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AN ASSESSMENT OF THE OCCURRENCES OF DISPUTE
IN
PUBLIC SECTOR INFRASTRUCTURE PROJECTS

by

LUNGISILE MASEKO

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at the

UNIVERSITY OF JOHANNESBURG

SUPERVISOR: PROFESSOR C.O. AIGBAVBOA
A dissertation submitted in partial fulfilment of the requirement for the award of a Magister Technologiae degree in Construction Management in the Department of Construction Management and Quantity Surveying, Faculty of Engineering and the Built Environment, University of Johannesburg, Republic of South Africa.
DEDICATION

I wholeheartedly dedicate this research work to my mother, Thembisile Miriam Mama T Mbonani, through whose love and support I have been able to reach this far in my life. Secondly, to my sister, Lehlomela Tiara Bompie Mbonani, who gave meaning to my life and lastly, to all the road runners and road cyclists in the world.
DECLARATION

I, Lungisile Maseko, declare that “An Assessment of the occurrences of dispute in public sector infrastructure projects” is the result of my own work, except to the extent indicated. All sources that I have used or quoted have been duly acknowledged by means of complete references. The thesis is submitted in fulfilment of the requirement of a Master’s degree in Quantity Surveying in the Department of Construction Management and Quantity Surveying, Faculty of Engineering and Built Environment, University of Johannesburg, South Africa.

Lungisile Maseko

Date

University of Johannesburg

Doornfontein Campus
ACKNOWLEDGEMENTS

“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 ingratitude. Such ideas might have been completely absorbed in my thinking, that they become unnoticed as my own.

I am very grateful to the Lord Almighty for His guidance and protection throughout this research work.

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Ngiyabonga Ngcamane elihle, Khuboni.

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ABSTRACT
Construction disputes happen fairly often: they are a reality on every construction project and could happen at any stage during the design or construction phase of the project. The objective of this study is to investigate the causes - and effects of disputes in construction projects however, the study has revealed that stakeholders play a significant role in dispute causation as a result of disputes by the client, consultant - , or contractors, and through design deficiency. Moreover, primary findings from the study outlines four major categories of dispute causation such as construction related causes of disputes; financial/economical causes of disputes, management causes of disputes and contract related causes of disputes. This study further reveals that when disputes are not resolved in timeously, they become very expensive – in terms of finances, personnel, time, 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 costs (e.g., damage to business relationships, potential value lost due to inefficient dispute resolution) are also considerable, although difficult or impossible to quantify. However, if disputes could be minimized and approached accordingly many disputes could be avoided. Nevertheless, if a dispute is not resolved promptly, it may escalate and ultimately require litigation proceedings which can be extremely costly for the parties concerned and even damage business relationships. The study is conducted with reference to existing literature, and unpublished and published research. Hence, this study explores the causes and effects of construction disputes and presents a robust background to the theories of construction project disputes.

Keywords: Construction disputes, Construction projects, Construction industry
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<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AB</td>
<td>Adjudication board</td>
</tr>
<tr>
<td>ADR</td>
<td>Alternative / amicable / appropriate dispute resolution</td>
</tr>
<tr>
<td>CEDR</td>
<td>Centre for effective dispute resolution</td>
</tr>
<tr>
<td>CIDB</td>
<td>Construction industry development board</td>
</tr>
<tr>
<td>DRM</td>
<td>Dispute resolution methods</td>
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<tr>
<td>DAB</td>
<td>Dispute adjudication board</td>
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<tr>
<td>DRB</td>
<td>Dispute review board</td>
</tr>
<tr>
<td>FIDIC</td>
<td>French acronym for international federation of consulting engineers</td>
</tr>
<tr>
<td>GCC</td>
<td>General conditions of contract for construction work</td>
</tr>
<tr>
<td>ICE</td>
<td>Institute of civil engineers</td>
</tr>
<tr>
<td>JBCC</td>
<td>Joint building contract committee</td>
</tr>
<tr>
<td>NEC</td>
<td>New engineering contract</td>
</tr>
<tr>
<td>SAICE</td>
<td>South African institute of civil engineers</td>
</tr>
<tr>
<td>TCC</td>
<td>Technology and construction court</td>
</tr>
<tr>
<td>UNCITRAL</td>
<td>United Nations commission on international trade law</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical package for the social sciences</td>
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DEFINITION OF TERMS

**Construction claim** – A construction ‘claim’ is an assertion by a party of a right to money, property or a remedy, which in construction includes ‘extensions of time’. Such claims can be classified as those arising from the contract itself, from a breach of the contract or a common law duty (as in tort), or from a quasi-contractual assertion for quantum merit (deserved) compensation or an ex-gratia settlement.

**Construction dispute** – Disputes arise under the process of construction claims where a claim or assertion made by one party is rejected by the other party and that rejection is not accepted.

**Construction conflict** – Conflicts occur when parties to a construction project disagree about particular provisions.
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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

This study investigates the disputes resolution in the South African construction industry: the causes, effects, dispute resolution methods, dispute prevention strategies and the different contractual methods for dispute resolution. In this chapter the basic background information is summarised, the various components of the study are highlighted and the structure is provided. Moreover, in this chapter the research questions, the objectives of the study, the purpose, limitations and the classifications of key terms of the study are presented.

Construction disputes happen fairly often, they are a reality on every construction project and could happen at any stage during the design or construction phase of the project (Hall, 2002). Construction disputes vary in nature, size and complexity, but they all have a common thread. They are costly, both in terms of time and money and they are often accompanied by the destruction of individual and good working relationships. Indeed, it is this tendency to destroy relationships and increase time and cost of construction projects, that has provoked a common interest of researchers in different countries to understand the nature and the cause of construction disputes in order to formulate measures to prevent or minimize their occurrence and to resolve them swiftly, efficiently and in a cost-effective manner if and when they occur (Assah-kissiedu, et al., 2010).

Fundamentally, work processes, policies and procedures as well as behaviours need to change in concert if disputes are to be reduced in construction projects (Love, 2008). Over the past two decades the construction industry has made tremendous progress in developing more efficient methods of dispute prevention and resolution. In fact, experts frequently refer to the construction industry as being on the innovative edge regarding dispute resolution (Hinchey & Schor, 2002). However, despite the progress, there remains much room for improvement.

In the light of the nature of the construction industry and the fact that it is often burdened with disputes arising from the contracts, appropriate and unique alternative disputes
resolution procedures are indispensable for disputes to be resolved quickly, efficiently and effectively (De Oliveira, 2012).

The South African Constitution makes provision for this in terms of Section 34 by granting parties the right to have their disputes resolved by means of public hearings before a court: alternatively, where appropriate, by means of another independent impartial forum. Arbitration, mediation, conciliation and adjudication, to name but a few, are alternative methods used in resolving South African construction disputes (De Oliveira, 2012).

In this research context, a conflict is defined as any action or circumstance resulting from incompatible or opposing needs, according to Peña-Mora et al. (2003). A claim is a request by a construction party to another party for compensation over and above the agreed-upon contract amount for additional work or damages that may have resulted from events that were not included in the initial contract (Adrian, 1988). A dispute is presented as a disagreement that requires a final determination, which is aided by the intervention of a third party. A lawsuit is a legal action whereby a plaintiff files a complaint against a defendant within the public court system, based on the defendant failing to perform a legal duty, resulting in harm to the plaintiff (Lectlaw, 2004).

The construction industry plays a major role in both the economy and infrastructure project delivery worldwide. However, one major critical characteristic of the construction industry is the high cost incurred for the resolution of arising conflicts in projects. As a result, project managers are seeking ways to avoid conflicts and resolve them effectively and equitably when they happen.

The construction industry plays a major role in both the economy and infrastructure project delivery worldwide (Pandolfi, 2003). However, one major critical characteristic of the construction industry is the high cost incurred by the resolution of arising conflict and lawsuits in projects (Thompson et al., 2000; Cheung et al., 2002; Harmon, 2003). Researchers have stated that the construction industry exists within an adversarial environment and conflict is unavoidable - (Fenn et al., 1998; Ock & Han, 2003; Mitropoulos and Howell-, 2001).
1.1 PROBLEM STATEMENT
Although measuring the performance of any construction project in terms of success or failure may appear simple, it is in fact a very complex process. In general, project success is most commonly identified with performance related to cost and time. However, attempting to define or limit the list of factors that contribute to project success would be certain to generate lengthy debate among project managers, researchers and practitioners.
Disputes have become an endemic feature of the South African construction industry. When they are not properly resolved, they can escalate, causing schedule delays, project failures and lead to claims that require litigation proceedings for resolution if arbitration is not present as a clause in the contract, thus destroying business relationships - hence the need to find resolutions to factors that cause disputes. Therefore, the problem investigated in this research project was to determine the factors causing construction disputes, determine their effects and additionally determine measures of minimising these disputes in the South African construction industry.

1.2 AIM OF THE STUDY
The aim of this study is to gain an understanding of the causes of disputes in the South African construction industry. Secondly, the research aims to add to the knowledge base relating to the effects of disputes and dispute resolution in the South African construction industry. This study also evaluates measures of minimising dispute occurrence in construction projects in the South African construction industry. Furthermore, considering the increasing complexity of construction projects and the economic environments within which they are being procured, there is a need to obtain a better understanding of the underlying conditions that contribute to disputes.

1.4 RESEARCH QUESTIONS
The study adopted the following research questions based on the defined problem statement for the study:
1. What are the causes of disputes in public sector infrastructure projects?
2. What are the effects of disputes in public sector infrastructure projects?
3. What are the most effective construction dispute resolution methods in use by the public sector?
4. How do the different construction contracts used in South African projects cover dispute avoidance and resolutions?
5. What are the best and most appropriate prevention strategies that can be developed to prevent the occurrence of construction disputes in public sector infrastructure?

1.5 OBJECTIVES OF THE STUDY
In order to investigate the research problem and the postulated questions, the study intends:

1. to determine the causes of disputes in public sector infrastructure projects;
2. to determine the effects of disputes in public sector infrastructure projects;
3. to evaluate the most effective construction dispute resolution methods in use by the public sector;
4. to identify how the different construction contracts cover dispute avoidance and resolution; and,
5. to identity and develop strategies to prevent dispute occurrence in public sector infrastructure projects.

1.6 MOTIVATION FOR THE STUDY
Although the potential for dispute resolution is inherent in any contractual relationship, given the unique and complex nature of a construction contract, disputes in construction are both inevitable and a common occurrence (Hibbed & Newman, 1999). Furthermore, role players in construction in the construction industry would disagree with Sir Michael Latham’s view (1995, 87) that the best solution to the problem is to prevent it and so to avoid disputes at all costs.

The motivation behind this study is to investigate the dominant causations and effects of disputes in the construction industry as these have become an endemic feature. In addition, the study aims to search for the most effective way to resolve disputes, in order to minimize their occurrence in projects, because they are the shortest cut to a project disaster. Construction projects delay, some even result in cost overruns due to the disputes that arose, therefore if disputes would be minimized and approached accordingly many projects would succeed however if a dispute is not resolved promptly, then it may escalate and ultimately require litigation proceedings which can be extremely costly for the parties concerned (Cheung et al., 2004).
1.7 PURPOSE OF THE STUDY
Changes during a construction project are inevitable but many projects are also plagued by severe construction disputes triggered by such changes. These disputes can become time-consuming and costly problems which may require litigation to resolve. Understanding the conditions that can contribute to their occurrence needs to be determined so that a mechanism can be put in place to prevent them from arising. Therefore, the purpose of this study is to determine the factors causing construction disputes, to determine their effects and further identify measures of minimising construction disputes in the South African construction industry.

1.8 RESEARCH METHODOLOGY
This section blueprints the research approach, the research area, targeted respondents and the sample data collected for the completion of this study.

1.9 RESEARCH APPROACH AND DESIGN
The quantitative approach was adopted in this research. The general methodology of this study relies largely on the survey questionnaire responses which were be collected from all the professionals involved in construction projects. A quantitative approach, using the descriptive survey study method as described by Leedy (1993) was decided to be the most appropriate methodology for answering the research question.

1.10 RESEARCH AREA AND TARGETED RESPONDENTS
The study was conducted in the Gauteng Province of South Africa, targeting all the construction professionals who are working on projects around the area and all professionals who have worked on projects in the targeted area. This included all the professional bodies that accommodate construction professionals.

1.11 SAMPLE AND DATA COLLECTION
Baker (1998) reported that statistically reliable conclusions can be obtained from a sample size of 20 or more, therefore for the purpose of this study a random sampling method was used. A total of 140 questionnaires were distributed to the respondents comprehending the relevant literature in the area of construction disputes.
1.12 RESEARCH LIMITATION
This study was conducted only in the Gauteng Province construction industry, and only construction professionals took part in the study, the focus of which was the causes of disputes, the effects, the different/ various contractual methods and strategies to prevent disputes in the Gauteng Province, South Africa.

1.13 ETHICAL CONSIDERATION
For the purpose of this study certain ethical issues were considered regarding the participants. The protection of participants in this study is imperative. The desire to participate in the study depended upon the participant’s willingness to share their experiences. The confidentiality of participants is vital and all information contributed by participants was acknowledged and cited.

1.14 OVERVIEW OF CHAPTERS

CHAPTER 1 Introduction
This chapter gives a brief description of the research problem and how it affects the construction industry as a whole. An indication is also given of how the researcher intended to go about investigating the proposed problem.; it further explains the researcher’s questions and objectives regarding the problem.

CHAPTER 2 Literature review - Construction disputes
In this chapter literature is reviewed, journals, papers, and books.by other authors whom have conducted research on the same case study or topic. Their findings are compared with those of others to conclude the study on the construction disputes in public sector infrastructure projects in South Africa.

CHAPTER 3 International literature - Dispute resolution
This chapter reviews other published books, journals, dissertations, articles. on the same topic by accredited scholars and researchers in Malaysia and Australia. The literature review highlights theories that have been established by other researchers on the topic. This chapter discusses international literature from Malaysia and Australia, covering the construction industry, the background of the country, a discussion of construction disputes and also identifying lessons learnt from each country. The purpose is to highlight existing established
knowledge and ideas about construction disputes causation in the construction industry of Malaysia and Australia.

CHAPTER 4  African literature - Dispute resolution
Chapter 4 discusses African literature from Ghana and Swaziland, covering the construction industry of the two countries, the background of the countries, a discussion of construction disputes and also ascertaining lessons learnt. The purpose is to highlight existing established knowledge and other researcher’s findings - in the Ghanaian and Swazi construction industries.

CHAPTER 5  Dispute resolution in South Africa
This chapter discusses the background, Construction industry, the causes, effects and dispute resolutions in the South African construction industry, to mention a few. It further elaborates on the construction dispute resolution prevention strategies that can be implemented to reduce the occurrences of construction disputes in the industry. Published and unpublished journals, articles, dissertations and books are reviewed.

CHAPTER 6  Research methodology
This chapter describes how the researcher collected information. In addition, it details how the descriptive survey method was applied in obtaining information from the participants. It also gives a clear view on how the primary data was obtained and analysed in terms of the basic descriptive - statistic method.

CHAPTER 7  Findings and analysis
This Chapter summarised the data from the questionnaires, and the results received back from the Statkon department, and furthermore draws the findings obtained.

CHAPTER 8  Discussion of findings
Once the findings were tabulated, the results are discussed and analysed according to their frequency and applicability to the construction projects. This assisted in the evaluation of occurrences of disputes in public sector projects and enabled conclusions to be drawn from the findings.

CHAPTER 9  Conclusion and recommendations
This chapter plays a major role in this study; it is in this chapter were the researcher concludes whether the research questions have been answered and if the researcher has met their objectives. Recommendations are given from the literature review of all the other publishers moreover mechanisms will be discussed which can be applied by the South African construction industry to minimise the occurrences of disputes in public sector infrastructure projects.

1.15 CONCLUSION

In this chapter the basis of the study were analyzed, motivation of the study, the proposed research questions, the study’s objectives were elaborated., Literature will be reviewed to establish mechanisms to minimize the occurrences of disputes in public sector infrastructure projects in South Africa, and this chapter also blueprints the importance of disputes occurrences and its drastic effects to public sector infrastructure projects. The next chapter focuses on the discussion of the literature review on construction disputes in the construction industry.
CHAPTER 2

OVERVIEW OF THE CAUSES OF, EFFECTS ON AND METHODS TO RESOLVE DISPUTES

2.1 INTRODUCTION
This chapter gives a speculative analysis and theoretical perception of disputes in construction projects, the dominant causes, the effects on, the disputes resolution methods use by the public sector, the different contractual methods used for dispute avoidance and prevention strategies to be developed to minimise the occurrences of construction disputes in public infrastructure projects. Literature from other researchers will be discussed in this chapter.

2.2 CONSTRUCTION INDUSTRY
Construction is a very general term meaning the art and science to form material or immaterial objects, systems or organizations and comes from Latin constructionem (from com- "together" and struere "to pile up") and Old French construction. Construction is used as a verb: the act of building, and a noun: how a building was built, the nature of its structure. Construction is often used as a synonym with building in its verb tense. As a noun, Russell Sturgis (2011) distinguished between architecture as being artistic structure, where a building is unadorned and can be "...poor...commonplace, ugly, insufficient, or otherwise of small importance; and the use of the word 'construction' as meaning ‘built using scientific principles in a highly skilful way’.

According to the Construction Industry Net (2014), there are four kinds of construction projects: buildings, commercial, heavy civil, and industrial. In South Africa, the problems confronting the construction industry are complex. However, aside from the on/off employment situation resulting from a lack of projects there is also a definitive slant toward urban development which means construction workers in rural areas have less income. In addition, the government has a shifting policy towards the construction industry which makes it difficult for companies to plan ahead. Nevertheless, most of the current construction projects are under the private sector. The government has majority over the civil engineering works, however; the construction industry development has shifted slightly to a more global perspective. In order to attract foreign investments, the standards have been raised to satisfy the needs of potential investors while staying true to the country’s environment
Traditionally the South African construction industry utilized numerous contracts which contained a wide variety of terms. Contractors were required to enter into contracts that were ambiguous and complex as well as unduly one-sided, with the contractor having to accept almost all the risk in terms thereof. However, huge disarray in contract management and dispute resolution were some of the repercussions. Moreover, a further factor contributing to the disarray in the construction industry was that there were hardly any regulatory provisions pertaining to dispute resolution or the construction industry itself, therefore this to a large extend is still the current position in the South African construction industry (De Oliveira, 2012: 1).

During the year 2000 the Construction Industry Development Board Act (38) was published. It established a regulatory statutory body known as the Construction Industry Development Board (CIDB). One of the objectives of the CIDB is to simplify and formalize the contracts that are to be utilized in the construction industry. However, other important objectives are to ensure that best practices in the construction industry are established to promote the uniform application of policies pertaining to the construction industry (section 4(i)) CIDB act.

Generally the industry remains dependent upon a wider economic stability and, if it is to be flourish it requires that government manage their respective economies efficiently to ensure solvency of national reserves, to maintain an acceptable level of employment, to maintain growth and to control inflation. However, while managing the economy, government may adopt economic measures that adversely affect the activities of the construction industry in particular (due to the way in which the industry interacts with the factors that shape a national economy). Moreover, from the susceptibility of the industry to government action, it can be said that the level of domestic construction work is ultimately determined by government economic policy (Kwakye, 1997:8).

The construction industry is a complex and competitive environment in which participants with different views, talents and levels of knowledge of the construction process work together. In this complex environment, there are participants from various professions, each has its own goals and each expects to make the most of its own benefits. The increase in the number of participants of different cultural backgrounds in the construction value chain
means more business interactions and arguments, whether contractual or social, resulting in an increase in the number of construction disputes (Kumaraswamy & Yogeswaran, 1998). There is confusion among construction professionals about the differences between conflict and dispute, and these terms have been used interchangeably, especially in the construction industry (Acharya et al., 2006). However, according to Fenn et al. (1997), conflict and dispute are two distinct notations. Conflict exists wherever there is incompatibility of interest. Conflict can be managed, possibly to the extent of preventing a dispute resulting from the conflict. On the other hand, disputes are one of the main factors which prevent the successfully completion of the construction project. Disputes are associated with distinct justiciable issues and require resolution such as mediation, negotiation and arbitration.

2.3 CONSTRUCTION INDUSTRY PERFORMANCE

The construction industry is one of the mainstays of a country’s economic progress. It may in fact be not far wrong to state that the state of a country’s construction sector can be used as a barometer to gauge that country’s economic performance. Different people may hold different views, but when a country’s economic statistics are heading downwards, the government’s “stimulus package” for the economy usually comprises substantial allocation for the construction industry. However, it is also true to say that the construction industry is a fertile source of disputes (Kheng, 2003:1).

Kheng (2003:1) further stipulates that a successful construction industry is essential to us all. Benefits from efficiently constructed buildings and infrastructures are well known and we all benefit from them. However, if we are prepared to challenge the waste and poor performance arising from existing practices and focus on our efforts on delivering the value that our customers need, we can attain and sustain continuous improvement in the industry. It is not easy to sustain radical improvement in a diverse industry as construction, especially with the constraints of developing countries.

With reference to the literature reviewed one can infer that the construction industry in a developing country is a major stakeholder of the economy. Furthermore, it is also a source of employment at various levels of skills from manual labour to semi - skilled, skilled and specialist workforce. Nevertheless, experience shows that it is one of the foremost industries in any developing country whose upward activity is related to the economy of the country. It is also perhaps the first industry whose slump is closely inter-linked with the fall of an
According to the Economic Intelligent reports (1999-2000) today’s construction industry hardly thinks about the client or the consumer it is serving; rather invariably it tends to think about the next employer in the contractual chain. There is no systematic research on what the end-user actually wants, neither does the industry seeks to raise customers’ aspirations and educate them to become more discerning. Moreover, the industry has no objective process for auditing clients’ satisfaction. Clients, both public and private sector, should be much more demanding.

The construction is a high stakes endeavour that produces long-term, unique, and complex building projects and infrastructure (Levy, 2007). However, 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. Nevertheless, 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 problem-prone industries, 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.

According to Sakal (2004), the construction industry today is different in that, strong relationships and trust between clients, contractors, and subcontractors have 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 common place (Sakal, 2004).

2.4 CONSTRUCTION DISPUTES
According to Campbell (1997:24), to consider how construction disputes can be avoided, it is first necessary to define what is meant by a ‘dispute’ and review the sequence of events which result in a construction dispute. However, in general the word ‘dispute’ is defined as an ‘argument’ or ‘contest’ with words (Chambers 20th Century dictionary). Moreover, in construction contracts the word has a more precise and formal meaning. The ICE Conditions of Contract (ICE, 1991) states in clause 66(2) that: “a dispute shall be deemed to arise when one party serves on the engineer a notice in writing (hereinafter called the notice of dispute) stating the nature of the dispute, therefore, before any party can serve such a notice they must first have taken any other steps and followed the appropriate procedures in accordance with the contract. The other party must also have been given the opportunity to take any appropriate action”.

The FIDIC international contract (FIDIC, 1987) contains a similar procedure at clause 67. However, other standard forms of contract do not require a specific notice of dispute, but are based on the same principles. Moreover, in construction a ‘dispute’ is a formal situation, after a claim has been submitted, rejected and reconsidered. However, it is not just any argument or contest with words. However, the OXFORD DICTIONARY defines disputes as a misunderstanding between two parties, either contractual or non-contractual, but because there is a misunderstanding between the two, it becomes a disputes.

Disputes in the construction industry always occur and can be attested by many court cases reported in court proceedings, various law journals and law reports. Therefore, construction disputes can have serious implications regarding the construction project. The project may suffer cost and time overrun, the owner may suffer significant loss and profit and worst still, the project may be abandoned or failed. This is because construction is a complex process involving many activities, myriads of individual, different companies or firms, different sizes, parts of the country with different skills and capabilities and always subject to a changing environment (Asniah 2007:1). Moreover, in every industry where people have to work together and cooperate there is a possibility for disputes to arise, and construction industry is not an exception. Often there is a lack of understanding about the reasons behind the disputes,
but to avoid disputes from occurring and resolving them if they occur, it is vital to understand the causes of disputes (Love et al, 2006).

Kwakye (1997:249) states that construction projects are generally complex and for this reason, delays and disputes are always present. Although the client has a desire to acquire the right building, at the right time and at the right price, he or she is always exposed to possible delays and/or additional costs to which there may be no compensation. Generally these will be the result of a dispute.

