus allow projects to continue with minimum delay and disruption.

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5.3.3 Future Research

The following are some areas suggested for future research:

- Extend research to identify the impact of construction disputes on the Client's and Contractor's Organization;
- The research covered building contractors in class D1 in the Greater Accra and Ashanti regions of Ghana. There is the need to repeat the research for all classes (D1-D4) and the study expanded by taking samples within the other eight regions in Ghana; and
- Studies to identify and evaluate the appropriateness of contractual methods for dispute avoidance and resolution.
- Determine the cost of dispute in real terms on specific projects.



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DEPARTMENT OF BUILDING TECHNOLOGY**

SURVEY QUESTIONNAIRE

Research topic: **THE DEVELOPMENT OF APPROPRIATE STRATEGIES TO PREVENT DISPUTES ON GHANAIAN CONSTRUCTION PROJECTS**

INTRODUCTION

Disputes are reality in every construction project and without the means to address them, minor issues can aggravate and grow, differences in opinion can also develop into disagreements and finally escalate into disputes, with crippling consequences for the project participants and the success of the project as a whole.

For this reason, there is a need to identify and develop appropriate strategies to prevent disputes on construction projects in Ghana since the only good construction dispute is the one which is either prevented or avoided.

This research is therefore being undertaken to find out from the primary stakeholders to any construction project (namely the client, consultant and contractor) what, in their opinion can be done to prevent disputes on construction projects in Ghana and in the attempt to achieve this goal, what actually causes these disputes will be outlined. This study is conducted as part of a graduate study at KNUST. It is my belief that the stakeholders will provide practical and convincing answers to the questions below to enable me present a good report on strategies that will be appropriate to prevent disputes on Ghanaian construction projects. Thank you in advance for your contribution to this research study.

Please respond to the following by either writing in the blank space provided or ticking the appropriate box.

SECTION ONE - RESPONDENT PROFILE

1.1 What type of organisation do you belong?

- a) Clients' organisation ☐ b) Contracting firm ☐ c) Consulting ☐
firm
d) Others (specify).....

1.2 Which of the following describes your position?

- a) Quantity Surveyor ☐ b) Project Manager ☐ c) Architect ☐
d) Principal consultant ☐ e) Managing director ☐ f) Contractor ☐
g) Others (specify)

1.3 How many years of experience do you have in the construction industry?

- a) Less than 5years ☐ b) 5 years to 10year ☐ c) 10 years to15 years ☐
d) 16 years and above ☐

1.4 Have you ever had any disagreement on a project? Yes ☐ No ☐

1.5 If yes, who originated it?

- a) Contractor ☐ b) Client ☐ c) Consultant ☐
d) Others (specify).....

SECTION TWO – QUESTIONS RELATED TO POTENTIAL CAUSES OF DISPUTES ON GHANAIAAN CONSTRUCTION PROJECTS

2.1 Below are a number of potential causes of construction disputes. From your experience, please express your opinion on how important each potential cause of disputes is on Ghanaian construction projects and also rate the frequency of occurrence for each cause on projects in Ghana. (Please tick the approximate cell).

Relative importance: 1 – Not important, 2 – Quite/low important, 3– Moderately Important, 4 –Important, 5 - Very important

Frequency of occurrence: 3 - High, 2 – Medium, 1- Low

Potential Causes of Construction Disputes		Relative Importance					Frequency		
		1	2	3	4	5	1	2	3
1	Changes or modifications of scope that increase consequential costs beyond initial cost								
2	Contractor's failure to read the contract documents								
3	Unrealistic claims for variations of works by contractors								
4	Failure of the client to honour payments as and when due								
5	Poor financial arrangements by the clients leading to late payments								
6	Variations and late confirmation of variations								
7	Deficient management, supervision and coordination efforts on the part of the project managers								
8	Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural ,architectural, mechanical and electrical designs								
9	Non - availability of specified materials								
10	Clients design vision not communicated effectively to the design team								
11	Contractors' failure to price properly for the works								
12	Lack of understanding and agreement on the type of contract between the client and the contractor								
13	Unclear and incomplete description of items in the bills of quantities								
14	Design professional's failure to remain within the clients project budget and design objectives								
15	Rigid budgets control by the client.								
16	The absence of team spirit among members of the project team								
17	Over design and under estimating the cost involved								
18	Acceleration of works requested by client that affected schedule								

	Potential Causes of Construction Disputes	Relative importance					Frequency		
		1	2	3	4	5	1	2	3
19	Site conditions which differ materially from those described in the contract documents(especially unforeseen underground conditions)								
20	Improper determination of the employment of the contractor under the contract								
21	Lack of clarity regarding the time from which contractor can calculate interests on late payments								
22	Contractors failure to plan adequately and to follow planned schedules								
23	Contractors failure to coordinate subcontractors' work								
24	Disruptions or delays to the works caused by client								
25	Contractors fundamental misunderstanding of what is allowable under the terms of the contract								
26	Clients expectations at variance with contract documentation								
27	Non-responses to questions or resolutions of problems presented by one party in the contract to another party in the contract								
28	Incomplete or inaccurate responses to problems presented by one party in the contract to another party in the contract								
29	Poor records keeping by client ,contractor and consultant								
30	Inexperience on the part of the consultant								
31	Under invoicing and Over invoicing by contractors								
32	Award of contracts to incapable contractors								
33	Inadequate site management								
34	Untimely issue of variations instructions								
35	Conflicting instructions								
36	Unconfirmed oral instructions								
37	Late information delivery								
38	Cumbersome procedure for requesting information								
39	Unclear lines of communication								
40	Late payments to subcontractors and suppliers								
41	Discrepancies /ambiguities in the contract documents								
42	Poor and unfair allocation of project risk								
43	Delays in the supply of working drawings								
44	The parties failing to identify and deal with issues on time								
45	Inadequate descriptions of the Preliminary Items in the Bills of Quantities								

SECTION THREE - QUESTIONS RELATING TO THE PREVENTION OF DISPUTE ON GHANAIAN CONSTRUCTION PROJECTS

3.1 Below are a number of ways in which potential causes of construction disputes can be prevented. From your experience, please tick the appropriate cell by indicating how important each method is in preventing disputes on Ghanaian construction projects.

Relative importance: 1 – Not important, 2 – Quite/low important, 3–Moderately Important, 4 –Important, 5 - Very important

Methods of preventing construction disputes		Relative Importance				
		1	2	3	4	5
1	Early negotiations					
2	Adequate contract documentation					
3	Designing contract conditions that are fair to all parties(allocating projects risks fairly to all parties)					
4	Team building including the introduction of partnering approaches to establish common objectives					
5	Communication of potential problems or claims at the earliest opportunity					
6	Realistic assessment of the value and impact of a claim on a project budget					
7	Educating those responsible for the administration of the contract on the rights and obligations of all parties under the contract					
8	Setting up of Dispute Review Boards prior to the start of construction					
9	Choosing the appropriate project delivery method(procurement system)					
10	Anticipating and Recognising the enhanced potential for disputes and preparing to address them					
	Indicate other ways of preventing construction disputes that have not been captured above and rank them accordingly. Any feedback is greatly appreciated.					
1						
2						
3						
4						