According to the Cooperative Research Centre for Construction Innovation (2009) the costs of contractual disputes, direct and indirect are substantial. However, they are borne not only by clients, designers and contractors, but also by the community through, for example, additional taxation revenue needed to provide essential services, and the management of the taxpayer-funded Federal, State and Territory court systems to deal with disputes. There are direct costs in disputes such as legal services, arbitration, consultants, courts, and the diversion of in-house resources (both legal and non-legal) to manage dispute resolution processes – for clients, designers and contractors. Moreover, when disputes proceed to arbitration or litigation, the direct costs can be significantly high and are often comparable to the amount of the claim itself. There are also indirect costs incurred by the parties such as delays to the project, adverse performance of the project, distraction and over-burdening of staff on the project, reduced morale, erosion of confidence and trust in working relationships, adverse impact on the reputation of the parties, emotional impact on people involved, lost opportunities for future work, destruction of business relationships, and the loss of people to the industry because of wasted effort, disillusionment and frustration (Construction Innovation (2009).

Carmicheal (2002) reveals that construction disputes and confrontations arise because the people involved have needs. From the contractor’s side the needs are usually money or profit related. Therefore, the architect has the ideas, his/her building or design which might be his monument to himself, his reputation, his artistic temperament, his money, his insurance premium, and similar needs. Moreover, 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 apologise and seek to make amends. In construction most are unable to pay for their mistakes, it is simply too expensive; and unfortunately, those who can afford to pay for the mistakes generally remember many of other errors by the other party which even if already forgiven, somehow must now be reconsidered (Mota, 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.

Moreover, in the quest for 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). Nevertheless, 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 2.1 shows the potential causes of disputes under contract conditions:

![Fish bone diagram illustrating potential causes of disputes in contract conditions](image)

**Figure 2.1 Fish bone diagram illustrating potential causes of disputes in contract conditions**
Fish bone diagram illustrating the potential causes of disputes in the contract conditions
Source: Authors Construct, 2008
2.5 TYPES OF DISPUTES
According to Campbell (1997:2), the types of disputes are many and various but they may be broadly categorised as: organisational, contractual and technical. However, owing to the diffuse nature of construction there is some overlap between these categories which are briefly discussed below:

2.5.1 Organisational
Campbell (1997:3) states that before World War II most construction work was executed by traditional methods. Moreover, a builder would carry out small jobs: larger projects would commission an architect as team leader who would construct a brief, employ specialist consultants, agree a scheme, draw up a contract, seek tenders and then superpose or check the work of the successful contractor. However, in a civil engineering project a consulting engineer would take the lead.

Nevertheless, with increasing project complexity and growing environmental sensitivity new forms of contract have merged. These include the following:
- Project management
- Package deals (or turnkey projects)
- Design and build
- Design, build, finance and operate (D.B.F.O)

Furthermore, each of these processes has a number of interfaces, moreover, at these interfaces and elsewhere misunderstandings occur which may give rise to disputes.

2.5.2 Contractual
The study of Campbell (1997:3) reveals that the following list of potential contractual disputes is not exhaustive but gives a flavour of what can go wrong:
- Extension of time - site boundaries
- Liquidated damages - customs difficulties
- Design faults - customs difficulties
- Variations to contract - disputes over quantities
- Payment (or non-payment) - employers risks
- Set-off - Setting out errors
- Unclear contracts - specification interpretation
- Actions by employers - construction method
- Actions by nominated sub-contractors-quality
- Adverse weather conditions - safely
- Application of rates in bills of quantity - possession of site
- Awaiting drawings, instructions - substitution of material
- Delay in commencement of works - tests
- Work permits - under-utilisation of resources
- Waivers

Nevertheless, many of these can be avoided by clear contract documentation (e.g. the Institution of Civil Engineers New Engineering and Construction Contract) and good communication between the parties. Moreover, old-fashioned engineering drawings often contained the legend “IF IN DOUBT ASK!“ there could be no better slogan for an industry wishing to avoid disputes (Campbell, 1993:3).

2.5.3 Technical

Furthermore, Campbell (1997: 4) mentions that the causes of defects in building were analysed in terms of cost repair, frequency of occurrence and defects in the ten years after construction. Moreover, he found that, more than half these defects affected the building envelope. However, many of these defects occur at interfaces between materials as they react differently to their environment. Many of these defects occur at the interfaces between materials as they react differently to their environment. Therefore, insufficient attention is often given to tolerances. Designers will sometimes select components from competing proprietary systems without thought for compatibility. However, much good work has been done by professional institutions and others in producing guidance on these matters. There is, however, a pressing need to raise standards and to make effective of this guidance.

Nevertheless, there is a time lapse between the recognition and solution of a problem and adoption by industry. This gap needs to be closed if disputes are to be avoided (Campbell, 1997:4).

Construction disputes can either be contractual or speculative. Rooted in an incomplete contract, risks, uncertainties, and collaborative conflicts would evoke contractual dispute. Likewise, also rooted in an incomplete contract, speculative dispute emerges with opportunistic behaviour or affective conflict (Cheung et al., 2013).
2.6 CAUSES OF DISPUTES

The construction industry has perhaps the unenviable reputation of being highly adversarial, and as a result of this, is paradoxically a leader in both dispute occurrences and dispute resolution systems (Keil, 1999). In the construction industry, disputes can be damaging and expensive, but can also seem inevitable. There is no universal definition of dispute. However, for the purpose of this research, the dispute is defined as a problem or disagreement between the parties that cannot be resolved by on-site project managers. However, according to (Rarooqui & Azhar, 2014), there are four major categories of disputes causation: construction related causes of disputes, financial/economical causes of disputes, management causes of disputes and contract-related causes of disputes.

2.6.1 Construction-related causes of disputes

According to Rarooqui and Azhar (2014), there are many causes of disputes related to the construction phase of the project. This study will address the following factors which normally happen during the execution of the project resulting to disputes:

- Unrealistic tender pricing
- Lack of appropriate level of man and machine
- Reluctant to seek clarification
- Unrealistic information expectations

2.6.2 Financial/Economical causes of disputes

Finance is one of the most important aspects of business management in the context of construction business. "Project finance" refers to the financing of the project that is dependent on the project’s cash flow for repayment as defined by the contractual relationships within each project, whereas the financial function plays a significant role in ensuring that company objectives are compatible with its resources (Farooqui & Azhar, 2014).

- Material price fluctuation
- Rising value of Rand
- Delay of payments
2.6.3 Management - related causes of disputes

Farooqui and Azhar (2014) reveal that; effective management of projects is becoming increasingly important for any type of organization to remain competitive in today’s dynamic business environment due to the pressure of globalization. However, through application of construction management tools and techniques and observing a sound project management system, the majority of the causes of disputes can be avoided, thereby reducing the chances that any dispute arises in the first place and if such thing comes about, it does not escalate to such a level that it is converted into a major conflict or breach of contract. The following factors will be described briefly in terms of their contribution towards management related disputes:

- Inadequate contract administration
- Poor procurement management
- Inappropriate contract type
- Inappropriate payment schemes

2.6.4 Contract related causes of disputes

Written contracts provide individual and businesses with a legal document stating the expectations of both parties and how negative situations will be resolved. If there are flaws in the formulation of contract documents, exaggerated claims on the contract can be a cause of disputes. Nevertheless, these causes and many other relevant to the domain of contract have a very high potential to be the source of diverse types disputes. Farooqui and Azhar (2014) stated the following factors as some of the dominant causes of contract related disputes:

- Contract clause interpretations
- Exaggerated claims
- Breach of contract by the project participants
- Unrealistic tender pricing

In a similar vein, Campbell (1997:51) also revealed that, construction disputes generally occur due to the following:

General

- 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.

Under the consultant category, Campbell (1997:51) reveals the following as the major causes of disputes:

Consultants

- Design errors;
- Design inadequacies;
- Lack of appropriate competence;
- Failure to define brief;
- Failure to define conditions of engagement and fees;
- Delay in settling claims;
- Late information;
- Incompetence information;
- Ambiguous specifications;
- Variations and late confirmation of variations;
- Lack of coordination of information from different sources;
- Under-certifying;
- Statutory authority requirements;
- Briefing client on implications of contract and building process;
- Checking contractors programme and method statement;
- Unclear delegation of responsibilities; and
- Inexperience.

According to Campbell (1997:52), the following are causes of disputes that are client related:

Client

- Poor briefing;
- Expectations at variance with contract documentation;
- Change of mind during construction;
- Changes to standard contract conditions and additional non-standard conditions;
- Poor financial arrangements leading to late payments;
- Rigid budgets;
- Reluctance of public bodies to reach decisions which might be criticised;
- Interference by administrators outside the contract process; and
- Interference by client in contractual duties of the contract administrator.

The fourth category of causes of disputes is the contractor - related causes, as highlighted in the study of Campbell (1997: 52) as follows:

**Contractor**

- Inadequate site management;
- Poor programming;
- Poor workmanship;
- Disputes with subcontractors/suppliers;
- Late payment of subcontractors/suppliers;
- Deliberate manufacture of claims premeditated or at conclusion of contract;
- Coordination of subcontractors;
- Unforeseen items.

The final category of causes of disputes revealed in the work of Campbell (1997:53) is the sub-contractor related as follows:

**Sub-contractor**

- Terms of subcontractor and/or mis-match with main contractor;
- Coordination of design input in non-design main contractors;
- Failure to follow conditions of contract; and
- Inability to substantiate costs at the appropriate time.

According to Kwakye (1997:251), disputes may arise on a project for a number of reasons. Some well-known ones include the following:
Shortcomings, omissions and error in contract documentation giving rise to ambiguities in contract requirements;

Delays in the supply of general construction information;

Late issue of instruction varying some section of the works;

Increase in scope of work (change, extra and errors) without proper consideration for extension of production time;

Untimely issue of variation instructions, which disrupts the contractor’s progress and programme of works;

Failure of contractor to construct the works diligently and to programme;

Poor workmanship and failure to use specified materials, skilled operatives and recognised methods;

Failure to inspect works in progress regularly and condemning only when works are completed;

Inaccurate valuation of variations and works in progress;

Acceleration to complete within original programme without proper agreement over the payment; and

Late or non-payment for works satisfactorily completed when payment is due.

It can be deduced from the above list that the main areas of construction disputes revolve around time and cost overruns, quality of workmanship, payment, contract documentation, construction information and site supervision. In addition to the above classification, it can be said that, owing to their diverse status, the viewpoints of the project participants towards the disputed areas will always vary (Kwakye, 1997:251).

Research by various scholars has been conducted on the causes of disputes. However, Diekmann and Girard (1995) inform that there are three major causes of disputes in the construction industry (CI), namely; people, process and project characteristics. Diekmann and Girard’s findings concur with El-Mesteckawi, Ibrahim, and Marzouk’s (2007) findings who inform that that the characteristics that influence disputes can be classified into three main categories, which are people issues, process issues and project issues. Howell and Mitropoulos (2001) posit that the basic factors that drive the development of disputes are project uncertainty; contractual problems and opportunistic behaviour. These factors, namely uncertainty, contractual problems and opportunist behaviour are also similar to the three
causes of disputes identified by the Dispute Prevention and Resolution Task Force of the Construction Industry.

Howell and Mitropoulos (2001) and Vorster (1993) note that project uncertainty which causes change beyond the expectation of the parties; the process problems, including imperfect contracts, and unrealistic performance expectations; and people issues, problems due to poor communication, poor interpersonal skills and opportunistic behaviour are also major causes of dispute in the CI. Younis et al. (n.d) agree with the above statement that disputes are caused by uncertainty, contracts and behaviour. These three factors are in a broader sense in line with three categories mentioned by Kuramaswamy (1997), namely external factors, contract and project teams. Harmon (2003) maintains that disputes result from factors such as unfair allocation of project risks, multiple prime contracts, unrealistic schedule and expectations, poorly prepared contract documents, variation orders and communication problems, among others. Below (See Table 2.1) is a literature summary of the causes of dispute in the CI, according to Fenn et al. (1997):

Table 2.1: A literature summary of the sources of disputes

<table>
<thead>
<tr>
<th>Author</th>
<th>Source of dispute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristow and Vasilopoulous (1995)</td>
<td>Six areas: unrealistic expectations; ambiguous contract documents; poor communications; lack of team spirit; and changes</td>
</tr>
<tr>
<td>Conlin et al (1996)</td>
<td>Six areas: payment; performance; delay; negligence; quality and administration</td>
</tr>
<tr>
<td>Diekmann et al (1994)</td>
<td>Three areas: people process and project</td>
</tr>
<tr>
<td>Heath et al (1994)</td>
<td>Seven areas: contract terms; payment; variations; time; re nomination; and information</td>
</tr>
<tr>
<td>Hewit (1991)</td>
<td>Six area: change of scope; changed conditions; delay; disruption; acceleration; and termination</td>
</tr>
<tr>
<td>Author</td>
<td>Factors contributing to claims/disputes</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Kumaraswamy (1996)</td>
<td>Two areas: root causes; and proximate causes</td>
</tr>
<tr>
<td>Rhys Jones (1994)</td>
<td>Ten areas: management; culture; communications; design; economics; tendering pressures; law; unrealistic expectations; contracts; and workmanship</td>
</tr>
<tr>
<td>Semple et al (1994)</td>
<td>Four areas: acceleration; restricted access; weather; and changes of scope</td>
</tr>
<tr>
<td>Sykes (1996)</td>
<td>Two areas: misunderstandings; and unpredictability</td>
</tr>
</tbody>
</table>

**Source:** Fenn et al. 1997

**Table 2.2 Claims and disputes in construction**

<table>
<thead>
<tr>
<th>Author</th>
<th>Factors contributing to claims/disputes</th>
</tr>
</thead>
</table>
| Blake Dawson Waldron (2006)   | *Nine* key causes in disputes:  
1. Variations to scope  
2. Contract interpretation  
3. EOT claims  
4. Site conditions  
5. Late, incomplete or substandard information  
6. Obtaining approvals  
7. Site access  
8. Quality of design  
9. Availability of resources |
| Cheung and Yui (2006)         | *Three* root causes of disputes:  
1. *Conflict* - Task interdependency, differentiations, communication obstacles, tensions, personality traits  
2. *Triggering events* - Non performance, payment, time  
3. *Contract Provision* |
- Construction related: variation and delay in work progress  
- Human behaviour parties: |
| Killian (2003) | • *Project management procedure*: Change order, pre-award design review, preconstruction conference proceedings, and Quality assurance.  
• *Design errors*: errors in drawings and Defective specifications.  
• *Contracting officer*: Knowledge of local statues, faulty negotiation procedure, scheduling, bid review  
• *Contracting practices*: Contract Familiarity/client contracting procedures.  
• *Site management*: scheduling, project management procedures, quality control, and financial packages  
• *Bid development errors*: estimating error |
| --- | --- |
| Mitropoulos and Howell (2001) | Factors that drive the development of a dispute:  
1. Project uncertainty  
2. Contractual problems  
3. Opportunistic behaviour |
| Kumaraswamy (1997) | *Five common category of claims*:  
1. Variations due to site conditions  
2. Variations due to client changes  
3. Variations due to design errors  
4. Unforeseen ground conditions  
5. Ambiguities in contract documents  
*Five common causes of claims*:  
1. Inaccurate design information  
2. Inadequate design information  
3. Slow client response to decision  
4. Poor communication  
5. Unrealistic time targets |
| | *Six key dispute areas*:  
1. Payment and budget  
2. Performance  
3. Delay and time  
4. Negligence  
5. Quality |
<table>
<thead>
<tr>
<th>Source</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colin et al. (1996)</td>
<td>6. Administration</td>
</tr>
</tbody>
</table>
| Sykes (1996)           | Two major groupings of claims and disputes:  
  1. Misunderstandings  
  2. Unpredictability |
| Bristow and Vasilopoulos (1995) | Five primary causes of claims:  
  1. Unrealistic expectations by parties  
  2. Ambiguous contract documents  
  3. Poor communications between project participants;  
  4. Lack of team spirit  
  5. Failure of participants to deal promptly with changes and unexpected outcomes |
| Diekman et al. (1994)  | Three main dispute areas:  
  1. Project uncertainty  
  2. Process problems  
  3. People issues |
| Heath et al. (1994)    | Five main categories of claims:  
  1. Extension of time  
  2. Variations in quantities  
  3. Variations in specifications  
  4. Drawing changes  
  5. Others  
 Seven main types of disputes:  
  1. Contract terms  
  2. Payments  
  3. Variations  
  4. Extensions of time  
  5. Nomination  
  6. Re-nomination  
  7. Availability of information |
| Rhys Jones (1994)      | Ten factors in the development of disputes:  
  1. Poor management  
  2. Adversarial culture  
  3. Poor communications  
  4. Inadequate design |
5. Economic environment  
6. Unrealistic tendering  
7. Influence of lawyers  
8. Unrealistic client expectations  
9. Inadequate contract drafting  
10. Poor workmanship

<table>
<thead>
<tr>
<th>Source</th>
<th>Details</th>
</tr>
</thead>
</table>
| Semple et al. (1994) | *Six commons categories of dispute claims:*  
1. Premium time  
2. Equipment costs  
3. Financing costs  
4. Loss of revenue  
5. Loss of productivity  
6. Site overhead  
*Four common causes of claims:*  
1. Acceleration  
2. Restricted access  
3. Weather/cold  
4. Increase in scope |
| Watts and Scrivener (1992) | *Most frequent sources of claims:*  
1. Variations  
2. Negligence in tort  
3. Delays |
| Hewitt (1991) | *Six areas:*  
1. Change of scope  
2. Change conditions  
3. Delay  
4. Disruption  
5. Acceleration  
6. Termination |

**Source:** Kumaraswamy (1997)

Likewise, Gebken and Gibson (2006) state that construction disputes can arise from many factors such as inadequate planning, changes in commodity prices, unexpected conditions at the work site, differing interpretations of contract language, and lack of communication.
among parties involved in the project. These can affect project performance and ultimately lead to litigation. Although there have been many studies elaborating on the cost of construction litigation.

According to Pena-Mora et al. (2003), "a number of causes of disputes in construction projects have been presented in the literature; however, a common source of conflict found is that the majority of projects are a one-time experience. Even when companies perform projects of similar nature and for the same client, differing site conditions, regulations, subcontractors, market conditions, and team members modify the development of the contract.” Therefore, the main sources of conflicts and disputes in construction projects are divided into two main categories: organizational issues, including structure, process and people; and uncertainty issues, including internal and external uncertainty. Refer to Table 2.3 for a complete description of each of these sources of conflicts and disputes.

Table 2.3 Sources of conflicts, claims and disputes

<table>
<thead>
<tr>
<th>Area</th>
<th>Discipline</th>
<th>Sources of Conflicts, Claims, and Disputes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational</td>
<td>Structure</td>
<td>Internal/external organizational structure, delivery systems, inappropriate contract type, contract documents, contract terms, law</td>
</tr>
<tr>
<td>Issues</td>
<td>Process</td>
<td>Performance, quality, tendering pressures, payment, delays, disruption, acceleration, reports, administration, formal communication channels, information sharing, and poor communication</td>
</tr>
<tr>
<td></td>
<td>People</td>
<td>Misunderstandings, unrealistic expectations, culture, language, communications, incompatible objectives, management, negligence, work habits and lack of team spirit</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>External</td>
<td>Change, variations, environmental concerns, social impacts, economics, political risks, weather, regulations and unforeseen site conditions</td>
</tr>
<tr>
<td></td>
<td>Internal</td>
<td>Incomplete scope definition, errors in design, construction methods and workmanship</td>
</tr>
</tbody>
</table>

Source: Pena – Mora et al .2003

In this context, conflicts are actions or circumstances "…resulting from incompatible or opposing needs" (Pena-Mora et al., 2003; Fenn et al., 1998). However, conflicts are usually managed at the project level but escalate to disputes and claims when adjustments to the
scope of the original contract are required (Adrian, 1988). When conflicts cannot be resolved amicably through direct negotiation between the project participants, they escalate to a dispute that requires the intervention of an experienced neutral third party to assist the project participants in aligning their objectives to reach an agreeable settlement (Pefia-Mora et al., 2003; Caltrans, 2003). Moreover, when parties fail to agree on the "...entitlement to contract adjustment and quantification of adjustment" (Adrian, 1988) disputes escalate to claims, and parties "...begin protracted settlements through means that may include binding arbitration or court proceedings to obtain determination" (Pefia-Mora et al. 2003; Caltrans 2003; Fenn et al. 1998). In this context, claims are requests "...by a construction contractor for compensation over and above the agreed upon amount for additional work or damages supposedly resulting from work not included in the original contract" (Adrian, 1988). According to Adrian (1988), construction related disputes and claims could be classified into four main categories as follows:

1. **Delay claims**: This claim occurs when the contractor cannot perform and complete the construction process within the specified or agreed upon schedule. Several reasons can contribute to the occurrence of delay claims such as: increase in the cost of capital; increase in cost of and shortage of material; delay in receiving owner-purchased material; uncontrollable events such as severe weather conditions; design error/omissions; revisions and changes; implementation of new delivery systems with non-traditional work packaging with several contractors involved in the project; and implementation of new technologies to issue drawings and specifications.

2. **Scope of work claims**: These claims occur when the project participants cannot agree on the damages resulting for required additional work in the project that can be the result of ambiguous drawings/specifications (e.g. Is the on-site contractor responsible for shoring the embankments?, What does the drawing actually specify in regard to the surface quality of the poured in-place concrete?), or direct requests by the owner due to changes in original scope of the project (e.g. increasing number of floors). The costs associated with a scope of work claim are very similar to those included by the contractor in his original bid documents including direct labour costs, material costs, equipment costs, and job overhead costs.

3. **Acceleration claims**: This type of claim, also referred to as productivity claims, occurs
when the contractor is required to perform the work in a time period less than initially planned. In this case, the contractor will have to utilize different or additional resources to speed up its production system. For example, the contractor might be requested to work overtime, add additional workers to his/her crews, work two or more shifts, utilize equipment not originally planned for, and finally “inadvertently “ directed by the owner or owner representative to change his/her method of construction. Such claims are typically the direct result of a delay or change in scope of work claims.

(4) Changing site condition Claims: This type of claim occurs because underground soil conditions vary in such a way that cannot always be detected by soil test borings. It is always possible that the contactor will encounter a soil condition that is different from that indicated by the soil boring test results on which he originally based his bid. In this case, the contractor might be compelled to request a large increase in cost and time to complete the excavation and foundation work.

Additionally 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. Moreover, 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.

2.7 EFFECTS OF DISPUTES
Construction disputes, when not resolved timeously, become very expensive – in terms of finances, personnel, time, 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 costs (e.g. damage to business relationships, potential value lost due to inefficient dispute resolution) are also considerable, although difficult or impossible to quantify (Farooqui & Azhar, 2014).

As a result of issues arising in projects, conflict and disputes may occur, which can lead to the disruption of construction schedules, increased project costs, and even adversely influence relationships between project participants (Yiu & Cheung, 2004). If a dispute is not resolved promptly, it may escalate, and ultimately require litigation proceedings, which can be extremely costly for the parties concerned (Cheung et al., 2004).

Allen (2011) identified five effects of construction disputes as follows;
• Project delays;
• Changes in the contract cost leading to cost overrun;
• Deterioration of relationships or bad relationships leading to friction;
• Parties do not get information on time; and
• Neglecting client’s needs.

Nevertheless, at project level, unresolved disputes can lead to programme delays, increase tension and can cause long term relationships (Cheung & Suen, 2002). Furthermore, the occurrences of construction disputes can lead to negative impact towards client organization; thus the construction work progress will become slow owing to the conflict and disputes.
between the contractor and client. Subsequently, the cash flow of the client will slow down. The client organization may suffer losses of time, cost and quality which consequently affect the image and background of the company (Poh, 2005). It is also said that unresolved disputes impact negatively on the client’s organization in areas such as in time and cost overruns, diminution of respect between parties – deterioration of relationships and breakdown in co-operation and additional expenses in managerial and administration. Disputes can also cause resource wastage and mistrust in the project (Kumaraswamy, 1998). Likewise, Poh (2005) categories the impact of construction disputes on the client organization as follows: additional expense in managerial and administration; possibility of litigation cases; loss of company reputation; loss of profitability and perhaps business viability; time delays and cost overruns; diminution of respect between parties-deterioration of relationship and breakdown in cooperation; higher tender prices; extended and/or more complex award process; rework and relocation costs for men, equipment and materials; and loss of professional reputation.

Every conflict, dispute and claim entails liability and financial damages. The liability issue focuses on the whether the work was performed in accordance with the contract, and project drawings and specifications. Furthermore, the financial damages focus on the additional costs associated with performing the work stipulated in the conflict, dispute and claim. These additional costs can include direct labour hours, direct labour hours due to loss of productivity, increased labour rate, additional material quantities and unit prices, additional subcontractor work and cost, additional equipment rental cost, cost for owned equipment use, company overhead and home office costs, interest or finance cost, loss of profit due to delay in project completion, and finally, loss of opportunity profit (Adrain, 1988).

2.8 DISPUTE RESOLUTION METHODS

Conflict and dispute are inter-related. However, they involve two different concepts, which are that conflict is simply about an incompatibly of interests, while dispute is a subsequent stage that involves the resolution of legitimate issues (Fenn et al., 1997). Simply put, a conflict becomes an unresolved circumstance when the contracting parties fail to manage the conflict, and then it becomes a dispute. In reality, both conflicts and disputes are inevitable events that happen in all facets of construction projects. In a project management context, conflict requires the selection of a conflict resolution mode such as confronting,
compromising, smoothing, forcing, or avoiding (Kerzner, 2006), while dispute resolution involves the next step, that of resolving the unsettled conflict through binding arbitration or litigation, or through non-binding approaches such as negotiation, and mediation (Jannadia et al., 2000). However, there are pros and cons to every dispute resolution method. Moreover, the selection of an appropriate dispute resolution method is vital as every project is likely to have disagreements. Nevertheless, the low frequency of practising alternative dispute resolution (ADR) in the local construction industry needs to be addressed, because opting for risky traditional dispute resolution methods are very costly and time consuming. Therefore, the aim of this research is to identify the behaviour of dispute resolution in the industry.

This study renders two significant contributions for the industry and academia. First, by considering the philosophies and stages of dispute resolution as well as different attributes or features of the methods that derive from the two objectives. The results could, in practical terms, help disputants select an appropriate dispute resolution method. Second, this would be very beneficial for future research and development, bridging the gap between the academia and industry.

2.8.1 STAGES OF DISPUTE RESOLUTION AND THEIR FEATURES

Disputes may be resolved in many ways using various procedures. It is not true to say that all disputes are resolved by court proceedings or in other formal or informal settings involving alternative dispute resolution methods. The following discussion focuses on the common dispute resolution methods that are applied and familiar in the construction industry, as the literature review which follows covers. The stages of dispute resolution always begin with a grievance. Badman and Grimmett (1996) highlight that the grievance may be abandoned when it is considered to be too trivial and not worth pursuing, where there is felt be an inability to pursue the matter or, there is a lack of understanding that legal recourse is available to resolve it. This type of grievance is probably the least confrontational and time consuming, as the person concerned would merely give in or surrender, due to his/her limited understanding or resources. In developing countries, the grievance is very obvious and common, even though the person concerned may not realize it.

The next step is negotiation, which is the first and informal method of dispute resolution. At this stage, there is an attempt to communicate the grievance and negotiate for a settlement. This negotiation technique is the preferred choice of the disputants, and most disputes are
resolved by this process (Cheung et al., 2000). It is the least expensive method, and is a speedy, voluntary, and unstructured process, which can preserve the working relationship of the parties involved. In negotiation, the parties have absolute freedom with respect to the form, process and type of agreement. The cultural background of the disputants could also lead to different approaches being taken in resolving disputes under negotiation (Tinsley et al., 2011). Yet, to make it successful, the negotiation demands cooperative effort from the disputants (Cheung, 1999; Edwin & Henry, 2005).

However, negotiation is not always workable in bringing consensus at the end. This is because projects diverge from the anticipated manner and other more formal methods of dispute resolution may be triggered. Mediation or conciliation may need to take place to reach a settlement after the negotiation (Essex, 1996). Ironically, the mediator has no power to impose a solution and his/her function is limited only to helping or guiding the disputants to focus on their actual objectives and resolve their matter consensually (Harmon, 2006). The role is to narrow the issues and focus on each party’s interest (Treacy, 1995). The parties can simply ignore the solution proposed by the mediator if they are not satisfied with it (Chau, 1992). Therefore, the success of mediation very much relies on its fairness and the bargaining power and position during the proceedings (Bellucci et al., 2010; Bollen et al., 2010; Charkoudian & Wayne, 2010).

Where the disputants have equal opportunities and rights in the disputed matter, they are most likely to appreciate the settlement proposed by the mediator and the success rate of mediation could be increased. The next stage involves methods that could render a legally binding decision, such as adjudication, arbitration and litigation. The alternative to arbitration is the use of adjudication, which may be considered certain features and benefits, that is decision can be “temporary binding” and it allows for quick determination (Dancaster, 2008; Owens, 2008). Usually, adjudication deals with the payment problem between the contracting parties (Uher & Brand, 2005; Teo, 2008; Noushad Ali & Lim, 2008). It can assist in expediting payment and improving cash flow within the construction industry, especially from the contractor’s perspective (Teo & Aibinu, 2007; Uher & Brand, 2008). The contract details can also affect the type and process of dispute resolution which is adopted (Lumineau & Malhotra, 2011).
Usually, these legally binding decision methods will be stated under a contractual provision and also enforceable by law. However, the “‘bindingness’” of an adjudication decision may not be final as it can be subject to a review or appeal to arbitration or litigation. Therefore, the next stage is the use of arbitration. Clearly, the disputants need an arbitrator, an independent expert to act as the decision maker, while the disputants also need to agree to be bound by the decision made by the arbitrator which is final and is enforced by law. However, in certain circumstances in the current development of arbitration, the arbitrator could make interim awards or injunctions; and court interventions are limited to certain areas within the spirit of the UNCITRAL Model Law (2010). The arbitration clauses are included in most of the standard forms of contract (Harmon, 2003). The proceedings are conducted in private and confidentially (Teo & Aibinu, 2007). Yet, over the years, with the increase in procedural complexity, arbitration is regarded as a replicating litigation, and the original designed positive effects are lacking (Cheung et al., 2000, 2002). Therefore, arbitration is categorized as the traditional dispute resolution method, instead of ADR.

Last, but not least, litigation is the final stage of dispute resolution. However, it is a traditional dispute resolution method and provides an involuntary and binding solution. Usually, the litigation proceedings are brought by clients and main contractors (Love et al., 2010). It is costly, time consuming and risky (Gebken & Gibson, 2006). It also involves a number of variables and is unlikely to satisfy the litigants (Harmon, 2004).

Nevertheless, litigation could be the preferred dispute resolution method if the dispute involves legal issues or points of law that are best determined by a judge (Harmon, 2003). The court proceedings consist of several levels too, within the hierarchy of the courts. This is important and offers the advantage of the provision of an appeals structure (Badman & Grimmett, 1996). The dispute should be resolved in the earliest possible stages of dispute resolution. The controversial and adversarial nature of the dispute between the contracting parties increase, as well as the consumption of cost or resources and time, once a higher stage of dispute resolution is applied is illustrated in Figure 2.2. The characteristics of the dispute resolution methods have been summarized based on the literature review.

Figure 2. 2 Stages of dispute resolution
2.8.2 TECHNIQUES USED TO RESOLVE DISPUTES

According to Fenn (2012, 11), there has been considerable recent interest in dispute resolution, particularly as means of making savings by optimising efficiency in dispute resolution. In fact, the ADR pledge (alternative dispute resolution) re-launched in 2011 as the “Dispute resolution commitment” is a central tenet of the UK governments commitment to greater efficiency in dispute resolution.

The range of conflict management and dispute resolution techniques include the following:

Conflict management/dispute avoidance

Incorporates a variety of techniques some used consciously and some subliminal to avoid the escalation from normal conflict into disputes. Examples might include: risk management to ensure that risks are identified, analysed and managed; procurement strategies to ensure that risks are appropriately allocated; and contractual arrangements to allow sensible administration. Moreover, specific examples include: clearer project definition, equitable risk allocation; improved procurement and tendering procedures; and partnering or relationship contracting.
Negotiation
Easily the most common form of dispute resolution, this is carried out in many forms everyday by just about everybody. In negotiation, the parties themselves attempt to settle their differences using a range of techniques from concession and compromise to coercing and confront.

Mediation
This is a private and non-binding form of dispute resolution, where an independent third party (neutral) facilitates the parties, reaching their own agreement to settle a dispute. However, mediation is often a structured process where the settlement becomes a legally binding contract.

Conciliation
This is a process where the neutral proposes a solution. In the same way that we distinguished between a continuum of conflict and dispute, a continuum of mediation and conciliation shows mediation at one facilitative end and conciliation at the other evaluative end of the continuum.

Med-arb
This is a combination of mediation and arbitration where the parties agree to mediate. However, if that fails to achieve settlement the dispute is referred to arbitration. The same person can act as mediator and arbitrator in this type of arrangement.

Dispute resolution adviser (DRA)
The concept of DRA is the use of an independent intervener. This independent intervener is paid for equally by the employer and the contractor to settle disputes as they emerged, rather than wait until the end of the contract.

Dispute review board (also dispute review panel, dispute avoidance panel)
This is a process whereby an independent board evaluates disputes.
Neutral evaluation
This is a private and non-binding technique whereby a third, neutral party (often legally qualified) gives an opinion on the likely outcome at trial as a basis for settlement discussions.

Expert determination
This is a long established procedure in English law and has been used across a number of industries. Examples include accountants valuing shares in limited companies; valuers fixing the price of goods; actuaries carrying out valuations for pension schemes; certifiers of liability for on-demand performance bonds; and adjudicators who are said to be acting “…as expert and not arbitrator”.

Mini-trial (Executive tribunal)
This is a voluntary non-binding process, whereby the parties involved present their respective cases to a panel comprising senior members of the organisation. The panel is assisted by a neutral facilitator and has decision-making authority. After hearing presentations from both sides, the panel asks clarifying questions and then the facilitator assists the senior party representatives in their attempt to negotiate a settlement.

Construction adjudication
This refers to statutory adjudication in construction Disputes as set out in the HGCRA 1996. Here, decisions of an adjudicator are binding on the parties at least until further process is invoked (Arbitration or Litigation).

Arbitration
This is a formal, private and binding process whereby disputes are resolved by an award of independent tribunal (third party or parties, the arbitrator or arbitrators). The tribunal is either agreed by the parties or nominated by a further independent body; for example, a court or professional institution.

Litigation
This is formal process whereby claims are taken through court and conducted in public. Judgements are binding on the parties subject to rights of appeal Fenn (2012:12).

According to Chong and Zin (2012:433), there are various forms of ADR, such as negotiation, mediation, conciliation, arbitration, the use of a facilitator, a referee, an
ombudsperson, or a dispute review board, for instance. The nature of ADR depends on the agreement between the parties and the selection of the process and method, or the combination of processes and methods, rests entirely with the parties. There are no numerous clauses of ADR. Through the years certain standard forms of ADR have evolved, each with its own characteristics. The ADR methods most commonly used in the construction industry will be discussed. They are negotiation, mediation, conciliation, early neutral evaluation, mini-trial adjudication and arbitration (Chong & Zin 2012:433).

Negotiation
De Oliveira (2010:10) stipulates that negotiation is a process whereby parties attempt to personally reach a settlement without the use of an independent third party. Moreover, parties enter into negotiation voluntarily, thus requiring the co-operation of both parties so as to achieve a win-win solution. The settlement reached between the parties is achieved of their own free will. Furthermore, this settlement is usually recorded in a written agreement between the parties. Negotiation is one of the most commonly used methods to resolve any dispute. It is an informal ADR method used as a pre-emptive measure in an attempt to avoid a fully-fledged dispute between the parties.

Negotiation is the most economical ADR method used. It is expedient, unstructured, and a voluntary process available to parties that often preserves their working relationship. Nevertheless, negotiation is not always successful in ending disputes between the parties. Moreover, this is often because of the parties being too subjective by being emotionally involved, due to a power imbalance, or as a result of a lack of knowledge and similar factors. Other ADR methods can be utilised when there is a dead lock between the parties. The parties can then agree to seek the assistance of a third party in order to settle their dispute. These ADR methods, where a third party is involved, are usually mediation, conciliation alternatively arbitration. (De Oliveira, 2010:11).

Early neutral evaluation (ENE)
According to Gaitskell (1999), ENE is a preliminary assessment of evidence, facts and legal merits by an impartial third party which is generally conducted in a confidential manner. ENE has three distinctive components, being that it is a process done early on in the dispute resolution process by a neutral, impartial third party, usually an expert, who evaluates the evidence and furnishes a recommendation as to the outcome. According to the Centre for Effective Dispute Resolution, the ENE is a process that is designed to serve as a basis for
more fruitful negotiations by encouraging direct communication between the parties or, at the very least, by assisting the parties in avoiding unnecessary stages in the litigation process by helping to clarify key issues whether legal or factual. This method is best used when the disputes involve factual and/or technical elements that require the use of an expert’s evaluation. These are often the characteristics of disputes arising in the construction industry which is why the method is suited for the resolution of certain construction disputes (Gaitskell, 1999).

Mediation
According to Cheung and Suen (2002:562), mediation is an ADR method often used by the parties in a conflict. It is a process whereby the parties voluntarily invite an impartial, neutral third party, known as the mediator, to assist them in reaching an amicable settlement. Mediation may take place only if there is a mutual agreement between the parties to enter into mediation proceedings. The parties must be genuinely willing to search for solutions as well as to give and take in order to reach a settlement. Therefore mediation is a voluntary process from its launch until and including its termination. Mediation is usually commenced by means of a written agreement, known as a mediation agreement entered into between the parties. The mediation agreement entails the agreement to mediate, the practicalities of the mediation about to be entered into such as the appointment of the mediator, the time frame within which a settlement must be reached, the procedure within which the mediation must take place, and similar aspects. The powers of the mediator are granted to him/her in terms of the mediation agreement (Cheung & Suen, 2002:562).

McCartney and Dain (2010) stipulate that in South Africa mediation is not regulated by means of statute. It has over the years found judicial support in South Africa nonetheless. The South African court rules provide for pre-trial procedures wherein parties must consider the use of mediation as a means of resolving their dispute. However, the current court rules are not utilised to their full potential. The outcome hereof is the introduction of court - referred mediation. Draft mediation rules were established for use in court - referred mediation and will shortly be introduced in various courts as part of a pilot project.

Furthermore, there has been an increase in the use of mediation over the years, especially in the construction sector. It used in the construction industry not only as an attempt to reduce the financial costs pertaining to the resolution of disputes. It can also be more generally beneficial in resolving disputes in the construction industry as it is an informal method of
resolving disputes where the control of the proceedings, more importantly the outcome, lies with the parties. The fairness, privacy and confidentiality of the dispute resolution process is also beneficial to the construction industry as it ensures that there is a balance of powers between the parties during the dispute resolution process and because it avoids the possibility of having their reputations tarnished in public. Mediation is a flexible ADR method which helps in reducing the huge risks that are often associated with construction disputes (McCartney & Dain, 2010).

The disadvantage of using this method at times is that settlement of the dispute is not always guaranteed. This is not beneficial to the construction industry as due to its very nature a solution to the dispute is required in the shortest space of time possible. If no settlement is reached, another method of dispute resolution must be used, which provides further delays which cannot always be accommodated because time is usually of the essence in construction projects. However, it would seem that the term ‘mediation’ has not been consistently used in the English and South African construction industries. The term ‘mediation’ is often used interchangeably with the term ‘conciliation’.

**Conciliation**

Conciliation is a voluntary process entered into between disputing parties. It is defined as a structured negotiation process, involving an impartial third party, known as the conciliator (Judin, 2010). However, the parties taking part in conciliation enter into a conciliation agreement at the commencement of the proceedings. There is no set procedure within which to conduct conciliation. The conciliator is to conduct the process in such a way so as to ensure that relevant information is rendered, the relevant issues are determined and any attempts to delay the proceedings are resisted (De Oliveria, 2010). The conciliator should attempt to follow a more flexible approach rather than a formal approach such as that prescribed by other ADR methods such as arbitration. In practice the claimant often provides a concise written statement within which the following is stipulated: the disputed issues, the claimant’s view thereon as well as the claimed amount. The responding party replies thereto with its own brief statement. The equivalent of a discovery bundle, as used in civil litigation, is often furnished to the conciliator so that all relevant information is before him/her. Should the parties reach an agreement, it will be final and binding. However, should no agreement be reached between the parties, the conciliator will issue a formal recommendation to the parties regarding the settlement of the dispute (De Oliveria, 2010).
Mini-trial
According to Brown and Simanowitz (1995:155), a mini-trial is an ideal method of resolving complex disputes as it allows representatives to have full insight into the resources and efforts that will be required should no settlement be reached. Various advantages may be derived from utilising a mini-trial. Firstly, the parties are always involved in the decision-making process and therefore the decision reached will be interest-based. Secondly, the confidentiality of the dispute is achieved. There is a considerable amount of time saving as well as cost saving in comparison with arbitration and/or litigation. Lastly, should the parties not be able to reach a settlement, the neutral may be approached and asked for an opinion. A mini-trial can be beneficial to resolving the disputes in the construction industry in certain ways. Firstly, it involves senior officials who have the authority to make decisions in respect of the settlement of issues in dispute. The parties are also in a position to decide on what the strength of the case is in light of the fact that all strengths and weaknesses are exposed. However, a mini-trial is a speedy affair and speed is required when resolving construction disputes. A mini-trial also allows parties in a position to easily ascertain as to whether it will be worthwhile financially to take the matter further, should there be no resolution to the dispute (Brown & Simanowitz, 1995:155).

Adjudication
The term ‘adjudication’ can be misleading. However, in its general sense it refers to the process by which the judge decides the case before him/her or the manner in which a referee should decide issues before him or her. More specifically, adjudication may be defined as a process where a neutral third party gives a decision which is binding on the parties in dispute unless or until revised in arbitration or litigation. This narrow interpretation may refer to the commercial use of an adjudicator to decide issues between parties to a contract. The use of an adjudicator is found in a variety of standard forms of contract used in the construction industry (McGaw, 1992: 605).

According to the CIDB document (2005), adjudication may be defined as an accelerated and cost-effective form of dispute resolution that, unlike other means of resolving disputes involving a third party intermediary, the outcome is a decision by a third party which is binding on the parties in dispute and is final unless and until reviewed by either arbitration or litigation. Therefore, adjudication is not arbitration or litigation. However, an adjudicator is a third party intermediary appointed to resolve a dispute between the parties in dispute.
The decision of the adjudicator is binding and is final unless and until later reviewed by either arbitration or court proceedings, whichever the parties selected at the time of formalising the contract. It is intended that adjudication is a condition precedent to proceeding to either arbitration or litigation. Adjudication is a form of dispute resolution that meets a need for a rapid, relatively inexpensive dispute - resolving mechanism which provides a decision that can be implemented immediately. It is anticipated that in certain circumstances the adjudicator will consult others to provide such expertise as the adjudicator does not have to assist in making the correct decision. This is inevitable in disputes that cover a wide range of technical disciplines and legal issues, as no one person could be expected to possess all the necessary skills. In effect, the adjudicator in these circumstances manages resolution of the dispute on behalf of the parties in dispute. The parties pay for the advice the adjudicator obtains as a reimbursable expense in terms of the adjudicator’s contract with the parties (CIDB ,2005).

**Arbitration**

Pretorius (1993) stipulated that arbitration can be defined as a process whereby the parties present their evidence to an independent third party, namely the arbitrator, who thereafter makes a binding award. The process followed may be dealt with in exactly the same manner as a trial, with the exception that the process may be somewhat more informal and may be modified as agreed between the parties. The parties have to agree in writing to validly refer the dispute for arbitration. However, arbitration has become one of the most common choices amongst the alternative methods of resolving disputes, especially disputes arising in terms of written contracts (Pretorius, 1993).

The reason for the preference is a preference to its strongest characteristic namely that the arbitrator’s decision is final and binding which is not true of mediation, negotiation, conciliation, adjudication” or other forms of ADR. The disadvantage associated with this method is that it mirrors that of the litigation process and it has become expensive owing to the costs associated with arbitration proceedings such as costs of the venue and the arbitrator (Ennis, 2012: 8). It is important to note that arbitration is the only ADR method regulated by statute in South Africa. The South African Law Commission in July 1998 recommended in their report that the Act needed to be repealed and a new Act be promulgated. Nevertheless, It is astonishing to think that the commission made the recommendation over 14 years ago and to date nothing has been done.
Dispute resolution is a field of study and practice concerning the choice, design and application of a procedure that best deals with a certain conflict or dispute, the resolution of dispute being designed to incorporate and satisfy the requirements of all the parties concerned (Judin, 2010). Disputes arising in the construction industry usually involve a diverse range of issues due to the technical and complex nature of construction disputes (Bvumbe & Thwala, 2011). However, the traditional legal process is not always best suited to large scale disputes. Moreover, taking the adversarial route to resolving the disputes would result in a win-lose situation, as such processes are rights based. Therefore, preference is given to resolving the disputes outside of the court and by means of ADR. However, the outcome of using ADR is generally a win-win settlement in the light of the fact that the ADR procedure is interest based.

The construction industry has significant influence on the growth of the national economy in that it contributes to social as well as economic development. It is therefore important that any disputes that arise are dealt with in a cost-effective and expedient manner that ensures fairness, confidentiality and privacy. ADR is suited to addressing these needs as the outcome of ADR is usually a win-win solution.

2.8.3 THE STAGES OF CONFLICT MANAGEMENT AND DISPUTE RESOLUTION

Fenn (2012, 12) further stipulates that there are three different stages of conflict management and dispute resolution as per the _Dispute resolution Guide_ produced by the Office of the Government Commerce. The stages (See Figure 2.3) are as follows:

- **Stage 1** - Negotiation
- **Stage 2** - Non-binding techniques and processes
- **Stage 3** - Binding techniques and processes
2.9 FUNCTIONAL ANALYSIS OF CONSTRUCTION CONTRACTS

Construction projects face enormous uncertainties and the contract is unavoidably incomplete in terms of the inability to incorporate provisions to deal with all the possible contingencies. Joint efforts are needed in such situations to solve the problems that may arise. Any unresolved issue arising there, which may become a dispute, is one of the most damaging relationship destroyers in construction contracting. In addition, the commonly used competitive tendering system encourages awarding contracts to the lowest bid. Very often, the contractor behaves opportunistically in an attempt to recoup the deficit stemming from the cutthroat bids through post contract claims. Furthermore, it is not uncommon for clients to refuse to give fair compensation to contractors even though there are legitimate causes, thus offering the perfect recipe for a dispute. Many have described disputes with reference to the subject matter. This approach is pragmatic but does not lead to any form of conceptualization (Cheung et al., 2013). A functional analysis of construction contracts will be outlined to highlight the role of dispute resolution in construction contracts.

In its most basic form, a contract serves to restate the intentions of the contracting parties. That includes setting out the procedures to facilitate accomplishing the project intents (Hughes & Greenwood, 1996). Moreover, to deal with the uncertainties during the construction stage of projects, conditions of contract have become more and more complex and highly elaborate with the aim of having provisions to deal with all possible contingencies and their effects. In this regard, contract clauses can be analysed in terms of their functions. As presented in Fig. 2.4, concentric circles are used to illustrate the evolving and progressive relationships among the essential provisions of construction contracts.

![Diagram of Dispute Resolution Stages](image-url)
The inner most circle of Fig. 2.4 represents the core of all construction contracts: stipulating the obligations of the contracting parties. Changes are considered necessary and unavoidable in all construction projects. To plan for such eventualities, provisions for instructing variations, acceleration, and postponement together with the corresponding time and monetary adjustments have to be incorporated. Thus the layer next to the central core is the adjustment layer. The dotted line is used to reflect the adjustment characteristic. According to Macneil (1975), planning for performance should take care of the obligations, ways to facilitate and recognize such completion. Measures such as supervision, inspection, testing, surety and insurance are meant to control and facilitate the accomplishment of the project intents. Certificates are used to signify the successful discharging of its obligations by the contractor. Control and approval reside on the third layer from the centre. The outer most layer is for the remedies available to the contracting parties for default of performance. Thus circumstances on which the parties can determine the contract are typically listed together with the respective rights and obligations. Moreover, determination by either party is seldom unchallenged. One common contention in such disagreement is the interpretation of the stipulated performance requirements. The dispute resolution provision is in place for such a gap-filling function (Macneil 1975). Although dispute resolution is often regarded as a stand-alone provision, its use is in fact intrinsically related to the operations of the provisions in the preceding layers.
The statutory definition of the law of contract has been considered extremely wide as this may include any agreement in writing or evidence in writing under which a party does any of the works such as carrying out construction operations, arranging for others to carry out construction operations and providing labour to deliver the construction. Construction contracts are governed by the general law of contract. In construction contracts, there are typically certain additional clauses on payment and settlement of disputes which are unique to construction contracts. Until recently, the law did not treat construction contracts as a special class, but merely as part of a larger category known as contracts for work and materials (Murdoch and Hughes, 2008).

It is a common practice in the construction industry for parties who involve in a construction project to enter into a legal and binding agreement called a contract. Contractual obligation by any party in any contract will be of questionable state if the understanding of the terms and interpretation of the contents of the contract documents are not fully appreciated. Therefore it is necessary to have a proper understanding of the contents of the contract documents which leads to the enhancement of the contractual relation and assurance of the intended deliverance of the product (Mohamad & Madon, 2006). The main purpose of engaging into a contract is to allow the involved parties in the project to have recourse to the law in the event that either of them fails to meet the purpose or main goal of a project.

Moreover, a contract as a legally binding document can be perceived as the ‘glue’ that binds
parties from different background into the process of construction project. The terms, which are agreed by parties who are making the contract, express the intentions of both parties whilst privity of contract restricts the scope of the clauses provided in the contract that is only applicable to the parties who signed and had agreed with the contract (Murdoch & Hughes, 2008). Additionally, Whitfield (1994) believed that besides the main parties who are involved in construction contract, there are other parties who have interest towards the end product of the project such as the funder, the developer, the planning authority and not to mention the public at large as the end user. All of this variety of interest and the complexity of the projects appear to be the contributing factors to conflict and disputes in the industry.

The construction industry has gained a reputation for being contentious and litigious in a manner that may have also damaged the reputation of its stakeholders in disputes. These disputes may affect work quality and delay the progress of the construction process (Sutrisna 2004). This is despite the fact that construction industries are striving to identify ways to resolve disputes equitably and economically (Cheng et al. 2009). Mitropoulos and Howell (2001) identified that most of the research on construction disputes had been focusing on specific factors, such as contractual language and its judicial interpretation, the technical causes of claims, contractual equity or parties’ relationship. There is a rather strong body of knowledge in dispute resolution (Gunawansa 2008; Jannadia et al., 2000) which mainly concern situations after the disputes occurred.

According to Carnell (2000), disputes should not be demonized, as resolution mechanisms have their place in the construction process. This is especially the case with onerous and one-sided amendments to standard forms, often drafted by lawyers with the objective of improving their clients’ position at the exception of fairness; or when the only way in which a party can actually protect their position because the contract conditions promote conflict (Clegg, 1992). Inappropriate risk allocation through disclaimer clauses in contracts is a significant reason for increasing total construction costs (Hartman, 1998). According to (Zaghoul and Hartman, 2003), the most common exculpatory clauses used in construction are:

- uncertainty of work conditions;
- delaying events;
• indemnification;
• liquidated damages; and
• Insufficiency in contract documents.

The use of disclaimer clauses to shift project risks to other contracting parties is still a general practice in the construction industry (Cole, 2002). To reach an improved understanding of the risk allocation process, a trust relationship between contracting parties needs to be established (Zaghoul & Hartman, 2003). This process should happen at the onset of the project so that risks can be managed or mitigated through a process of negotiation (Kozek & Hebbard, 1998). In particular, there is a need for a greater understanding of risk allocation between contracted parties so as to determine who owns or can manage the risk (Cole, 2002).

2.10 LESSON LEARNT
It is important to note that almost all the clients, consultants and contractors related factors listed previously 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. Moreover, three types of disputes were elaborated, namely organisational, contractual and technical. In the study of Fenn the myriad of techniques used to resolve disputes was mentioned. Lastly, the stages of dispute resolutions were discussed in the literature review.

2.11 CONCLUSION
The main causes of disputes in the construction industry were analysed. First of all, the main causes of construction disputes were determined with a comprehensive literature review. Then, the disputes derived from the literature were classified into main categories. According to the classification, the main disputes categories were found to be; owner - related disputes, contractor - related disputes, design - related disputes, contract - related disputes, human behaviour - related disputes, project - related disputes and external factors. All these disputes categories have their own sub-dispute causes. After determining the dispute causes, the effects of disputes were established. The model considers the relevant dispute causes which
occur in construction projects. Finally, an analysis was carried out to identify the relative importance of the different dispute causes and a functional analysis of construction contracts was conducted. The analysis reveals that the contractor related disputes and their sub-dispute categories are the most common ones in the construction industry.
CHAPTER 3

CONSTRUCTION DISPUTE RESOLUTION – INTERNATIONAL LITERATURE

3.0 INTRODUCTION

This chapter focuses on construction disputes in the construction industry of Malaysia and Australia. The background of the countries and the construction industry are presented. In addition, detailed literature is reviewed on the phenomenon of construction dispute causation in construction projects in Malaysia and Australia. Also, this chapter analyses how disputes in Malaysia and Australia are resolved and managed. This chapter further reviews sources of disputes in the construction projects.

3.1.1 BACKGROUND

Malaysia is located in south-east Asia and it occupies a peninsular that extends into the South China Sea and borders Thailand in the north (See Figure 3.1). It also occupies the northern tip of the Indonesian island of Borneo where it shares a border with Indonesia and Brunei (Lockwood, 2003; Library of Congress, 2006). Malaysia was granted complete independence from British colonial rule in 1957. Malaysia was established as a federated constitutional monarchy with the King as the ceremonial Head of State (Kingsbury, 2001). There are thirteen states and three federal territories. Malaysia has political organizations and systems. It is split between two landmasses. Malays constitute the largest ethnic group at 65 per cent, followed by the Chinese at 26 per cent, Indians at 8 per cent and 10 per cent of other ethnic groups. While Islam remains the dominant religion, Buddhism, Hinduism, Confucianism and Christianity are also widely practised. Malay, Chinese and English are the main languages spoken (Department of Foreign Affairs and Trade, 2005).

Malaysia has emerged in the last few decades as one of a number of rapidly developing modern economies in the Asian region. On the surface Malaysia appears to be a healthy, modern democratic state: however, there are systemic political and human rights issues that stem from problems within the federal and state political and judicial systems (Malaysian Government Ministry of Foreign Affairs, 2000). Malaysia’s economy suffered a serious
downturn following the Asian financial crisis of 1997 and the SARS outbreak in 2002-2003 but is now recovering strongly, once again recording healthy economic growth (Allard, 2005). The contribution of agriculture to the economy has fallen to less than 16.5 per cent of the GDP. Nevertheless, Malaysia has a highly successful economy and levels of education, health and living standards have undergone dramatic improvements since independence (Lockwood, 2003). With an ethnically diverse population estimated at 23.5 million in 2004, managing the ethnic and religious mix remains the single most important political issue for Malaysia. The Malays control government and agriculture, while the Chinese dominate commerce and industry (Lockwood, 2003).

Freedom of expression is fragile in Malaysia. Freedom of speech is guaranteed in the Constitution but the government has imposed a complex web of laws and regulations to monitor and control information. Publications and media outlets must re-apply for a new license every year, providing a subtle method of suppression. The government justifies restrictions on the grounds that they are protecting national security and public order (Sundaram, 2001).

Figure 3.1: Map of Malaysia
3.1.2 MALAYSIAN CONSTRUCTION INDUSTRY

The construction industry is one of the main contributors towards the development of nations, providing the necessary infrastructure and physical structures for activities such as commerce, services and utilities (Papargyropoulou, Preece, Padfield & Abdullah, 2011: 2).

The overview of the Malaysian construction sector report (2012: 8) states that the Malaysian construction sector is divided into four subsectors: residential, non-residential, civil engineering and special trade works. Special trade works refer to mainly maintenance activities such as electrical, tiling, plumbing, painting and carpentry. The report further revealed that since the 1990s, the construction sector in Malaysia has undergone a series of ups and downs. In the period of 1989 to 1997, the construction sector registered a commendable growth of 14.3 per cent vis-à-vis economic growth of 9.2 per cent. The boom was caused by the implementation of several large-scale projects such as the Kuala Lumpur International Airport, Petronas Twin Towers, Sepang International Circuit and the development of Putrajaya and Cyberjaya which today stand as the country’s famous iconic buildings. Furthermore, after this boom period, from 2000 to 2006, the number of construction projects escalated down tremendously as most of the large-scale projects had been completed and contractors were going through a difficult time, particularly after the Asian financial crisis. During this time, the construction sector grew marginally by 0.7 per cent. However, construction of new infrastructure projects between the years 2007 to 2011 resulted in an average growth rate of 5.9%. During this period, the country saw many developments in the rail, road and housing sectors. The government’s stimulus package implemented during 2008/2009 also played an important role in reviving the construction industry and subsequently the economy as a whole.

The overview of the Malaysian construction sector report (2012: 8) further revealed that the year 2011 also saw recovery in the residential and non-residential sectors. The public civil engineering projects moderated as compared to the private projects. The private sector construction activities have increased especially in the area of LNG re-gasification (oil and gas) and the development of an oil terminal. Other activities that supported the growth of the construction sector included upgrading, repair and maintenance works of public buildings, construction of rural roads and works on improving the rural basic infrastructure. Due to favourable business activities and increased consumer spending, there was also demand for
retail spaces, thus the number of shopping complexes and hotels also increased during this period. The Malaysian construction industry further expanded strongly in 2012 by 18.9 per cent in the first half of the year supported by strong activities in the residential and civil engineering subsectors. The future of the sector is foreseen to be robust given many construction projects in the pipeline (The overview on Malaysian construction sector report, 2012: 8).

However, it is also true to say that the construction industry is a fertile source of disputes. There have been no statistics as far as is known regarding the extent and the prevalence of these disputes in the Malaysian construction industry but anecdotal evidence and ‘grapevine gossips’ among legal practitioners and those professionals within the arbitral community are such that a substantial proportion of the disputes that were referred to arbitration involve players from the construction industry. This may also explain the rise of other ‘sub-industries’ such as the ‘claims industry’ and what may be called the ‘arbitration industry’. The reasons for such prevalent occurrence of disputes in the construction industry include, for example, the low standard of contracts administration and contract documentation, personality clashes, less than satisfactory understanding of the contract provisions on the part of the contractors and employers (and their consultants), and too optimistic pricing on the part of the contractors who harbour hope of “recouping” their losses through claims which are denied. Other reasons may also be the nature of the construction law itself and also the construction process itself which is complex and is unlike simple off-the-shelf product procurement (Kheng, 2003).

Poh (2005) reported that disputes in the construction industry in Malaysia are attributable to actions or inactions by all parties. Some of these causes include incompleteness of drawings and specifications, design and specification oversights, poor management and supervision of projects, failure to provide design information in a timely manner and underestimation of the cost of the works.

The construction industry is an important part of the Malaysian economy. According to Construction Industry Development Board (CIDB), this industry achieved RM110 billion worth of projects in 2013. The projects include those in the infrastructure, transportation and oil and gas sectors. Completing a project on schedule is a difficult task to achieve in the
uncertain, complex, multiparty, and dynamic environment of construction projects (Kartam, 1999). Because of this, the industry is always open to disputes.

3.1.3 CAUSES OF CONSTRUCTION DISPUTES IN THE MALAYSIAN INDUSTRY

Today, carelessness and negligence in the construction industry have risen to greater prominence. Political and economic trends are increasing the economic pressure on the construction industry, resulting in disputes from careless design and inadequate construction practices. Besides, complex construction can likewise result in complex disputes (Poh, 2005).

Great concern has been expressed in recent years regarding the dramatic in conflict and disputes in the construction industries of many countries and the attendant high cost, both in terms of direct cost (lawyers, claims consultants, management time, delays to project completions) and indirect/ - consequential costs (degeneration of working relationships, mistrust between participants, lack of teamwork and resultant poor standard of workmanship) (Poh, 2005).

In construction practice, there are numerous of construction disputes that occur between the various parties in a design / construction effort largely for many reasons. The construction disputes may occur from the initial stage until the closeout stage of the project. The occurrences of construction disputes can lead negative impact towards client organization. The construction work progress will be slow owing to the conflict and disputes between the contractor and client. Subsequently, the cash flow of the client will slow down. The client organization may suffer losses of time, cost and quality which consequently affected the image and background of the company. Dissatisfied end - users may create trouble such as making reports on building quality and irresponsible developers on delivery of the product. The disputes will be endless and only the developer will suffer losses and even the reputation of the company. According to Poh (2005), the following are the causes of disputes in the Malaysian construction industry:

- Design phase

Design and specification oversight, errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs can result in unexpected change orders, wholesale scope changes, and project delays. The design professional’s failure to
remain within an owner’s project budget and design objectives, while not as frequent an occurrence as ill-coordinated documents, nonetheless can result in the project “growing its own legs” when the designer follows his own vision of what he perceived the owner. The liabilities of the architect will be questioned and the client may engage a third party to be involved in this project.

A similar dispute may occur when an owner’s design vision of a project is not communicated effectively to the design team. Perhaps due to an owner’s inexperience, this breakdown may result in an unrealistic project square footage, unnecessary architectural features, and/ or finishes that cannot be achieved within budget. Over - design is a predictable cause of disputes, particularly when an owner turns to third party consultants for input that is not coordinated effectively with the design team while the overall design is evolving and maturing. Moreover, the design team’s failure to understand its responsibilities under the design team contract will lead to problems. For example, serious implications arise when the designer handles contractor time extension requests and delay claims without having performed either its own CPM-based schedule analysis, or required the contractor to produce its source CPM schedule with supporting documentation evidencing the legitimacy of delay claims. Besides, the owner’s failure to contract with the architect for construction administration/construction observation services can lead to poor coordination of the project, especially in cases involving absentee or inexperienced owners.

- **Contract phase**

Project problems will undoubtedly arise if there is any lack of understanding and agreement between the owner and contractor as to whether the contract is lump sum, cost-reimbursable (time and materials), cost plus fixed fee, or guaranteed maximum price contract arrangement. Other issues that arise during contract formation include the following:

- The basis for the contractor’s fee;
- Defining what is included in a budget breakdown, particularly when predictable items based upon the design intent remain ‘un-scoped’ and result in a contractor providing the owner an “allowance”;
- Defining what costs are allowable and reimbursable;
- The budget breakdown and schedule of values for pay items that are essential in controlling billed costs, progress and earned revenue; and
- The allocation of change orders to budget or pay items relative to billing practices and progress measurement.

- **Changed conditions**

  Conditions are different from those represented in the contract documents, or known at the time of the bidding on the work, such as different soil conditions, unknown obstruction.

**Additional corks**

Disputes occur over the pricing and timing of additional work required, or even whether a piece of identified work is in the contract or not. Beware particularly of omissions in the design documents, requiring changes to make a system work, especially if they appear in a subtle way through the shop-drawing review and approval process. This is always very embarrassing for the designers, who like to see them incorporated for free. Beware also of changes requested by the users (as distinct from the owners) of the project. For example, while the owner may have specified a car, the users are invariably looking for a Ferrari.

- **Delays**

  These refer to delays strictly beyond the contractor’s control. They may be caused by the owner directly, or by his representative. A prime example is failure to give access to the site of the work in a timely way or failure to give possession of the whole site on the date for possession as indicated in the contract form, or failure by employer to deliver equipment’s or materials which are to be supplied by the employer as stipulated in the contract or as agreed or promised. More frequently, construction drawings are not provided in the time to enable the contractor to plan and execute their work, shop drawings are not reviewed and approved in a timely manner.

- **Contract time**

  Disputes occur over a contractor’s request for extension on account of changed conditions, required changes to the contract, or owner caused delays. Disputes may also arise over instructions to accelerate the work on the presumption that the instructions to incorporate additional work without a corresponding time extension, especially if the instructed
additional work is linked on the critical path, is tantamount to an instruction to accelerate in order to meet the contract completion date which. This will cause the contractor to suffer loss or expenses (time and cost aspects) for which he will not be reimbursed by any of the items in the contract bill.

- Construction phase

Construction project are complex because of the division of tasks and responsibilities among architects, engineers, and contractor. Building projects requiring the presence of more than forty different specialists at the construction site are not usual. The various languages that are spoken in Malaysia construction sites, for example, further complicate the matter. For example, the foreign workers from Vietnam, Thailand, India as well as Sri Lanka will communicate ineffectively which affects the work productivity and quality. Construction disputes due to lack of access to utilities, unanticipated site conditions and/or inclement weather impacts on working conditions can result in claims for inefficiency and delay-related costs. The contractor’s failure to coordinate its subcontractors’ work through effective and timely exchange of shop drawings, failure to provide timely responses to revised drawing and architect’s site instruction, and purchasing and schedule mismanagement that may impact the work of others, are all factors that also result in delays, inefficiency, rework, defects and cost overruns that lead to claims and disputes. Contractor over-billings often are the result of a fundamental misunderstanding of what is allowable under the terms of the contract. This includes unsupported costs, disallowed costs under the construction contract, or costs for no compensable delays, inefficiency, rework and mismanagement. Disputes can arise from the architect’s failure in its contractual administrative duties for such aspects as field observations and reporting with regard to construction defects, quality, progress, and conformance of the work with the contract documents; and the evaluation of contractor change orders and pay applications.

Cost overruns often lead to disputes because of an owner’s unwillingness or inability to pay, even when they are the result of legitimate scope changes and/project upgrades. The owner’s contribution to these cost overruns also typically causes contractor delays, acceleration and inefficiency. Moreover, construction projects are interdisciplinary by nature, and the lack of communication between specialists may lead to failures. Construction failure may create
dispute among the participants on construction sites. According to Feld & Carper 1997; Kaminetzky (1991), errors during the construction phase may include the following:

- Overloading;
- Improper temporary supports;
- Inadequate planning and execution of construction process;
- Lack of inspection;
- Insufficient safety factors; and
- Inadequate training of construction workers.

Failures also have many other causes such as material defects, poor workmanship, lack of maintenance and so forth. Construction failures often occur because of a lack of attention to the construction phase. Failures during the construction phase may lead to construction disputes regarding the time, cost and quality factors.

The Centre for Public Resources Inc. (1991) in its publication *Preventing and Resolving Construction Disputes* suggests that the ten most common specific causes of construction disputes are the following:

- Contract provisions, which unrealistically shift project risks to parties who are unprepared to cover those risks;
- Unrealistic expectations of the parties, particularly employers who have insufficient financing to accomplish their objectives;
- Ambiguous contract documents;
- Contractors who bid too low;
- Poor communications between project participants;
- Inadequate contractor management, supervision and coordination;
- Failure of participants to deal promptly with changes and unexpected conditions;
- A lack of team spirit or collegiality among participants;
- A “macho” or litigious mind-set on the part of some or all project participants; and
- Contract administrators who prefer to buck a dispute to a higher level or to lawyers rather than take responsibility for resolving the problem at the source.
In this study, the researcher has decided to classify the event of construction disputes into three categories which are clients, designers and contractors. The causes of construction disputes listed below have been identified by a range of party representatives and professionals working in the construction industry. The authors have identified the causes of construction disputes that caused by the client, designer and contractor as per follows:

**CAUSES OF DISPUTES BY CLIENT**

- Failure to respond in a timely manner;
- Inadequate tracing mechanisms for RFI (request for information);
- Reluctant to check for constructability, clarity and completeness;
- Discrepancies / ambiguities in contract documents;
- Poor communications between and among the parties involved in the project;
- Failure to appoint an overall project manager;
- Lowest price mentality in engagement of contractors and designers;
- The absence of “team spirit” among the participants; and
- Deficient management, supervision and coordination efforts on the part of the project.

**CAUSES OF DISPUTES BY DESIGNER**

- Failure to understand its responsibilities under design team contract;
- Over-design and underestimate the costs involve;
- Inadequate in open and factual communication;
- Late information issued and cumbersome approaches to RFIs;
- Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs; and
- Incompleteness of drawing and specifications.

**CAUSES OF DISPUTES BY CONTRACTORS**

- Inadequate contractor management, supervision and coordination;
- Lack of understanding and agreement in contract procurement;
- Failure to understand and correctly bid or price the works;
- Reluctance to seek clarification;
- Failure to plan and execute the changes of works;
- Inadequate CPM scheduling and update requirements; and
• Delay/ suspension of works.

3.1.4 EFFECTS OF CONSTRUCTION DISPUTES IN MALAYSIA
The problems of construction disputes impacts on all stakeholders which may leads to an inequitable mode of project delivery such as reduced margins, increased costs and even reduced quality and/or level of service. However, most disputes are of a minor nature and are settled quickly, fairly and amicably by the building team. From time to time, however, more serious issues come into dispute. When this happens, the building team should make every effort to reach a fair settlement by negotiation. If this fails, it becomes necessary to use one or more of the disputes resolution mechanisms available- mediation, adjudication, arbitration and litigation. When the above methods of dispute recovery fails, the outcome of the result will be only winning or losing for one party (Poh, 2005).

Poh (2005) further states that, the consequences of the construction disputes will not benefit the stakeholders in the construction project. The impact/effects of construction disputes on client organizations can be summarized by the following:

• Additional expense in managerial and administration;
• Possibility of litigation cases;
• Loss of company reputation;
• Loss of profitability and perhaps business viability;
• Time delays and cost overruns;
• Diminution of respect between parties-deterioration of relationship and breakdown in cooperation;
• Higher tender prices;
• Extended and/or more complex award process;
• Rework and relocation costs for men, equipment and materials; and
• Loss of professional reputation.

3.1.5 DISPUTE RESOLUTION IN THE MALAYSIAN CONSTRUCTION INDUSTRY
Conflict and dispute are inter-related. However, they involve two different concepts, which are that conflict is simply about an incompatibly of interests, while dispute is a subsequent stage that involves the resolution of legitimate issues (Fenn et al., 1997). Simply, a conflict
becomes an unresolved circumstance when the contracting parties fail to manage the conflict, and then it becomes a dispute. In reality, both conflict and dispute are inevitable events can happen in all facets of construction projects. In a project management context, conflict requires the selection of a conflict resolution mode such as confronting, compromising, smoothing, forcing, or avoiding (Kerzner, 2006), while dispute resolution involves the next step, that of resolving the unsettled conflict through binding arbitration or litigation, or through nonbinding approaches such as negotiation, and mediation (Jannadia et al., 2000). However, there are pros and cons to every dispute resolution method. Selection of an appropriate dispute resolution method is vital as every project is likely to have disagreements. Moreover, the low frequency of practicing alternative dispute resolution (ADR) in the local construction industry needs to be addressed, because opting for risky traditional dispute resolution methods is very costly and time consuming.

Disputes may be resolved in many ways using various procedures. It is not true to say that all disputes are resolved by court proceedings or in other formal or informal settings involving alternative dispute resolution methods. The following discussion focuses on the common dispute resolution methods that are applied and familiar in the Malaysian construction industry, as the literature review which follows covers. The stages of dispute resolution always begin with a grievance. Badman and Grimmett (1996) highlight that the grievance may be abandoned when it is considered to be too trivial and not worth pursuing, where there is felt be an inability to pursue the matter or where there is a lack of understanding that legal recourse is available to resolve it. This type of grievance is probably the least confrontational and time consuming, as the person concerned would merely give in or surrender, due to his/her limited understanding or resources. In developing countries, the grievance is very obvious and common, even though the person concerned may not realize it.

The next step is negotiation, which is the first and informal method of dispute resolution. At this stage, there is an attempt to communicate the grievance and negotiate for a settlement. This negotiation technique is the preferred choice of the disputants, and most disputes are resolved by this process (Cheung et al., 2000). It is the least expensive method, and is a speedy, voluntary, and unstructured process, which can preserve the working relationship of the parties involved. Furthermore, in negotiation, the parties have absolute freedom with respect to the form, process and type of agreement. The cultural background of the disputants could also lead to different approaches being taken in resolving disputes under negotiation (Tinsley et al., 2011). Yet, to make it successful, the negotiation demands cooperative effort
from the disputants (Cheung, 1999; Edwin & Henry, 2005).

However, negotiation is not always workable in bringing consensus at the end. This is because projects diverge from the anticipated manner and other more formal methods of dispute resolution may be triggered. Mediation or conciliation may need to take place to reach a settlement after the negotiation (Essex, 1996). Ironically, the mediator has no power to impose a solution and his/her function is limited only to helping or guiding the disputants to focus on their actual objectives and resolve their matter consensually (Harmon, 2006).

The role is to narrow the issues and focus on each party’s interest (Treacy, 1995). The parties can simply ignore the solution proposed by the mediator if they are not satisfied with it (Chau, 1992). Therefore, the success of mediation very much relies on its fairness and the bargaining power and position during the proceedings (Bellucci et al., 2010; Bollen et al., 2010; Charkoudian & Wayne, 2010). Where the disputants have equal opportunities and rights in the disputed matter, they are most likely to appreciate the settlement proposed by the mediator and the success rate of mediation could be increased. The next stage involves methods that could render a legally binding decision, such as adjudication, arbitration and litigation.

The alternative to arbitration is the use of adjudication, which may be considered certain features and benefits that is decision can be “temporary binding” and it allows for quick determination (Dancaster, 2008; Owens, 2008). Usually, adjudication deals with the payment problem between the contracting parties (Uher & Brand, 2005; Teo, 2008; Noushad Ali & Lim, 2008). It can assist in expediting payment and improving cash flow within the construction industry, especially from the contractor’s perspective (Evelyn Teo & Aibinu, 2007; Uher and Brand, 2008). The contract details can also affect the type and process of dispute resolution which is adopted (Lumineau and Malhotra, 2011). Usually, these legally binding decision methods will be stated under a contractual provision and are also enforceable by law. However, the “‘bindingness’” of an adjudication decision may not be final as it can be subject to a review or appeal to arbitration or litigation.

Therefore, the next stage is the use of arbitration. Clearly, the disputants need an arbitrator, an independent expert to act as the decision maker, while the disputants also need to agree to be bound by the decision made by arbitrator which is final and enforced by law. Moreover, in
certain circumstances in the current development of arbitration, the arbitrator could make interim awards or injunctions; and court interventions are limited to certain areas within the spirit of the UNCITRAL Model Law, 2010.

The arbitration clauses are included in most of the standard forms of contract (Harmon, 2003). However, the proceedings are conducted in private and confidentially (Teo & Aibinu, 2007). Yet, over the years, with the increase in procedural complexity, arbitration is regarded as a replicating litigation, and the original designed positive effects are lacking (Cheung et al., 2000, 2002). Therefore, arbitration is categorized as the traditional dispute resolution method, instead of ADR. Last, but not least, litigation is the final stage of dispute resolution. It is a traditional dispute resolution method and provides an involuntary and binding solution. Usually, the litigation proceedings are brought by clients and main contractors (Love et al., 2010). It is costly, time consuming and risky (Gebken & Gibson, 2006). It also involves a number of variables and is unlikely to satisfy the litigants (Harmon, 2004). Nevertheless, litigation could be the preferred dispute resolution method if the dispute involves legal issues or points of law that are best determined by a judge (Harmon, 2003).

The court proceedings consist of several levels too, within the hierarchy of the courts. This is important and offers the advantage of the provision of an appeals structure (Badman & Grimmett, 1996).

According to Mohd Suhaimi et al., (2012), the current dispute resolution procedures available in the Malaysian construction industry are mainly litigation and arbitration. In addition, the alternative dispute resolutions (ADRs), namely mediation and adjudication, have also been introduced as the other methods for resolving disputes. Furthermore, Kheng (2003) argues that the following are the means used in the Malaysian construction industry:

- Negotiation;
- Litigation;
- Arbitration;
- Mediation;
- Adjudication;
- Expert determination;
- Mini-trial;
- Hybrid ADR;
Dispute review board; and
Dispute resolution advisor.

Negotiation

It would not be wrong to state that most of the construction industry disputes do not go beyond the stage where legal advice is sought, and many disputes are resolved by the parties before one of the parties to the contract evokes the dispute resolution clause in the construction contract and starts the contractual process of resolving the disputes on going. However, many may not be aware of this, but businessmen, being practical people, have many disputes resolved by negotiation, as a means of resolving disputes is thus a first step towards many a construction industry dispute and it does not need the evoking of a contractual provision to set it into motion. It is a consensual process and, like all consensual Processes, it only works well when both parties are genuine and sincere about of achieving a resolution of the dispute. The absence of this very ingredient may well spell the doom of negotiation as a means of achieving success in resolving the dispute between the two parties. Very often, a give and take attitude is called for and the result is often a compromised solution not too unacceptable and not too undesirable, to the two parties. A settlement agreement may be the end product of this which should reflect the essence and agreements of the negotiation.

Litigation

Kheng (2003) states that many people are attracted by dramatized courtroom dramas but litigation is said to be feared by most lay people. If businessmen can avoid legal suits, most practical-minded businessmen would gladly avoid them. However, it must be stressed that any contract provision which ousts absolutely the right of any party from enforcing his legal rights is void to that extent.

Litigation as a means of resolving disputes focuses on the (legal) rights of the parties and tends to be very confrontational and, as some may say, akin to washing dirty linens in public. This is to a large degree unavoidable if one resorts to litigation given the adversarial nature of the (common law) litigation process. However, much as the very point that litigation is the very ultimate and final means of resolving disputes (other than the appellate system within the litigation process itself), the use of litigation as a means of dispute resolution mechanism has in recent years been eroded. It may not be wrong to say that the trend is towards the use
of litigation as a means to supervise, or support, other dispute resolution mechanisms and/or as a means of enforcing, or to a lesser degree avoiding, the end result of other dispute resolution mechanisms: it provides a supporting role for the efficient implementation of other methods of resolving disputes.

The disadvantages of litigation are rather well known. A backlog of cases and the consequent delay in the parties’ own cases are often being heard: the usual adage “‘justice delayed is justice denied’” has very often been invoked. Technical points of law not having direct relevance to the issues in disputes may be raised; technical and complex and some may say inflexible rules of evidence will need to be adhered to; the frequent postponements of cases already fixed for hearing mean further delay; judges are not quite appreciative of the facts due to the highly technical nature of the disputes and the issues involved; and many others tend to point to the erosion of litigation as a means of resolving disputes. Having said so, it may be pertinent to ask if, for example, the drawbacks of litigation such as delay (due to backlog of cases and inherent procedural mechanisms) and high cost can be eliminated, specialist construction judges are to be introduced coupled with a more flexible use of procedure, will the erosion of litigation as a means of resolving disputes be arrested? There are indications in other countries that this may be so and a big ‘casualty’ of this seems to be the use of arbitration as a means of resolving construction disputes, a brief overview of which now follows (Kheng, 2003).

**Arbitration**

It may be important, however, to observe that arbitration, like litigation, focuses on the parties’ legal rights and an arbitral proceeding is sometime not much different from a court proceeding, except that in the case of arbitration, the principle of privacy is upheld and outsiders are not allowed, unless with the tacit approval of the parties and the arbitrator, to be present during the hearing. It is due to this that arbitration is sometime referred to, not with commendation, it may be said, as “‘privatized litigation’”. The advantages attributed to arbitration, often stated as a comparison vis-à-vis litigation, will often include privacy, confidentiality, cost effectiveness, speedy resolution, flexibility, finality and, with special reference to construction contracts, the power of the arbitrator to “open up, review and revise” the (architect’s, engineer’s or S.O.’s) certificates and the decisions of the architect, engineer or S.O. The main drawbacks of arbitrations are often stated to be those associated with the question of an arbitrator’s jurisdiction and his degree of competence (Kheng, 2003).
Mediation

“Mediation is a facilitative process in which the disputing parties engage the assistance of an impartial third party, the mediator, who helps them to try to arrive at an agreed resolution of their dispute.” Mediation as a means of dispute resolution mechanism is thus a consensual process; it is in a sense a “brokered negotiation” or facilitated negotiation between the two parties to the dispute with the mediator being the facilitator. However, unlike in arbitration or litigation where the arbitrator or the judge will pronounce the legal rights of the parties in the form of an award or a judgment, a mediator does not make decisions for the parties. A mediator thus has no authority to adjudicate or determine the rights or wrongs of the parties and their disputes; the parties themselves have to come to a settlement acceptable to them, or not too unacceptable to them. In this aspect lies the fundamental difference between mediation and arbitration as a means of dispute resolution mechanism. Another notable difference between mediation and arbitration is that whereas arbitration (and also litigation) focuses solely on the legal rights or the parties, mediation takes a different approach in focusing on the interests of the parties devoid of any of their emotional positions. A mediator will attempt to arrive at a “win-win” situation for the two parties to the dispute. Moreover, mediation process can be broadly described as follows. The appointed mediator will first get the two parties to the dispute together and to first build up an atmosphere conducive for negotiation. He/she will then explain his role in the mediation process and will also lay down the ground rules for its proper conduct. The requirement of maintaining confidentiality will also be highlighted. Each of the parties will then be invited to present his side of the case uninterrupted by the other party and the mediator will try to distil from the presentations what the main interests, pertinent issues and goals of the parties are (Kheng, 2003).

Very often the mediator will conduct a separate meeting thereafter with one party in the absence of the other so as to have a deeper discussion with the party (maintaining of confidentiality must always be upheld) and this process will be repeated with the other party. The two parties will then be brought together for further negotiations and discussions. A brainstorming session with the parties to generate options for the resolution of the dispute will then be held. If any of the options generated is acceptable to the two parties, this will then be formalized in a settlement agreement. If this settlement agreement is concluded and executed, the mediation process can then be pronounced a success. It has to be appreciated that the mediator does not make any decision nor will he adjudicate on the rights or wrongs of the parties.
The parties are at liberty to decide whether any solution is acceptable to them. Any party can also walk out of a mediation venue if he thinks that the mediation is not going to work and a resolution of the dispute is unlikely or impossible. Like all consensual processes, the ingredient of success for mediation will include a large dose of goodwill and sincerity from all the parties to the dispute. Another necessary ingredient for the successful use of mediation is the skill of the mediators themselves. One feature of mediation is that not all disputes that are referred to mediation can be a success, i.e. as measured by whether the disputes can be satisfactorily resolved with the conclusion and execution of a settlement agreement; that is the reason why it is still common to talk about the success rate of mediation. The Malaysian construction industry has in recent years introduced provisions for the use of mediation as a means of dispute resolution into the standard forms of contracts. A teething problem with the use of mediation as a means of resolving construction industry disputes is that currently there may be a shortage of experienced mediators (Kheng, 2003).

It may be correct to say that the continuing international trend is towards the use of mediation to resolve construction (and other commercial) disputes. At least in Malaysia, it may be premature at this stage to agree with the following statement of George H Golvan QC but given time and with the increasing popularity of mediation as a means of disputes resolution, reservations among legal practitioners against mediation discharged and their attitudes changed, and with all the infrastructures for the use of mediation properly in place, a concurring note may be unreservedly given. The statement is this: “Mediation is such a suitable process for resolving commercial disputes that it may well be arguable in the future that a lawyer who fails to take advantage of an available mediation procedure, and has instead committed his or her client to protracted and expensive commercial litigation, could well be guilty of a breach of professional duty.”

**Adjudication**

Very often, arbitration clauses in construction contracts are drafted in such a way that referral to arbitration can only be commenced upon the completion or alleged completion of the works. The reason for this is that due to the adversarial nature of the arbitral process, the conduct of the arbitration may be too disruptive to the continued execution of the works. This reason is not without justification. However, the fact that some disputes have to wait until the
Completion of the works for their attempt at resolution cannot be said to have justification. These disputes include, for example, the withholding of certificates, deposit of retention monies in a separate bank account and others. Besides, and from the contractors’ perspective, their cash flow can be severely and adversely affected. It is in this situation that adjudication can find a useful place as a means of resolving construction disputes. Broadly, adjudication can be of two types: statutory adjudication and contractual adjudication. In England, the use of adjudication is statutorily provided for and before a party resorts to arbitration, adjudication must first take place and the decision of the adjudicator on the dispute is binding on the two parties to the dispute, until and unless it is challenged and set aside by an arbitral tribunal. Contractual adjudication operates in similar manner except that in contractual adjudications, the adjudicator derives his power and authority from the agreement between the two parties.

**Expert determination**

For this form of dispute resolution, the parties agree to refer the dispute to a mutually agreed independent expert for his determination. The parties can further agree under what circumstances (if any) that they will treat the determination of the expert to be final and binding on the parties. However, it is sometime quite common for an agreement to contain a provision that certain dispute or disagreement can be determined by an engineer, accountant or the like. “…acting as an expert and not as an arbitrator”. The expert will usually examine the written submission from both parties to the dispute and provide them with his determination or appraisal. Despite the process which can and often expressed to be final and binding, it must be distinguished from that of arbitration as in the latter case, the principle of natural justice must always be upheld. The distinction is important for if the process, by whatever name so called, is held to be an arbitration and not expert determination, then the common law rules and the provisions of Arbitration Act 1952 will apply with consequences which may be unintended by the parties.

It has to be appreciated that it is the method and process by which the expert comes to a determination of the disputes and not by whatever name he is called that will make him either an expert or an arbitrator. In the Canadian Supreme Court’s decision of Sports Maska Inc v. Zitrer, the Canadian Supreme Court after an extensive review of authorities from various jurisdictions, observed that the court will not be bound by the name given to the person who has been asked to be the adjudicator of dispute and what is being labelled as an expert.
determination may in fact be arbitration. For example, if the person appointed makes a
determination from his own personal knowledge, the process is likely to be an expert
determination. However, if the appointed person has to listen to opposing arguments, the
process is more likely to be arbitration. The greater the similarity to the judicial process, the
more likely it is that the process is arbitration and not expert determination (Kheng, 2003).

Mini trial
According to Kheng (2003), though named as a trial, it is strictly incorrect and this is
sometime referred to as a “conference”. It is really a tribunal formed by senior executives
from both parties. However, each party presents the issues, usually for the first time, to the
senior executives from both parties who are usually assisted by a neutral chairman. The
chairman is usually a respected expert and he may give advice on the likely outcome if the
dispute is brought in front of an arbitral tribunal or to court. The time frame allocated to each
party’s presentations of the issues is usually limited and thus avoids lengthy submissions. The
method relies upon a neutral party (the chairman) to facilitate and moderate the “trial” and
he usually also assesses the strength and weakness of each party’s position. The parties can
attempt negotiation for a settlement thereafter.

Hybrid ADR
It is possible that the parties to the dispute can structure a process to resolve their dispute
which involves a combination of the ADR processes named above. For example, arbitration
can be resorted jointly or consecutively with mediation to serve the parties’ common end, i.e.
to have their disputes satisfactorily, economically, fairly and speedily resolved: this is
sometime given the name of Arb-Med or Med-Arb depending on which process comes in
first. Other combinations are of course possible. An example of Arb-Med would be to resort
to arbitration to settle the issue of liability and to thereafter resort to mediation to mediate on
the issue of the quantum of that liability however, Counsels and arbitrators would readily
agree that the abduction of evidence to prove quantum is one which is laborious and lengthy
and the normal judicial or arbitral process which involves examination-in-chief, cross-
examination and re-examination followed by oral or written submissions and final decision in
the form of a judgment or award is not the most satisfactory, economical, fair or speedy way
of dealing with and deciding the issue of quantum of damages after the issue of liability is
established. Therefore the strength of one method is used to complement the weakness of the
other. An example of Med-Arb would be a situation when the mediator could assume the role
as an arbitrator and continue to adjudicate on the dispute as an arbitrator if the earlier held mediation does not result in the execution of a settlement agreement. Therefore, it is to be noted that there are some reservations, not without justifications, on the continued performance by the mediator of the role of an arbitrator who goes on to publish an award determining the legal rights of one party vis-à-vis the other.

**Dispute Review Board**

In this method of dispute resolution, the dispute review board (hereinafter referred to as DRB) which is constituted by a senior executive each from the Employer and the contractor of the project together with a third party. The DRB is established and maintained throughout the duration of the project therefore, the members of the DRB meet regularly to keep abreast with the development on site (site visits will also be made) and to discuss and consider any issues which have arisen or which may arise. Any potential misunderstanding of position, ignorance of legal standing or any budding problem is thus prevented from developing into a full-blown dispute. The third party member of DRB is usually someone who is independent, familiar with mediation and arbitration and, of course, with the construction industry. He can, for example, advise the parties if a dispute were to be referred to arbitration, certain decision one way or another may be reached. The DRB system is strictly also another example of a hybrid system and if the parties agree, some interim binding decision can also be made by the third party. In some sense, it is not a pure method of dispute resolution but more a combination of dispute avoidance cum dispute resolution.

One criticism that is frequently levelled against the DRB system is that it may undermine the position of the architect, the engineer or the S.O. who is the certifier and contracts administrator of the project.

**Dispute Resolution Advisor**

Kheng (2003) states that the dispute resolution advisor (hereinafter referred to as DRA) can be considered as a variant of the DRB. The DRA is appointed at the beginning of the project by mutual consent of both the employer and the contractor. The DRA will, like the members that constitute the DRB, make regular site visits and hold discussions with key staff of the project including that of the consultant (i.e. the Architect, the Engineer or the S.O.), and will try to resolve any potential dispute by good faith negotiations however, If these negotiations fail, the DRA will then, mindful of the nature of the dispute, prepare a report which would,
among others, suggest to the parties how best to resolve the dispute additionally. The senior executives then study the report and try to reach a settlement of the dispute if this too fails, the parties will then resort to a short form arbitration to resolve that dispute. As is evident from the brief outline of the DRA system given above, the DRA system is another hybrid system which focuses on both dispute avoidance and dispute resolution incorporating techniques borrowed from different systems described above and also partnering.

Likewise, according to the study by Mohd Danuri. et al. (2012), the current dispute resolution procedures available in the Malaysian construction industry are mainly litigation and arbitration. In addition, the alternative dispute resolutions (ADR), namely mediation and adjudication, have also been introduced as the other methods for resolving disputes. The objective of this study is to examine the current practice of dispute resolution and ADR available in the Malaysian construction industry. The aim of this study is two-fold: to report the current practice of dispute resolution and ADR, and identify the attributes of successful implementation of both mechanisms based on the perceptions of the Malaysian construction industry players. From the jurisprudence point of view, this study looks into the law as it is, in relation to the current practice of dispute resolution and ADR, by showing how those findings can be used to explain why improvement is needed to promote a successful and well received dispute resolution and ADR, and what lessons can be learnt, towards the formulation of a more viable methods for the Malaysian construction industry. Literature review reveals a continuous development of dispute resolution and ADR in the Malaysian construction industry, while, globally the industry has not only embraced ADR but also spearheaded the development of innovative forms of dispute avoidance mechanism.

3.1.6 LESSONS LEARNT

Literature reviewed showed that litigation and arbitration stand above the other dispute resolution mechanisms briefly described above; and the rest of the means of dispute resolution, commonly and collectively described as ADR, play complementary roles in resolving construction industry disputes. Furthermore, some of the ADR method such as mediation can stand on their own and obtain results by having the disputes resolved. Others are used in combination with the others to achieve the desired results.
Contrary to the popular perception, arbitration may not be the best nor the most suitable form of resolving disputes arising from the construction industry, nor the only one available; the parties can choose which method of dispute resolution mechanism best suits them and their purpose. In deciding, even designing, the method of dispute resolution that best suits a particular project or purpose, the drawbacks of that method will need to be borne in mind; often time, money, fairness and finality are the criteria that the parties will have to bear in mind in coming to a decision on one method or the other.

3.1.7 CONCLUSION
This chapter gave a detailed discussion of dispute resolutions in the Malaysian construction industry. Literature showed that disputes resolutions such as negotiation, mediation, adjudication, arbitration, dispute resolution advisor, mini trial, expert determination, hybrid ADR, dispute review board and a dispute resolution advisor are some of the methods used in Malaysia. The next chapter reviews literature related to dispute resolution in the African countries.

3.2 CONSTRUCTION DISPUTES IN AUSTRALIA

3.2.1 BACKGROUND
Australia is a country and continent surrounded by the Indian and Pacific oceans (See Figure 3.2). Its major cities – Sydney, Brisbane, Melbourne, Perth, Adelaide – are coastal. Its capital, Canberra, is inland. The country is known for its Sydney Opera House, the Great Barrier Reef, a vast interior desert wilderness called the Outback, and unique animal species such as kangaroos and duck-billed platypuses. (World Fact Book, CIA, 2015).

The government type of Australia is a federal parliamentary democracy and a commonwealth realm, and the capital city is Canberra. In recent decades, Australia has become an international competitive, advanced market economy due in large part to economic reforms adopted in the 1980s and its location in one of the fastest growing regions of the world economy. Following two decades of continuous growth, low unemployment, contained inflation, very low public debt and a strong and stable financial system, Australia entered 2015 facing a range of growth constraints, principally driven by a sharp fall in the global prices of key export commodities. The services sector is the largest part of the Australian
economy, accounting for about 70 per cent of the GDP and 75 per cent of jobs. Australia was comparatively unaffected by the global financial crisis as the banking system has remained strong and inflation is under control (The World Fact Book, CIA, 2015).

Figure 3.2: Map of Australia

3.2.2 AUSTRALIAN CONSTRUCTION INDUSTRY
During the last two decades the Australian construction industry has been in an intense period of introspection, specifically examining how it can improve its performance and productivity as well as reduce the incidence of disputes (London & McGeorge, 2008). While a number of improvements have been made in areas such as occupational health and safety (Mohamed, 2002), relationship contracting (Hauck et al., 2004; Davis, 2008), and technology adoption (Peansupap & Walker, 2005; 2006), the industry still continues to be plagued by cost and schedule overruns (Love et al., 2005). Blake Waldron and Dawson (2006) found that cost and schedule overruns are the two most significant contributing factors to disputes. The main factors that were identified as contributing to cost and schedule overruns were scope changes, incorrect design and incomplete documentation, and late authority approvals.

There has been considerable research undertaken that has sought to determine the causes of disputes (e.g., Semple et al., 1994; Kumaraswamy, 1997; Yiu and Cheung, 2007) and the most appropriate dispute resolution process (e.g. Steen, 1994; Treacy, 1995; Cheung, 1998;
Research into determining the causes of disputes has reached saturation point; consistently the same causal variables are identified. Because most of the studies undertaken have been based upon questionnaires (e.g., Kurmaraswmy, 1997) or derived from case law (e.g., Watts and Scrivener, 1995), the factors identified lack contextual meaning. For example, poor communication has been identified as a cause of disputes (Kumaraswamy, 1997). Yet problems do not arise because X does not communicate Z to Y, but the way Y interprets Z in light of some prior experience (or lack of), which X does not know about. Thus, X fails to make allowances for Z, and Y does not realise X does this because Y thinks both that their experiences are representative (Busby, 2001). Simply improving communication practices by improving information flow with technology or using Computer-Aided-Design will not reduce per se the incidence of disputes in construction (Love et al., 2008). Fundamentally, work processes, policies, and procedures as well behaviours need to change in tandem if disputes are to be reduced in construction.

It is proffered that to reduce the incidence and consequential impact of disputes, an ameliorated understanding of why and how they arose is needed. Once an understanding is derived then strategies and processes can be put in place to prevent them from arising in the first instance. It is suggested that disputes arise as a result of pathogens within a project system. Such pathogens contribute to unworkable relationships, procedures and design and construction deficiencies (Aigbavboa & Mashwana, 2016).

Pathogens are latent conditions and lie dormant within a system until a dispute comes to light (Busby & Hughes, 2004). Before the dispute becomes apparent, project participants often remain unaware of the impact upon project performance that particular decisions, practices or procedures can have. Pathogens can arise because of strategic decisions taken by top management or key decision-makers. Such decisions may be mistaken but they need not be. Latent conditions can lay dormant within a system for a considerable period of time and thus become an integral part of everyday work practices.

**3.2.3 CAUSES OF CONSTRUCTION IN THE AUSTRALIAN INDUSTRY**

A plethora of definitions as to what constitutes a dispute can be found in the normative literature (Brown & Marriott, 1993). The terms dispute, conflict and claim are often used interchangeably, but their meanings are very different (Al-Tabtabai & Thomas, 2004).
Examples of how each of these terms has been defined include:

- **Dispute** – “any contract question or controversy that must be settled beyond the jobsite management” (Diekmann & Girad, 1995).

- **Conflict** – “serious disagreement and agreement about something important” (Collins, 1995).

Similarly, Leung et al. (2005) define conflict as a “functional or dysfunctional element in the management process”. Willmot and Hocker (1998), on the other hand, provide a detailed definition of conflict as “an expressed struggle between at least two independent parties who perceive incompatible goals, scarce resources, and interference from other achieving those goals”.

- **Claim** – “for the assertion of a right to money, property or remedy” (Powell-Smith & Stephenson, 1993). Likewise, Semple et al. (1994) define a claim as “a request for compensation for damages incurred by any party to a contract.

Reid and Ellis (2007) argue that there is no definitive meaning of a dispute, the existence of which is a subjective issue requiring a common-sense approach that relies on the facts, the law and policy considerations.

The literature is replete with studies that have examined the sources and causes of disputes (e.g., Watts & Scrivner, 1992; Kumaraswamy, 1997; Cheung & Yiu, 2006). Notably, the findings from such studies are similar in nature to those that have attempted to determine the causes of claims (Diekmann and Nelson, 1985; Heath et al., 1994; Vidogah and Ndekugri, 2002), rework (Love and Smith, 2003), delays (Chan & Kumaraswamy, 1995) and cost and schedule overruns (Chan and Kumaraswamy, 1995). For example, Onyango (1993) found that largest contributors to claims were post contract changes by clients, different site conditions, and unfilled duties of the architect/engineers. By the same token, Chan and Kumaraswamy (1997) revealed that the common causes of delay included client-initiated variations, necessary variations to works, unforeseen ground conditions, poor site management and supervision, and low speed in decision making.
There is a considerable degree of ambiguity and inconsistency with respect to the operationalization and meaning of constructs within the literature. For example, Sykes (1996) used the dispute construct of ‘misunderstandings’ and Bristow and Vasilopoulos (1995) ‘unrealistic expectations’: they appear to have the same meanings but lack any form of theoretical underpinning. Many of the causes of disputes that have been identified can be anticipated and are specific to some degree. For example, weather, change of scope, payment, workmanship, and quality, documentation (Blake Waldron & Dawson, 2006). Kumaraswamy (1997) attempted to differentiate causes of claims and disputes into root causes and proximate causes. Kumaraswamy (1997) defined proximate causes as those that were immediately apparent and differentiated these from the underlying root causes. An example of a proximate cause is changes by client, the root cause being a lack of information for the client to make appropriate decisions.

It is suggested that the determination of the underlying latent conditions that is pathogenic, which contribute to disputes is the first step that is required to achieve a degree of process stability in construction. Pathogens have been defined by a number of qualities (Busby & Hughes, 2004: p.428):

- They are a relatively stable phenomena that have been in existence for a substantial time before the error occurs;
- Before the error occurs, they would not have been seen as obvious stages in an identifiable sequence failure; and
- They are strongly connected to the error, and are identifiable as principal causes of the error once it has occurred.

Drawing on the literature that has looked at the causes of errors, pathogens can be categorized as follows (Busby and Hughes, 2004):

- Practice – arising from people’s deliberate practices;
- Task – arising from the nature of the task being performed;
- Circumstance – arising from the situation or environment the project was operating in;
- Organization – arising from organizational structure or operation;
- System – arising from an organizational system;
- Industry – arising from the structural property of the industry; and
- Tool – arising from the technical characteristic of the tool.

The following are the causes of construction disputes in Australian construction projects as per Cheung and Yiu (2006); Love, Davis, Ellis and Cheung (2008) and Gutierrez, Panuwatwanej and Walker (n.d):

- Changed conditions;
- Inadequate design information;
- Ambiguities in contract documents;
- Timing (schedule delays, delayed design information, delayed site possession);
- Unfair risk allocation;
- Unrealistic time/cost/quality targets by the client;
- Adversarial industry culture;
- Inappropriate contract type;
- Defective specifications/unrealistic information expectation;
- Variations (due to site conditions, client change, design errors);
- Delays disruption;
- Inadequate brief;
- Slow client responses;
- Unforeseen ground conditions;
- Damages;
- Professional negligence;
- Behaviour of parties; and
- Weather.

3.2.4 EFFECTS OF DISPUTE IN CONSTRUCTION PROJECTS
Disputes have a greater impact on the number of working days lost in the construction industry as opposed to any other industry. The construction industry of Australia lost nearly one additional day of work, when compared to employees involved in industrial disputes across all industries (Australian Bureau of Statistics, 2010). Therefore, it is in the industry’s interests to be aware of the factors contributing to disputes in order to be able to minimise
any legal expenses resulting from disputes. The following are the effects of construction disputes as per a study conducted by Gutierrez, Panuwatwanicj and Walker (n.d):

- Cost overrun;
- Time overrun; and
- Delays

### 3.2.5 DISPUTE RESOLUTION IN THE AUSTRALIAN INDUSTRY

When disputes occur, they require resolution and therefore are associated with distinct legal remedies (Fenn et al., 1997). There may be instances where differences between parties cannot be resolved without a third party intervention. Therefore, mediation, negotiations, adjudication, arbitration and litigation in their various forms can be used to resolve the dispute at hand (Love, Davis, Ellis & Cheung, 2008). Furthermore, disputes should not be demonised, as resolution mechanisms have their place in the construction process. Uff (2010) notes that in the last decades, there has been significant growth in the variety of dispute resolution avenues open to parties involved in construction disputes. He also contends that effective dispute resolution should strive to be final, albeit subject to some exceptions. Parties must have confidence that the decision made during the course of the resolution will not be subject to multiple challenges by the parties.

It is noted that the majority of construction projects are undertaken using a standard contract and such contracts generally seek to limit the number of disputes and establish dispute resolution regimes, including the insertion of compulsory arbitration clauses for those disputes that the parties have been able to avoid or resolve themselves. Unfortunately, the most widely used standard form of contract used in commercial construction of projects in Australia fails to include any form of ADR: it provides only for arbitration or litigation (Gerber & Serra, 2011).

### 3.2.5.1 Arbitration

In the Australian construction industry, the traditional response to the risk of construction dispute has been to include arbitration within the dispute resolution clause of the standard form of contract. Courts have tended to endorse this course of action by readily staying litigation if one of the parties seeks to arbitrate the dispute pursuant to a valid arbitration clause in a construction contract. However, despite the support from the construction industry
of Australia, parties in a dispute are less inclined to choose arbitration as their preferred dispute resolution method (Gerber & Serra, 2011).

3.2.5.2 Litigation

Construction litigation enjoys an unenviable reputation for being highly complex, extremely time-consuming and prohibitively expensive. For example, the construction case of *Kane Construction Pty Ltd v Sopov*, which involved a project that commenced in 1999 and had judgment for the first time in 2005 and was finally disposed in 2009, proved that litigation can be expensive and time-consuming (Sopov v Kane Construction Pty Ltd, 2009).

Construction litigation usually involves complex technical issues, several parties and a large volume of discoverable document. These aspects of construction litigation all significantly increase the potential for lengthy delays and disproportionate costs (Gerber & Serra, 2011). Gerber and Serra (2011) have highlighted difficulties which construction litigants continue to face when involved in disputes, especially in the Supreme Court of Victoria, and have identified a number of reforms that would promote greater fairness and efficiency in construction litigation, namely a docket system, compulsory conferences and pre-action procedures.

3.2.6 LESSON LEARNT

The causes of disputes in construction are numerous and simply trying to identify a specific cause is not possible given the complexity associated with the procurement of construction projects. Understanding the relationship between variables, and pathogens within project systems contribute to disputes is the first step that is required to reduce the incidence of disputes. A conceptual causal model, derived from the literature was proposed. Research is currently focusing on determining the pathogens that contribute to disputes. A number of industry focus groups and semi structured interviews are being conducted with clients, consultants, contractors and subcontractors so as to develop a rich causal model of disputes.

Furthermore, from the review of literature on the Australian construction industry, a number of lessons can be learnt regarding the causes, effects of disputes and the use of ADR to resolve construction disputes. Love et al (2008) and Cheung (2004) state that the same variables are identified and continue to manifest in construction projects of Australia, namely poor contract documentation, scope changes, unfair risk allocation, inappropriate contract
type and adverse behavioural adaptation of individuals which still prevail in the construction industry of Australia. Hence it is deduced that the lack of professionalism by design professionals because of reduced design fees can result in inadequate contract documentation being produced, therefore leading to rework that manifests as a lack of professionalism.

3.3 CONCLUSION
The aim of this chapter was to focus on the international perspective on construction disputes in the construction industry in construction projects. The causes of disputes were established, the effects of disputes and the dispute resolution methods available in the construction industry were mentioned. The following chapter gives the African perspective on construction disputes in the construction industry in construction projects.
CHAPTER 4

CONSTRUCTION DISPUTE RESOLUTION – AFRICAN LITERATURE

4.1 INTRODUCTION
This chapter presents the concept of dispute resolution in Ghana and Swaziland. This chapter
gives a theoretical review and conceptual perspective of construction dispute resolution in the
Ghanaian construction industry. Previous theories of construction dispute resolutions in
Ghana, such as causes of disputes, effects of disputes and the measures of minimising
construction disputes in the Ghanaian construction industry are discussed in this chapter.
However there has been lack of studies on construction dispute prevention in Ghana and
Swaziland.

4.1.1 THE GHANAIAN 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, who may be individuals, corporations, or government entities; architects;
enengineers; 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, disputes 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 frequently leads 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). Moreover, 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 per cent 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, conflicts and disputes plague 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). 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 have become inevitable in the industry.

According to Ofori (2012: 6), for Ghana to be able to realise its aim of being the “Gateway to West Africa”, it must have a good infrastructure. There are several reasons for this need. First, a high quality of physical infrastructure would attract foreign investors to (re)locate their operations in this country, as their overall costs would be low, thus enhancing their global competitiveness. The costs of local firms would similarly be lower, with the same result. Second, with a good infrastructure, networks of firms would be more effective as supply chain management issues would be easier to deal with, and many factors in the operating environment of companies would be more predictable. Finally, a high quality physical infrastructure will earn Ghana much revenue as the ports of Tema and Takoradi could be transhipment hubs, especially given the number of landlocked countries in the region. To establish the physical infrastructure, an efficient construction industry is necessary.

Sutton and Kpentey (2012: 109) states that the share of GDP associated with the building and construction sector increased from 4.5 per cent in 1975 to 8.5 per cent in 2000. Over the next few years, the sector continued to grow rapidly, but the annual growth rate slowed from 15% in 2007 to 12 per cent in 2008, and since then the sector has contracted somewhat. The government is the major sponsor of infrastructure projects (building and construction) and dominates the sector. The construction industry provides the means of production for other industries or commodities to be consumed. As Ghana aspired to become a middle income nation by 2015, and with the recent discovery of oil in commercial quantities, the role of the construction industry is important.
4.1.2 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).

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. The time has come for professionals to come up with ideas on how to handle the situation by ensuring that more attention is given to understanding why and how problems become differences of opinion, then disagreements, and finally escalate into disputes.

4.1.3 CAUSES OF CONSTRUCTION DISPUTES IN THE GHANAIAN INDUSTRY

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 build ability of a complex design or the client taking 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 these relationships become strained; minor issues can fester and grow into disputes with crippling consequences for the projects participants. These relationships are as follows:

- The relationship of the client to the designer;
- The relationship of the designer to another design specialist(s);
- The relationship of the client to the prime contractor; and
- 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.

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 (Kissiedu, 2009).

According to (Kissiedu, 2009) the following are the factors which the client identifies as significant causes of construction disputes in Ghana:

- Disruptions and delays by the contractor that create deviation from initial programme of works;
- Awarding of contracts to incapable contractors;
- Unclear and incomplete description of items in the bills of quantities;
- Government policy which encourages low evaluated tenders followed by claims;
- Poor financial arrangements by the clients leading to late payments;
- Design and specification oversights and errors or omissions resulting from uncoordinated civil, structural, architectural, mechanical and electrical designs;
- Variations and late confirmation of variations;
- Failure of the client to honour payments as and when due;
- Poor interpretation of specifications;
- Contractor's failure to read the contract documents;
- 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.
Subsequently these were the twelve 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. (Kissiedu, 2009).

Moreover, Kissiedu (2009) also discovered that from a contractor’s side the following are the factors considered as the most significant causes of disputes in Ghana:

- Unconfirmed oral instructions;
- Award of contracts to incapable contractor;
- Failure of the client to honour payments as and when due;
- 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;
- Ineffective communication between the parties on the project;
- Deficient management, supervision and coordination efforts on the part of the project managers;
- Conflicting instructions;
- Poor financial arrangements by the clients leading to late payments;
- Unclear and incomplete description of items in the bills of quantities;
- Discrepancies /ambiguities in the contract documents;
- Site conditions which differ materially from those described in the contract documents (especially unforeseen underground conditions); and
- Failure to use specified materials, skilled operatives and recognised methods.

All the factors identified by the contractors are factors that were consistent in literature. The following, are significant factors the cause disputes on Ghanaian construction projects from a consultant’s perspective according to (Kissiedu, 2009).

- 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; and
• Disruptions and delays by the contractor that create deviations from the 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 (Kissiedu, 2009).

4.1.5 LESSON LEARNT
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 owing to the unavailability of this information from the appropriate authorities which are 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 to the affected parties.

4.1.6 CONCLUSION
In Ghana, there has been a lack of studies on construction disputes prevention. However, we were able to discover some of the known dispute causations, effects and dispute resolution techniques in construction projects found in Ghana.
4.2.1 INTRODUCTION
This section reviews literature on dispute causation in construction projects. The section first presents the background to the Kingdom of Swaziland, the construction industry in Swaziland, reasons for the high number of disputes in construction projects and the impact of construction disputes in projects. In addition, the cost involved in construction disputes, dispute prevention or minimising and dispute resolution are also discussed.

4.2.2 OVERVIEW OF SWAZILAND
The Kingdom of Swaziland is a relatively small, landlocked country in southern Africa (See Figure 4.1) (Miller, Holmes & Feulner, 2013: 413). Bantu migrations in the 15th and 16th centuries from the Great Lakes regions of Eastern Africa formed the initial population base of the country of Swaziland. In 1899, as a result of the Anglo-Boer war, Britain transformed this small country into a protectorate under its direct control. Subsequently, throughout the colonial period, Swaziland was governed by a resident administrator who ruled according to legal orders issued by the British High Commissioner for South Africa. Britain expected that Swaziland would ultimately be incorporated into South Africa. However, South Africa's intensified racial discrimination post-World War II pushed the United Kingdom to arrange for the independence of Swaziland (Coppock, Forte, Ncube, Ooka, Richards & Vyas, 2008).

Political parties began to form in the 1960s, including the Imbokodvo National Movement (INM) run by King Sobhuza II and his Inner Council. Swaziland gained its independence in 1968 with the INM winning 75 per cent of the votes. In 1973, King Sobhuza replaced the constitution and dissolved the parliament, assuming all powers. Eventually a new parliament was formed, one that was chosen in part by elections and direct appointment by the king (Coppock et al, 2008). The country's current head of state (King Mswati III) appoints the prime minister and a small number of representatives for both chambers of parliament. Elections are held every five years to determine the majority of the representatives.

Student and labour unrest during the 1990s pressured King Mswati III, the world's last absolute monarch, to allow political reform and greater democracy (Coppock et al, 2008). A year later the first constitution of the country was put into place, but it maintained the current ruling of no opposition parties and the king as the ultimate power. Agriculture, manufacturing and the service industry are the dominant factors of the Swaziland economy (Coppock et al., 2008).
Geography
Swaziland is a very small country but nonetheless has a varied landscape, with mountains, savannas, and rainforests. The mountains of Swaziland include the Lubombo range along the eastern border. The highest mountain in Swaziland is called Emlembe, which stands 1,862 meters (6,109 feet) above sea level. Swaziland is entirely landlocked, but it does have several important rivers. Major rivers in Swaziland include the Great Usutu River, the Mbuluzi River, and the Ngwavuma (Coppock et al, 2008). Much of Swaziland's interest lies in its natural and scenic regions, many of which are true rugged wilderness, offering adventure. Swaziland is home to several major scenic regions, including game reserves and protected parks. One of the best parks in the country is Hlane Royal National Park, which is home to many elephants and rhinos, as well as giraffes, zebras, lions and leopards. The park is fairly small, but sighting animals, especially rhinos, is very likely. It is also possible to camp out at the park overnight for a more complete experience. Mkhaya Game Reserve is a protected habitat for many endemic and endangered species, including rhinos, elephants, and antelope (Miller et al, 2013).

The Mlawula Nature Reserve is situated within the Lubombo mountain range, and is home to diverse plant and animal life. The park is an ideal place to explore and hike in the mountain trails. The cities of Swaziland do not have many attractions other than their markets, some of which sell local handicrafts, including the Swazi candles, and often their nightlife. There are, however, several cultural experiences that can be had in the cities. Swaziland is home to a colourful culture, which it celebrates with ceremonies and community events (Miller et al. 2013). In Lombaba are the traditional royal ceremonies of the Reed Dance (Umhlanga) and the Incwala, which honour the queen and king respectively. Swaziland's international airport is called King Mswati (III) International Airport, and is located outside of Manzini. The airport offers services to South Africa and other regional destinations. There are also several bus systems that offer long-distance transportation into Swaziland from several cities in South Africa and Mozambique's Maputo. Road conditions vary in Swaziland, and driving can be dangerous. The minibus is suitable for travel between cities within Swaziland, while taxis are also available most of the time. Minibuses are also a good way to get around the country's parks (Miller et al, 2013).

Swaziland shares most of its border with South Africa and towards the east with Mozambique. It is heavily dependent on its neighbours for access to the sea, to the markets.
and to outside suppliers (SACU- Kingdom of Swaziland, 2009). Swaziland’s population is estimated at around 1.4 million. Swaziland is Africa’s last monarchy, ruled by King Mswati III, subject to the constitution of 2005. The constitution involves some democratic elements and the protection of human rights (Miller et al. 2013: 413). However, political parties remain banned (Coppock et al. 2008: 2). The country is partially reliant on natural resources such as coal, clay, gold, diamond deposits, quarry stone, hydropower, timber and talc (Miller et al, 2013:413). The Kingdom is divided into four districts, namely Hhohho, Manzini, Lubombo and Shiselweni Districts. Major cities in Swaziland are Lobamba, Mbabane (capital city), Manzini, Siteki, Piggs Peak, Nhlangano and Bigbend (Coppock et al, 2008). The capital city is Mbabane in the Hhohho District with a population of around 100,000. An authoritarian environment obtains in Swaziland and this makes the governance system weak and vulnerable to corruption. The courts are inefficient and organisations often pursue out of court settlements (Miller et al., 2013:414).

4.2.3 SWAZILAND CONSTRUCTION INDUSTRY
The construction industry (CI) in many countries is a key component of economic growth. For the developing countries the construction industry plays even a greater role in
development and poverty alleviation by providing access to basic services and transport facilities (Odediran, Adeyinka, Opatunji & Morakinyo, 2012:255).

Therefore, the CI is an important sector of the economy because of the outputs of its activities. The CI contributes to national socio-economic development by providing the buildings which are used in the production of all goods in the economy. Further the construction industry plays a significant role in the economy, as an economic contributor in any country (Ofori, 2007:2 ; Mashwama & Aigbavboa, 2016).

Furthermore, Thwala and Mvubu (2009) suggest that the CI embraces the development of materials, project documentation and procedures, human resources, technology, contractors and institutions, both public and private. However, the CI is also responsible for infrastructure planning, design construction, maintenance and eventual demolition. It provides significant employment opportunities from non-skilled to skilled levels as it encompasses all civil engineering works, building projects and maintenance of facilities.

The CI in Swaziland is one of the most diverse and unstable sectors within the economy. It faces fluctuation demand cycles, project-specific product demands, uncertain production conditions and it combines a diverse range of specialist skills within geographically dispersed short-term project environments. As a result, the construction industry has become highly specialised in view of the changing market (U.S Army Corps, 2004:1-4)

In Swaziland the role of construction is even more critical and a key contributor to the economy. In 2011 the country faced an economic crisis and the construction industry was hit the hardest. The CI relies on government as it is the major client and many projects came to a halt, resulting in contractors not getting paid on time (Sacu - Kingdom of Swaziland, 2009). This crisis created problems for the CI and all the stakeholders involved in the supply chain. Public projects faced a severe financial crisis that led to construction delays, cost and time overruns and low quality on most projects.

Swaziland ’s construction industry (CI) is backed by qualified professionals, such as quantity surveyors, architects, project managers, civil and structural engineers, mechanical and electrical engineers and surveyors(land). It also includes a diversity of manufacturers and suppliers. Although some materials, such as glass, ceramic tiles and metal frames, are imported, many commodities are produced locally. These include building blocks, clay bricks, pavers, roof trusses and tiles, and paint, as well as construction sheeting and fencing
materials. Stone crush and sand are obtained from the local quarries and rivers. Cement is also manufactured in the country (Swaziland Business Year Book, 2002).

The construction companies operating in Swaziland range from small local contractors to major companies with the capability to carry out highly specialised projects. The large contractors employ about 20,000 people. The range of work undertaken in the construction industry covers small buildings, multi-level projects, roads, dams and infrastructure. Therefore, the CI is a key source of work and income in the Kingdom. The overall contribution to the gross domestic product (GDP) by the construction industry was 5.8 percent in 2002, but it has dropped down to 2.8 per cent in 2013 (Swaziland Business Year Book 2002, Central Bank of Swaziland; Mashwama & Aigbavboa, 2016).

The government is the major client in the construction industry. The Ministry of Public Works and Transport is the government’s implementing agency on behalf of all ministries with regard to all construction capital projects (Mvubu & Thwala, 2009:356). The Swaziland government through the Ministry of Public Works and Transport also has a responsibility to educate contractors and subcontractors about the government’s expectations of the quality of work, the process of tendering and the information required (Mvubu & Thwala, 2009:356).

The government of the kingdom of Swaziland, through its 25-year National Development Strategy, has identified the construction sector as a priority area to provide the impetus to improve the social and economic development of the country. However, the agriculture industry is the one that leads by contributing more to the economy of the country (Mvubu & Thwala, 2009) and (Mashwama & Aigbavboa, 2016).

4.2.4 CONCLUSION
The purpose of this section was to give a background of the construction industry in Swaziland. Since there is no published literature on the causes of construction disputes, effects of construction disputes, cost of construction disputes, avoidance of construction dispute and alternative resolution dispute (ADR), the focus was therefore on the construction industry and the background of the country. The following chapter will focus on dispute resolution in South Africa.
CHAPTER FIVE

CONSTRUCTION DISPUTE RESOLUTION: SOUTH AFRICA

5.0 INTRODUCTION

This chapter gives a theoretical review and intangible viewpoint of construction disputes in the South African construction industry. Previous theories of construction disputes are discussed in this chapter the causes of disputes, effects, strategies to prevent these disputes and dispute resolution methods used.

5.1 BACKGROUND

South Africa is located at the southern tip of the continent of Africa, with a total area of 1,219,090 sq. km (See Figure 5.1) South Africa shares boarders with Botswana, Lesotho, Mozambique, Swaziland, Namibia and Zimbabwe. The climate is semi-arid; a plateau rimmed by rugged hills and a narrow coast plain. The South African population consists of 80.2 per cent blacks, 8.45 per cent whites, 8.8 per cent coloured people and 2.5 per cent Asians. There are 12 official languages (IsiZulu 22.7 per cent, isiXhosa 16 per cent, Afrikaans 13.5 per cent, English 9.6 per cent, Sepedi 9.6 per cent, Setswana 8 per cent, Sesotho 7.6 per cent Xitsonga 4.5 per cent, siSwati 2.5 per cent, Tshivenda 2.4 per cent, isiNdebele 2.1 per cent, sign language 0.5 per cent and other languages 1.6 per cent (2011). The population numbers 53,675,563.00 (World Fact Book, 2015).

South Africa is a middle-income, emerging market with an abundant supply of natural resources; well-developed financial, legal, communications, energy, and transport sectors and a stock exchange that is the 16th largest in the world. Furthermore, the country’s modern infrastructure supports a relatively efficient distribution of goods to major urban centres throughout the region, but unstable electricity supplies retard growth. The global financial crises reduced commodity prices and world demand. The GDP fell nearly 2 per cent in 2009 but has recovered since then, albeit slowly with 2014 growth projected at about 2 per cent. Unemployment, poverty and inequality - among the highest in the world - remain a challenge. Official unemployment is at nearly 25 per cent of the work force, and runs significantly higher among black youth. South Africa’s economy policy has focused on controlling
inflation. However, the country has had significant budget deficits that restrict its ability to deal with pressing economic problems (Aigbavboa & Mashwama, 2016).

The current government faces growing pressure from special interest groups to use state-owned enterprise to deliver basic services to low-income areas and to increase job growth (World Fact Book, 2015; Aigbavboa & Mashwama, 2016).

![Figure 5.1: Map of South Africa](image)


### 5.2 THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

Historically, the South African construction industry utilised numerous contracts which contained a wide variety of terms. Contractors were required to enter into contracts that were ambiguous and complex as well as unduly one-sided, with the contractor having to accept almost all the risk in terms thereof. Huge disarray in contract management and dispute resolution were some of the repercussions. A further factor contributing to the disarray in the construction industry was that there were hardly any regulatory provisions pertaining to
dispute resolution or the construction industry itself. This to a large extent is still the current position in the South African construction industry.

The construction industry has a long tradition of reliance on a dispute resolution process rather than formal litigation. Only recently some attempts have been made to involve dispute resolution practitioners and organisations in the construction industry in the mainstream of dispute resolution development. As a result of these separate developments, arbitration in the construction field reflects a more traditional approach. The highly complex and specialised nature of construction disputes has also contributed to the development of an arbitration practice peculiar to the construction industry. Standard-form contracts in the construction industry have recently begun to reflect an attempt to modernise and expedite dispute resolution practices. However, an increasing number of construction contracts unfortunately end in disputes that require the intervention of either the courts or of an arbitrator, mediator or adjudicator to achieve resolution. It is obvious that an attempt to design or select the most appropriate form of dispute resolution for a particular dispute would involve consideration of the advantages and disadvantages of all forms of dispute resolution, including litigation. The field of dispute resolution therefore covers a broad range of mechanisms and processes designed to assist parties in resolving differences creatively and effectively (Finsen & Butler, 1993).

5.3 CONSTRUCTION DISPUTES IN SOUTH AFRICA
The last four decades have witnessed the construction projects continually becoming much more dynamic in nature (Sakal, 2004). The construction projects are accomplished today in an environment which is completely complex, uncertain projects within tight budget and time constraints. The dynamics of the construction industry by virtue of it continual fragmentation contributes specifically to its complexities - more parts, more interfaces. The dynamic environment of the industry forces client to attempt to reduce cost and time while at the same time demanding high quality finished products (McGuin, 1989). However, the grim reality is that quality and speed do not always sit easily together. Clients also include bespoke clauses in an attempt to offload risk to contractors. This subsequently leads to the main contractor passing the risk onto the sub-contractors Furthermore; an attempt by project participants to safeguard their contractual rights backfires resulting in adversarial relationships and expensive litigation. The plethora of these factors unsurprisingly negatively affects project performance resulting in dispute arising between parties involved in
construction projects. The result of these conflict is heated disputes and ultimately litigation claims that are detrimental to project participants economically. Nonetheless, irrespective of the nature of dispute, one thing is certain, the efficiency and project performance is impaired due to mistrust between project participants and a decline in teamwork in an attempt by the major players to try to offload risk (Latham, 1994; Sakal 2004).

Arguably, many construction disputes have their origin in the seeds sown by or in, the client’s error (Steen, 2002) This often happens when the client expects something unrealistic to be done, such as the build ability of a complex design or the client taken possession of his building within a very short time, not taking into consideration unexpected delays and unforeseen setbacks.

5.4 CAUSES OF DISPUTES IN SOUTH AFRICA
Inevitably, disputes are a reality on every construction project (Steen, 2002). They may arise on a construction project for a number of reasons and can be grouped into the following main categories Sewczuk (1996):

- **Organisational** - Increased project complexity has resulted in varying forms of contract, each with varying interfaces where misunderstandings occur giving rise to disputes;

- **Contractual** - This area covers the majority of construction disputes, i.e. extension of time, liquidated damages, variations, loss and expense, payment, late deliverables, adverse weather and the like;

- **Technical** - Poor/Incomplete design, workmanship, material selection and the like.

Notwithstanding the categorisation of disputes, it still arises on projects with best intentions. Even when every possibility of disagreement has been potentially eliminated, problems can still occur. Consequently, understanding how disputes arise on a project site can be very helpful for anticipating situations that may be turbulent. While it may seem, at times that anything can start a conflict and when not eliminated can result into a dispute, especially in
the present economic climate construction disputes will typically revolve around defects and payment. This is according to a study conducted by Hellard (1987) into the sources of construction disputes. His findings collaborated with factors of other research reports as contained in their various studies and papers and it is as follows:

**The contract conditions**
These comprise the following:
- Imperfection in the contract document;
- Inability to quantify cost; or
- Interpersonal relationships of people involved in construction i.e. sociological issues, psychological issues and physiological issues.

**The design deficiency**
This consists of:
- The underground or subsurface problem, changed and differing conditions;
- Poor and unfair allocation of risks;
- Defective plans; or
- Construction methods and specification performance.

As indicated by Hellard (1987) and supported by other researchers the ground or subsurface problem, changed and differing conditions are a subset of design deficiency but the author is of the view that it should be a cause on its own. The writer offers no opinion in this but set it forth as a discussion point since these conditions are almost unforeseen when the documents are prepared and do not just occur.

**The construction process**
A major cause of construction dispute arises as a result of the construction process according to Hellard (1987) and this view is supported by other researchers. Although Hohns (1979) supports Hellard’s view on construction process as a major cause of construction dispute, he is of the view that it is difficult to differentiate between design error and the consequence of the process. It is thought that provided the contractor carries out the work strictly in accordance with the contract documents, he is not responsible if the works prove to be
unsuitable for the purpose which the employer or architect has in mind. On the other hand, it is probably the contractors implied duty to bring any obvious errors in the architect’s design of which the contractor had actual knowledge to the architect’s attention.

Research into disputes during the construction process according to Kennedy, Conlin and Langford (1996) and classified as administrative causes is as follows:

- Poor feedback from contractors;
- Contractor’s non adherence to administrative procedure;
- Lack of information from design team/client;
- Lack of working information from design team;
- Design teams non - adherence to administrative procedure;
- Sub contractor’s non - adherence to administrative procedure; and
- Extra contractual third party coordination.

Certainly, the above list is not exhaustive but by standard professional ethics, these items are an indication of failure on the part of someone to do that which was required by the contract and having an impact on the project in question and resulting in a dispute.

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).

Indisputably 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 build ability 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.

In a study by Levy (2007), it was shown that the principal reasons for misunderstandings leading to disputes on construction projects 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;
- Breeches 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.

5.5 EFFECTS OF CONSTRUCTION DISPUTES IN SOUTH AFRICA

Baloyi & Agumba (2014) stated that the continuing costly disputes in the construction industry of South Africa have led to a common interest of research in different countries to identify the generic effects of conflicts, claims dispute and their resolution. Construction dispute affect projects in a negative way, since they are not budgeted for and they are very costly. The following are effects of construction disputes in the South African construction projects according to a study conducted by Baloyi & Agumba (2014):
• Delay on the projects;
• Bad relationship between parties;
• Changes in contract amount;
• Information not delivered to parties on time;
• Neglecting client’s wants;
• Causes friction between parties;
• Time delay; and
• Cost overruns.

Since disputes are not budgeted for, when they occur they may turn out to be very costly. Cost is one of the parameters or factors that determine a project’s success. Contractors seek to complete the construction at the lowest possible cost to get maximum profit whilst the clients seek to have their project completed at the lowest economical cost. Construction disputes, when not resolved in a timely manner, become expensive in terms of finances, personnel, and time and opportunity costs (Bvumbwe & Thwala, 2011). The following costs, although difficult or impossible to quantify, affect the project and have a significant impact on a company itself:

5.5.1.1 Visible costs
• Attorneys,
• Expert determination/witness, and
• The dispute resolution process.

5.5.1.2 Less visible costs
• Company resources assigned to the dispute, and
• Loss of business opportunities.

5.5.1.3 Intangible costs
• Damage to business relationships, and

Potential value lost due to inefficient dispute resolution (Bvumbwe & Thwala, 2011).
5.6 DISPUTE RESOLUTION IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

In the global arena, there are many forms of DRMs adopted, each with its own particular characteristics (Chan et al., 2006). DRMs can be categorized in different ways. One way is to categorize them according to the basis on which the decisions are made power-based approaches (based on authority or competition), right-based approach (based on rights), interest-based (win-win and all-gain negotiations), or relational approaches (based on maintaining relationships). Another way of categorizing DRMs is according to the way the dispute is seen for resolution; distributive approaches where resources are seen as fixed and splitting solutions are offered, while in integrative approaches parties offer more solutions than the obvious ones and create an all-gain approach (Morris 2002). Also, defining the degree by which parties influence the outcome is another way of classifying DRMs (Sander & Rozdeiczer 2006).

Pretorius (1993: 133) refers to three major categories of dispute resolution, which are the following:

- Dispute resolution processes involving private decision-making by the parties themselves. This category would include negotiation and mediation;
- Dispute resolution processes involving private adjudication by third parties. Arbitration would fall into this category; and
- Dispute resolution processes involving adjudication by public authority. This category would include administrative decision-making and formal litigation before the courts.

In the light of the nature of the construction industry and the fact that it is often burdened with disputes arising from the contract, appropriate and unique alternative dispute resolution procedures are indispensable for disputes to be resolved quickly, efficiently and effectively. Section 34 of the Constitution of the Republic of South Africa, 1996 provides for the right to have disputes resolved by means of a public hearing before a court, alternatively, where appropriate, by means of an independent, impartial forum. Arbitration, mediation, conciliation and adjudication, to name but a few, are alternative methods used in resolving
South African construction disputes. Some of these alternative dispute resolution (ADR) methods are provided for in the Construction Industry Development Board recommended standard contracts (Oliveira, 2010).

Since 1995 the post-apartheid South African government has similarly been obsessed with the pursuit of procurement reform, especially in introducing appropriate methods for effective dispute resolution into the construction industry. Recognising the entrenchment of alternative dispute resolution (ADR) procedures for resolving labour disputes in the Labour Relations (Act No 66 of 1995) and successful application of ADR procedures in the private sector, the White Paper on *Creating an Environment for Reconstruction Growth and Development in the Construction Industry* commits the public sector to promoting the application of ADR procedures, in particular adjudication, in the South African construction industry.

In promoting adjudication as the first tier in managing disputes throughout the South African construction industry, the White Paper confirms that "... recommendations adapted largely from the Latham report will be introduced to the construction industry, specifically for Public-sector contracts. “Latham (1993), among other matters, "... recommended that a system of adjudication should be introduced within all the Standard Forms of Contract (except where comparable arrangements already exist for mediation or conciliation) and that this should be underpinned by legislation. In their 1999 white paper to the Minister of Public Works, the CIDB recommended the use of ADR, as arbitration and litigation were seen as costly and time-consuming (CIDB, 2005). The Latham report (UK, 1996) is referred to as a point of departure. The CIDB went further and made it mandatory for the South African construction industry to adopt adjudication before referring disputes to arbitration or litigation (CIDB, 2005).

### 5.6.1 ADJUDICATION IN SOUTH AFRICAN CONSTRUCTION INDUSTRY PRACTICE

The term ‘adjudicate’ is found in general usage to mean ‘to give a ruling’ or ‘to judge’. In more recent times, a specialised use of the term ‘adjudication’ appears as a form of alternative dispute resolution (ADR) available to the construction industry. Its definition in this context is not universally agreed, it being more often defined by what it is not than by
what it is, but the following characteristics are reflected by most definitions (after CIDB 2004):

- The object is to reach a fair, rapid and inexpensive decision.
- The adjudicator is to act impartially and in accordance with rules of natural justice.
- Adjudication is neither arbitration nor expert determination, but adjudicator may rely on own expertise.

The adjudicator's decision is immediately binding (finality is dependent on whether it is challenged within the allotted time, in which case finality may be reached through arbitration, litigation or by agreement).

Adjudication in South African construction practice has, through various initiatives of the South African government and Construction Industry Development Board, the increased use of international standard form construction contracts, and the South African High Court’s robust approach in enforcing adjudicators’ decisions, become relatively commonplace in both the public and private sectors as the first tier in dispute resolution procedures on construction projects across the South African construction industry (Maritz, 2007).

Adjudication has long been part of the panoply of ADR procedures available to parties bound by construction contracts, but until recent years was far from universal, and if the case law that refers to it is anything to go by, was not greatly used. Where adopted by the parties it was by express agreement in writing and contained an *ad hoc* set of rules that differed from contract to contract (Gaitskell, 2011).

In addition to the South African government's interventions in promoting adjudication in South African construction practice, the industry itself has largely embraced the procedure "...Whereby the parties agree to confer jurisdiction on an adjudicator to decide the particular dispute that has arisen between them ..." (Coulson 2007) as a means "...to find some sensible resolution of their problem and then get back to their real business ..." (Jackson 2006). As a matter of practice in the South African construction industry, the obligation to adjudicate, however, only arises consequent on a specific agreement to adjudicate, which agreement is recorded in the dispute management mechanisms captured in the particular construction contract.
Contractual adjudication has for some time now found a place in standard form building contracts in use in South Africa, such as the Joint Building Contracts Committee's (JBCC) Principal Building Agreement (JBCC 2014) and the General Conditions of Contract for Construction Works (SAICE 2010), into which the adjudication process was introduced for the first time in 2004. A thorough knowledge of adjudication procedures, practice and implementation has now become essential for any construction professional playing a certifying, advisory or commercial role in a construction project.

Bvumbwe and Thwala (2011) conducted a study to determine which of the spectrum of ADR procedures (including specifically mediation and adjudication) are most frequently deployed through the South African construction industry in resolving construction disputes. They concluded that, although "... mediation is the most frequently used method in resolving disputes in the construction industry ... the majority of respondents would prefer the inclusion of adjudication as the priority in resolving a dispute before arbitration."

Van der Merwe (2009) conducted a comparative study of the application of both mediation and adjudication across the South African construction industry to determine which of the two dispute resolution methods is better suited to resolve construction disputes in this industry. In concluding that adjudication is preferable, Van der Merwe states "that both mediation and adjudication are effective alternative methods of dispute resolution as to litigation and arbitration. Although adjudication has a weakness in the enforceability of the decision of the adjudicator, it still has an advantage over mediation."

Maritz (2007) overviewed the development of adjudication in the South African construction industry, considering its effectiveness in resolving construction disputes, and the extent to which adjudication has been utilised since its introduction into this industry, and concludes that "... experience in other countries who have introduced adjudication has shown that adjudication without the statutory force is not likely to be effective. Enforcement of the adjudicator’s decision is critical to the success of adjudication, and before South Africa introduces an Act similar to Acts such as the Housing Grants, Construction and Regeneration Act 1996 (UK), the Construction Contracts Act 2002 (NZ) or Building and Construction Industry Security of Payment Act 2004 (Singapore), adjudication will remain largely ineffective and, therefore, underutilised in the South African context."
Gaitskil (2007), echoing Maritz’s observations, argues that "in order for adjudication to have any real impact, it had to be compulsory so that powerful employers or main contractors could not simply strike such clauses out of contracts they made. This meant that there had to be legislation which simply imposed adjudication on all parties in the construction industry."

Following an investigation into adjudication practice in the South African construction industry, Maikets’o and Maritz (2009) concluded “That adjudication has found acceptance in the South African construction industry. However, it still has some way to go before its potential can be realised in full. Certain challenges need to be overcome to enable this to happen, which range from the contractual, institutional and legislative framework, to matters of skills and training.”

5.6.2 MEDIATION
In South Africa, Povey’s (2005) survey of mediation practice in the construction industry was a notable addition to the empirical evidence and suggests that there is a plethora of research and literature on mediation as it is used by mediators and litigators worldwide and in various fields of dispute resolution. Barth (2007) investigating the suitability of arbitration in the South African construction industry found that mediation was considered a more suitable dispute settling mechanism than arbitration or litigation by the industry participants (including attorneys). Schindler’s research into the role of mediation and arbitration as dispute resolution mechanism in the South African construction industry focused on the awareness, experience, attitudes and perceptions of architects, engineers and contractors and concluded that these participants did not have much experience in mediation and as such have negative attitudes and perceptions about the process.

In general, techniques other than litigation are referred to as alternative dispute resolution (ADR) techniques. In construction contracts, most contracts will not go for litigation unless other ADR techniques have been attempted first (Yates & Smith, 2007). This is because litigation is very procedural and expensive, enforcing the old saying that “A poor settlement beats a good lawsuit” (Smith et al., 2009). In this section, different types of DRMs used in the construction industry, including litigation and other ADR methods, are introduced with emphasis placed on their main significant characteristics.
Mediation has been doing the rounds in the South African construction industry for the last three decades and was initially introduced into the civil engineering and construction sector of the industry in the 1982 edition of the General Conditions of Contract for Works of Civil Engineering Construction (GCC), and later into the building sector via the 1991 edition of the Principal Building Agreement (PBA) published by the Joint Building Contracts Committee (JBCC). It is widely accepted that mediation is intended to be a voluntary, non-binding, flexible, informal and confidential process.

Although the process involves a third party, namely the mediator, it is the parties who remain responsible for the outcome. This is known as the facilitative model of mediation and in this model, as the name so aptly implies, the mediator aims to facilitate a settlement between the parties without interjecting his own expertise of opinion into the dispute.

The mediator attempts to accomplish this by, inter alia, conveying information between the parties in a re-framed and muddled format, exploring possible offers, concessions and counteroffers with the parties by helping them consider these from different vantage points and reality testing them by, for example, asking a party to consider how its position might stand up in court of law.

These functions, skills and techniques are specific to mediation and require training, practice and an acute understanding by the mediator of his/her role in order to ensure any possibility of success.

According to Willie (2010), the research has shown that mediation in the South African construction industry is not consistent with the accepted principles of the facilitative mediation process, as the mediator does not generally assist the parties in determining their own settlement; instead the mediation activities centre mainly on the collection of information on the dispute by the mediator and the formulation of a solution by the mediator. The research also revealed that the mediator’s knowledge and utilisation of specific mediation process skills and techniques are limited as they rely on their knowledge and experience to “‘solve’” disputes.

In South Africa the difference between mediation is that an expert gives an expert opinion as opposed to adjudication where an expert gives an expert determination. This is much of a
muchness and has caused mediation to become devalued as an effective dispute resolution mechanism.

5.6.3 LITIGATION

Litigation is a dispute resolution government run system, involving judges and courts. It is a very complex procedural process following many rules that vary from state to state, as well as from country to country (Smith et al., 2009). Parties involved need solicitors and barristers to assist them, as they are the only ones permitted to address the court, implying a very expensive process. The judgment of the court is final and binding. Litigation is public, since anyone can attend the trial. No party has any say on the choice of judge. Given construction disputes are primarily technical and judges making decisions in such disputes usually lack the technical knowledge that may be required, litigation is not the best resort, although sometimes becomes the only one (Layngross.com Construction Disputes Resolution nd). Compared to other ADRs, litigation does not offer disputants the option to determine the process they will use, leading to less satisfying outcomes and harder decisions to comply. Less cooperation and more competition are involved in litigation compared to ADR methods. Thus, ADR methods compared to litigation help maintain good relationships between parties and this becomes a key advantage in the construction industry, where parties continue to interact, if not on the same project, at least in future projects after a settlement is reached (Layngross.com Construction Disputes Resolution nd). In the context of large international projects, where there are several parties of different nationalities involved, ADR avoids any conflict of laws difficulties or jurisdictional problems that may arise, since it allows the parties to reach agreement as to how their disputes should be resolved, taking into account national and cultural differences (Chan & Tse, 2003). In general, ADR has gained favour over litigation for its low cost, speedy resolution and lower procedural complexity (Chan et al., 2006).

5.6.4 ARBITRATION

Arbitration is a non-judicial international forum to settle disputes (Yates & Smith, 2007). It is used as an alternative to litigation with prior contractual agreement of the parties (Smith et al. 2009). Arbitration’s benefit emerges from the fact that disputes in the construction industry often require the decision-maker to be well versed in relevant technical and industrial matters, in addition to legal issues (Layngross.com Construction Disputes Resolution nd; Yates & Smith, 2007). However, this advantage may sometimes lead to the overlook of basic legal
principles, such as right of appeal and evidentiary rules (Sweet & Schneier, 2009). Many arbitration associations provide lists of arbitrators with construction experience that disputing parties can choose from. An example of popular arbitration organizations is the International Arbitration Association (Yates & Smith, 2007).

Arbitration is a confidential process in comparison to litigation (Chan and Tse 2003; Layngross.com Construction Disputes Resolution nd). The decision reached is final and binding, and is usually enforced through the courts of any jurisdiction, not necessarily the jurisdiction where the arbitration was held. Such characteristics make it considerably attractive in international disputes (Chan & Tse 2003; Layngross.com Construction Disputes Resolution nd; Yates & Smith 2007). International contracts usually specify the location of the arbitration proceedings (since local jurisdictions may vary in regulating the arbitration process) and the governing language (Yates & Smith 2007). Sometimes the choice of law may also be included within the arbitration clause. International contracts usually insist on the use of international arbitration to overcome distrust and anticipated problems with local laws. Arbitration decisions are enforceable worldwide under the New York Convention (Sweet & Schneier, 2009).

However, when arbitration is chosen to resolve disputes, the process ends with a win-lose situation: the arbitrators decide the outcome and the parties lose the power to self-determine the resolution. Though it still remains the most popular DRM in international construction contracts, other DRMs are sometimes favoured by the disputants, as arbitration can be overly formalized, time consuming, and expensive (Seifert, 2005).

5.6.5 DISPUTE ADJUDICATION BOARD (DAB) / DISPUTE REVIEW BOARD (DRB)

DABs (also known as dispute resolution boards, or DRBs) were developed by the international construction industry in response to the perceived inadequacy of arbitration to provide an efficient and cost-effective means of disputes resolution (Seifert 2005). DAB members are a panel of construction industry experts, who work on a particular construction project, and are familiar with the project’s construction contract and progress (Sweet & Schneier, 2009).
DAB adjudicate quasi-binding disputes that arise from the contract; these are held periodically to ensure smaller disputes do not negatively affect the project’s schedule or budget. By using DAB, parties also avoid submitting construction claims (sometimes very technical) to a court and can instead rely on the board to settle matters timeously.

In international projects, it is most desirable to have DAB members of the same nationalities, as those of the parties involved. Today, both the World Bank and the FIDIC (International Federation of Consulting Engineers) documents have DABs replace arbitration as the primary form of dispute resolution in construction projects (Seifert 2005). However, the decision issued by DAB is often advisory in nature and not binding; thus, any of the parties can contest the decision by employing any other DRM (Yates & Smith, 2007).

5.6.6 EXPERT DETERMINATION

In expert determinations, the parties refer the dispute to an expert (usually chosen by both parties), who has the full authority to make a decision solely on the expert’s own knowledge and without any of the parties’ consultation. The contract may dictate the terms of reference, including the procedure to be followed, expert’s power, duties and liability, and the matters of dispute. The expert’s decision is usually final and binding. This form is usually used in complex technical issues, where the parties themselves may lack the technical expertise. It is considered a very inexpensive and expeditious form of dispute resolution that requires the parties’ confidence in the expert’s competence (Layngross.com Construction Disputes Resolution, nd).

5.6.7 EARLY NEUTRAL EVALUATION

Early neutral evaluation (ENE) started as a method to be used at an early stage in a dispute to improve the parties’ understanding of the strengths and weaknesses of their case, and the probability of success in formal court proceedings. It soon became a technique commonly adopted as a process to assist in the early resolution of disputes. It is voluntary, confidential, and non-binding. Early neutral evaluation involves a neutral evaluator not connected to the dispute or any of the parties. The depth of the evaluation will be defined by the time allocated to the process. The parties decide on the process details, whether it is documentary evidence only or includes oral hearings, number, and scope of proceedings. The costs of the ENE process are usually shared between the parties (Royal Institution of Chartered Surveyors (RICS, 2010).
5.6.8 HYBRID METHODS
There are many forms of hybrid ADR methods. Mediation-arbitration, or med-arb, is an ADR method that involves both mediation and arbitration. This method, the parties start with mediation and then move automatically to arbitration, if no agreement is reached. The mediator is likely selected and becomes involved early in the project (Sweet & Schneider, 2009). With the mediator involved with mediation, he/she gains more knowledge of the case and the parties, leading to a more efficient arbitration process; yet, biases carried from mediation to arbitration are susceptible (Smith et al., 2009).

Other hybrid methods are mini-trials and summary jury trials. In a mini-trial, a nonbinding trial is held before a three-person panel (one senior representative from each corporation and a neutral third party), where the senior representative tries to find a resolution with the help of the mediator. Thus, the parties’ representatives act as jury, judge, and negotiators. In the summary jury trial, a nonbinding trial is held before a mock judge and jury, after which the parties negotiate a settlement (Smith et al. 2009). Such a settling helps both parties realize the case’s weakness and strengths, and reaches a resolution with no real trial (Smith et al. 2009).

5.7 DISPUTE RESOLUTION METHODS IN CONSTRUCTION CONTRACTS
It certainly seems that construction contracts go wrong; everybody knows that it is one of the problems of construction. The problems have intrigued, one might say obsessed, the industry and government for 50 years (Fenn, 2002).

International construction projects provide opportunities for developing countries to advance in the global economy, and for international firms to increase their profit and market share. Despite the attractive opportunities that international construction offers, there are many challenges and difficulties when moving into international markets. These include the many risks associated with international construction, whether external or project-specific risks, the different culture the company needs to deal with and manage, and the level of trust the international parties share. All these aspects affect the way the contract clauses are drafted, including the dispute resolution clause.

However, in most standard contracts, arbitration is still used as the default dispute resolution method (DRM) with minimum thought placed on how the dispute resolution process can be
designed to control or lessen both the risk of claims and the cost of disputes that may arise in such an international context (Gebken & Gibson, 2006; Seifert, 2005). Contractual disputes are time consuming, expensive, and unpleasant. Inevitably, however, they do occur from time-to-time. The Construction Industry Institute (CII) defines twelve contract aspects related to risk allocation; one is dispute resolution. The importance of bringing the dispute to a conclusion as efficiently and cost-effectively as possible cannot be overstated. Thus, choosing the most suitable DRM becomes crucial.

Accordingly, if a decision is taken to venture into international contracting, firms must be aware the international contracts they will sign, although similar to their own domestic contracts, will still include some major additional/modified clauses that address international issues. One of these very critical clauses is the dispute resolution clause. The dispute resolution clause is a contract clause that specifies the DRMs used for resolving disputes arising under the contract.

Construction projects and contracts are mostly based on confrontations that lead to mistrust (Zaghloul & Hartman, 2002). Furthermore, contract clauses usually reflect the trust level the parties have for each other; a party displays trust the other party will perform what is agreed upon in the contract (Kadefors 2004; Zaghloul 2003). Although some scholars view contracts as a legal document whose main objective is to avoid risk, others see the contract as a basis for mutual trust between parties (Rousseau et al., 1998). Thus, there is a mutual expectation/contractual trust that promises made are kept. A contract is a demonstration of trust through written or verbal guarantees. Trust is not only formed when the contract is signed, it occurs at all stages of a contract negotiation, execution, and closeout (Lau, 2001).

Not only does trust reflected in the contract clauses affect the relationship between the involved parties, it also has a significant effect on increase of the total cost of a project (Zaghloul 2003). Also, with trust come costs that are either direct costs for building it, costs that may arise out of trust breach, or costs of inefficiency due to excessive trust (Kadefors 2004). In legal terms and law, trust is used in the context of assigning a person as the trustee to look after the trustee’s property for the benefit of another person called the beneficiary (Lau 2001). However, this is out of the scope of this research.
5.7.1 DISPUTE RESOLUTION METHODS ADOPTED IN SA CONSTRUCTION CONTRACTS

According to Binnington (2015), South African Standard Forms of Contract still draw, to a large extent, on their English historical counterparts. Indeed, the Standard Building Contract prior to 1991 was based on JCT63 and the Standard Civil Engineering Contract, current edition 1990, was modelled closely on ICE 5th Edition. With the launch of the New Engineering Suite of Contracts in 1991 (1st Edition) and their adoption by the electricity parastatal, Eskom, adjudication was introduced for the first time as a mechanism for dispute resolution. In 1986 and 1991 respectively the Civil and Buildings Forms of Contract introduced mediation as a voluntary precursor to arbitration. Although statistics are hard to come by, a survey done by the South African Institute of Civil Engineers during the mid-1990s indicated that mediation was an exceedingly successful mechanism for dispute resolution. The figures quoted were that in excess of 75 per cent of the matters referred to mediation were settled without recourse to subsequent arbitration or litigation. In the building industry no such figures are available but our own perspective is that mediation has not been a success and is generally utilised as a delaying or fishing expedition prior to the matter being referred to arbitration.

The high cost of litigation and arbitration is still the major motivator for pursuing some form of alternative dispute resolution procedure but ADR procedures are in large measure hampered by the absence of adequately qualified, competent third party neutrals. Whilst many organisations pay lip service to ADR, the non-binding effect of these decisions means that there must be a high degree of co-operation and willingness to settle matters if there is to be any prospect of a negotiated settlement through the intervention of the third party neutral. South Africa has very little construction legislation and certainly nothing equivalent to the Housing Grants, Construction and Regeneration Act of 1996. Large organisations continue to take financial advantage over smaller contractors and sub-contractors and settle their disputes through financial pressure rather than relying upon the intervention of dispute resolution procedures (Bennington, 2015).

The FIDIC Civil Engineering Document (Red Book) is widely used both in Africa generally and in South Africa for domestic contracts. The 1999 Suite of FIDIC Contracts is also starting to be used more regularly and, certainly on the larger projects, the recognition of the advantage of dispute adjudication or dispute review boards as a first port of call is not only
gaining momentum but also gaining recognition for the effectiveness of early intervention strategies (Bennington, 2015).

In March 2001 government published a Code of Practice as a draft entitled “Adjudication in Engineering and Construction Contracts in South Africa”. The Code of Practice was prepared to assist the Construction Industry Development Board (“CIDB”), a statutory board with overall responsibility for monitoring and advising on best practice in the construction industry, for the establishment of adjudication in South Africa including a panel of accredited and state approved adjudicators subsequently, the stated intention being to move towards implementing rapid and inexpensive dispute resolution mechanisms in engineering and construction contracts. The Code of Practice envisages a list of accredited adjudicators and will be located on the CIDB website to enable all organs of state and contractors to access the list and to make their selection of an approved and accredited adjudicator.

**FIDIC**

It is for this reason, Pritchard says, that the International Federation of Consulting Engineers (FIDIC) published a set of contracts known as ‘the Rainbow Suite’ in 1999. These contracts aim to achieve unity and global understanding in construction contracts.

He adds that the most frequently used of these standard-form contracts are FIDIC Yellow Book, Red Book and Silver Book, which focus on design and build, traditional engineering, procurement, and construction/turnkey conditions.

FIDIC makes provision for the creation of a disputes adjudication board (DAB), which is an impartial and independent panel of one to three suitably qualified persons who may be appointed either when a project begins (a standing DAB) or as and when disputes arise (an ad hoc DAB).

“The DAB is tasked with making decisions on any disputes arising from the contract. The board is constituted by agreement, but provision is made for the appointment of DAB members when the parties cannot reach agreement,” explains candidate attorney Philip Thompson. He adds that a unique feature and possibly the greatest benefit of a DAB is that
the dispute resolution mechanism used allows for construction under the contract to continue, while a decision on resolution is pending.

Clause 20.4 of FIDIC (Yellow and Red Book) is the primary mechanism for dispute resolution and describes the procedures required for a claimant to refer a dispute to the DAB. As a result should a party be dissatisfied with the DAB's decision, a Notice of Dissatisfaction may be delivered within 28 days after having received the decision.

“When this occurs, in terms of Clause 20.5 the parties are required to attempt to reach an amicable settlement. If no such settlement can be reached, the matter is then referred to arbitration in terms of Clause 20.6, whereby a panel of three arbitrators must be appointed to give a final binding decision regarding the dispute,” he explains, adding that the arbitration process will be bound by the rules of arbitration of the International Chamber of Commerce. Further, Clause 20.6 allows for the parties not to be bound by any initial Referral Notice, argument and evidence put before the DAB, nor by the reasons given by the dissatisfied party in its Notice of Dissatisfaction.

“This is a major criticism levelled against the DAB and is considered a flaw, as it effectively nullifies the powers of the DAB to decide disputes and creates a dual forum of first instance,” The DAB’s lack of enforceability is also often criticised, as the dissatisfied party can create another chance for a favourable decision by referring the dispute to arbitration. However, Thompson believes that this is largely an unfair criticism owing to the fact that the courts, both locally and internationally, have held that a DAB’s decision must be given effect to unless and until revised by an arbitral decision.

**JBCC Contracts**

A second type of construction contract available is the local non-profit company Joint Building Contracts Committee (JBCC) contract, which concentrates on the compilation of current contract documentation with an equitable distribution of contractual risk in the building industry, explains Pritchard.

He states that the JBCC is similar to FIDIC and has issued its own set of standardised construction contracts, of which the current revision is known as the 'JBCC Series 2000'.
"Clause 40 of the JBCC contains a mechanism for dispute resolution, which is similar to that of FIDIC. "However, in terms of the JBCC, when a dispute arises, the party declaring the dispute must notify the other party of the dispute and call on that party to resolve the dispute within ten working days," Pritchard explains. If the dispute is not resolved, it is referred to adjudication or arbitration. Disputes referred to adjudication are governed by the JBCC Adjudication Rules, which set out the rules for the appointment and powers of the adjudicator, the procedures followed in declaring a dispute and the determination of disputes. Provisions similar to those of FIDIC apply in terms of a dissatisfied party being empowered to refer the matter further to arbitration. The JBCC also allows for disputes to be referred to mediation.

Similar to the process of the application of FIDIC, the South African courts have held that the adjudicator's decision is binding on the parties and must be carried out without delay unless and until it is subsequently revised by an arbitrator. Furthermore, Pritchard (2014) notes that, owing to the JBCC’s South African origin, it is less commonly used, particularly in large-scale projects involving multinational contracting parties, and is more readily adopted in the local market for smaller-scale projects, although all of the contracts used for the 2010 World Cup stadia were JBCC based.

The Adjudication Rules issued by the JBCC for use with the contract describe adjudication as ‘an accelerated form of dispute resolution in which a neutral third party determines the dispute as an expert and not as an arbitrator and whose determination is binding unless and until varied or overturned by an arbitration award’. An adjudicator is given wide inquisitorial powers that enable disputes to be resolved summarily and expeditiously. He is empowered, for example, to determine the dispute on the basis alone of the documents submitted to him by the parties, or on the basis alone of an inspection of the works. He may make use of his own specialist knowledge, he may open up and review any determination or certificate or valuation related to the dispute, and generally, he may ‘adopt the most cost- and time-effective procedure consistent with fairness to determine the dispute’. A determination by the adjudicator is ‘binding upon the parties unless and until such determination is overturned or varied in whole or in part by arbitration in terms of clause 40.5 of the Agreement’.

When read together with the Rules, I think it is plain that, in keeping with modern practice internationally, adjudication under clause 40 is designed as a measure for the summary and interim resolution of disputes, subject to their final resolution by arbitration where
appropriate. The effect of clause 40, properly construed, is that the first port of call for a contractor, where disagreement arises with the employer, is the principal agent. The clause does not purport to limit the time within which the principal agent may be called upon to do so. But once he has been called upon he must resolve the disagreement within ten days. If he fails to do so, or if either party disputes his decision within 20 days, a dispute is deemed to exist. If he gives a decision, and it is not disputed within that time, then his decision becomes final and binding. Once a dispute is deemed to exist either party may (but not must) submit the dispute for independent resolution. Once again the clause does not purport to prescribe a time within which that must be done. But if a party wants it resolved before practical completion, it must be submitted to adjudication. After practical completion it must be resolved by arbitration. I leave aside the opportunity for mediation by agreement. Needless to say, it is also open to the parties, after practical completion, to agree to adjudication.) An adjudicator’s determination is clearly not exhaustive of the dispute. After practical completion the dispute might be submitted again to arbitration for final resolution. Whether a dispute is to be resolved by adjudication or by arbitration, in other words, depends upon when the dispute is submitted for resolution, and not upon the nature or genesis of the dispute.

The contract defines ‘practical completion’ of the works as ‘the stage of completion where, in the opinion of the principal agent, completion of the works has substantially been reached and can effectively be used for the purposes intended’. It is a significant event because failure to reach practical completion by the agreed date renders the contractor liable to penalties. The contract recognises that delays might occur in the course of construction for any number of reasons. Where the delay occurs through no fault of the contractor then generally the contractor will be entitled to revision of the date for practical completion, and in some cases also to adjustment of the contract value. Delays that give rise to those entitlements are listed in clauses 29.1 to 29.3 of the contract but need no elaboration for present purposes. If the contractor anticipates such a delay occurring he is required by clauses 29.4 to 29.6 to give the principal agent reasonable and timeous notice of the anticipated delay, to take steps to avoid or reduce the delay, and to give notice to the principal agent, within a stipulated time, of his intention to claim a revision, failing which the principal agent need not consider the claim. The contractor must also submit any such claim to the principal agent, incorporating certain specified information, within 60 days of the delay ceasing, failing which the claim is forfeited. Within 20 working days of receiving such a claim the principal agent is required by clause 29.7 to ‘29.7.1 Grant, reduce or refuse the period claimed 29.7.2 Determine the revised
date for practical completion in relation to the working days granted 29.7.3 Identify each
circumstance and relevant sub clause for each revision granted or give reasons for amending
or refusing such claim’. If the principal agent fails to act in accordance with that clause the
claim is deemed to have been refused (clause 29.8

**NEC Contracts**

Pritchard points out that, similar to FIDIC and JBCC, the New Engineering Contract (NEC)
is another standardised set of contracts widely used in construction and engineering projects
internationally. “The current version is the NEC3 of June 2005 and the dispute resolution
mechanism contained therein differs somewhat from that of FIDIC and JBCC,” he states,
adding that NEC emanates from the UK.

NEC3 provides two options for dispute resolution and the choice of option is sometimes
determined by the application of certain UK legislation to the construction contract. Similarly to FIDIC and JBCC, the adjudicator’s decision is reviewable and may be referred to
a tribunal by a dissatisfied party to make a final and binding decision. However, pending the
outcome of such further referral and review, the adjudicator’s decision is binding on the
parties and must be given effect.

**5.8 CONSTRUCTION DISPUTES PREVENTION STRATEGIES**

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.
5.8.1 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 a 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 & 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 & 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).

Steps that should be considered when allocating risk are the following:

- Identify the risks;
- Determine which risks can be insured;
- Determine which party can most easily and economically obtain cover for insurance risks;
- Determine which party is best able to control and minimize the risks which cannot be insured; and
- 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 workshop, 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, and submittals. 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 mind set 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 programme are described as follows:

- The tender and contract documents must state that partnering principles will be applied;
- The top people in each company must take the initiative and lead by example;
- The initial partnering meeting, or workshop must be properly planned and conducted;
- The partnering agreement must be negotiated and signed by all the companies who are engaged on the project;
- The agreement must state whether the claim notification procedures in the contract are still required; and
- 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 teamwork, 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 insurability, 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 favours 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 & 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 proactive in anticipating and addressing potential or actual problems.
5.9 LESSONS LEARNT

Based on the literature review of the South African construction industry, factors causing construction disputes were shown to be discrepancies in the contract document; incomplete drawings and specifications; suspension of work and also failure to understand contracts; incorrectly bid or price the works and lack of communication. This is an indication that South African construction industry is not unique compared with global trends in terms of causes of disputes in their projects.

According to Bvumbwe and Thwala (2011), ADR is used to a certain extent in the South African construction industry and mediation, negotiations and arbitration are frequently used in their study to resolve construction dispute in the construction industry. Therefore, the study conducted by Maiketso and Maritz (2012) concurred with that of Bvumbe and Thwala (2011), namely that there is a serious challenge of a lack of knowledge about ADR in the South African construction industry.

According to the study conducted by Maiketso and Maritz (2012), South Africans are challenged by a lack of knowledge and understanding of adjudication. According to their study adjudication is best way to resolve construction disputes.

This chapter also revealed confused usage of the basic terms: conflict, claim and dispute. The definition of a dispute by Kumaraswarmy 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.

5.10 CONCLUSION

The chapter has shown the ways in which dispute, in all its forms, can arise in a normal constructional project. The client failed to be honest in dealing with the contractor and allowed dispute to grow rather than deal with them. It cannot be repeated often enough that record keeping is the single most effective method of preventing a conflict from turning into dispute. If facts can be established early, the disputes will be more manageable. In South
African construction industry, construction projects are increasingly more complex, with complex contract documents which result in disputes most of the time. Hence disputes have become an inherent feature of the construction industry. Moreover, Adjudication has recently been introduced into the four CIDB-endorsed forms of contract (JBCC, GCC, FIDIC and NEC) as the standard method of dispute resolution (Maikutso & Maritz, 2012). The South African construction industry is more familiar with the forms of dispute resolution, namely mediation, arbitration, negotiations and litigation. Furthermore, causes of disputes and how to deal with dispute in construction project by using alternative dispute resolution was discussed.
CHAPTER SIX

RESEARCH METHODOLOGY

6.1 INTRODUCTION
This chapter of the research describes the research methodology used in carrying out this study. The geographical area where the study was conducted, the study design and population sample are also described. Likewise, the instrument used in collecting the data, including methods implemented to maintain legitimacy and trustworthiness of the instrument are described in order to carry out the assessment of the causes, effects, prevention strategies, construction contracts and methods of minimising construction project disputes in Gauteng, South Africa.

6.2 RATIONAL OF THE STUDY
The rationale of this study is to investigate the dominant causations and effects of disputes in the construction industry as this has become an endemic feature and secondly, to search for the most effective way to resolve disputes, in order to minimize the occurrence of disputes in projects, because they are the shortest cut to a project disaster. Furthermore, the study contributes to the body of knowledge on the subject of construction dispute resolutions using the Gauteng Province of South Africa as a case study.

6.3 RESEARCH APPROACH AND DESIGN
The quantitative approach was adopted in the study. Burns and Grove (1993:777) define quantitative research as a formal, objective, systematic process to describe and test relationships and examine causes and effects interactions among variables. However, Polit and Hungler (1993:148) state that a quantitative research is a survey to obtain information from a sample of people by means of self-report, that is, the people respond to a sequence of questions posed to them by the researcher. Therefore, in this study the information was collected through a well-structured questionnaire distributed to the respondents by the researcher.

A descriptive survey was selected because it gives an accurate account of the characteristics, for example, behaviour, opinions, abilities, beliefs and knowledge of a particular individual,
situation or group. This method was chosen to meet the objectives of this study, namely to identify the causes of disputes in the South African construction industry and the effects of disputes, further, identifying the measures of resolving these disputes in construction projects.

6.4 RESEARCH AREA
The study was executed in the Gauteng Province, South Africa. I targeted all the construction professionals who are working on projects around the area and all professionals who have worked on projects in the targeted area. This included the engineers, construction manager’s project managers. Quantity surveyors, architects and other construction professionals involved in the construction industry in Gauteng.

Map 6.1: Map of Gauteng Province, South Africa
6.5 TARGET POPULATION
A population is the total of all the individuals who have certain characteristics and are of interest to the researcher in meeting the criteria for inclusion in a study (Burns & Grove, 1993:779).

The target population in this study were architects, quantity surveyors, engineers, construction managers, project managers, planners and other construction professional and team players. Who are currently working in project around the Gauteng province, South Africa. This was accomplished with the aid of a well-structured questionnaires distributed to the respondents who are professionals in the field of construction in South Africa.

6.6 SAMPLE
There are two major groups of sampling strategy in the social science: probability sampling and purposive sampling. Probability sampling techniques are generally used in quantitative research (Teddlie & Yu, 2007:77).

The purposive-random sampling was adopted in this study because it gave all the participants an equal of chance to be selected. The participants were selected on the same criteria, namely that they must be or were once involved in projects in or around the Gauteng Province, South Africa.

6.7 DATA COLLECTION
In this study a questionnaire was used to collect the primary data. The questionnaire was designed and developed according to the problems that were revealed by literature and also based on construction industry reports. Two instruments were used to distribute the questionnaires, namely through emails and hand delivery.

6.8 INSTRUMENT OF DATA COLLECTION
A questionnaire was chosen for this research as a means of the data collection instrument. A questionnaire is a printed self-report form designed to draw information’s that can be obtained through the written responses of the subject. According to Burns and Grove (1993:368), information obtained through a questionnaire is similar to that obtained by an interview, but the questions tend to have less depth. Data was collected with the aid of a
questionnaire to evaluate the causes and, effects of construction project disputes in Johannesburg, South Africa, as well as methods of minimising them.

The questionnaires were designed in English as all the respondents are educated construction professionals; therefore, they could read and answer the questions. The respondents were assured of the anonymity of their responses.

<table>
<thead>
<tr>
<th>Survey responses</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire sent out</td>
<td>140</td>
</tr>
<tr>
<td>Questionnaire received back</td>
<td>104</td>
</tr>
<tr>
<td>Usable questionnaire</td>
<td>104</td>
</tr>
<tr>
<td>Usable response rate (%)</td>
<td>74%</td>
</tr>
</tbody>
</table>

The collected data from the respondents was then gutted and screened before analysis could take place. The data was then passed on a statistical package for social sciences (SPSS) for frequency analysis.

6.9 PERIOD OF COLLECTION
The researcher collected the data during the period of October 2016.

6.10 CONSISTENCY
An internal consistence check was conducted using the consistency and reliability statistic measure of the Cronbach's alpha. According to Tavakol and Dennick (2011: 53), the Cronbach’s alpha measures the internal consistency of a test or scale; it describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. The current study adopted the Cronbach's alpha to check internal consistence. Gliem and Gliem (2003: 87) state that an alpha of 0.8 is probably a reasonable goal. George and Mallery (2003) further note that a value of the Cronbach's alpha above 0.7 is acceptable. Hence the current study proceeded with analysis as the internal consistence tests revealed that the Cronbach's alpha was within the acceptable values, hence all items in the study measured the same concept and all the items were inter-related.
6.11 DATA ANALYSIS
The questionnaires were analyzed using basic descriptive statistics. The responses were grouped according to the major categories of the questionnaire sections. Therefore, charts, graphs and tables were applied to examine the data.

6.12 LIMITATION OF THE STUDY
The researcher had set the following boundaries for the study: Students studying towards a construction-related qualification were not included only professionals were involved in the study; only architects, quantity surveyors, engineers, project managers, construction managers and other construction professionals took part in the study. Moreover, no interviews were performed in this study. The study only concentrated on literature relating to construction disputes and papers written on the same topic.

6.13 ETHICAL CONSIDERATION
For the purpose of this study certain ethical issues were considered regarding the participants; the protection of participants; in this study was imperative; the desire to participate in the study depended upon the participant's willingness to share his or her experience; the confidentiality of participants was vital and all information contributed by participants was acknowledged and cited. A written cover letter of permission to carry out this research study was obtained from the University of Johannesburg, Department of Construction Management and Quantity Surveying, Doornfontein Campus and this was attached to the sent out questionnaires. Anonymity and confidentiality were maintained throughout the study.

6.14 CONCLUSION
In this chapter, the research methodology used for the study was described, including the population, sample, data collection tools as well as approaches used to ensure ethical standards as well as why questionnaires were adopted for the research. The next chapter of this study presents the findings and analysis of the data.
CHAPTER SEVEN

QUESTIONNAIRE SURVEY RESULTS

7.1 INTRODUCTION
In this chapter, the data was analysed, interpreted and presented in order to achieve the aims and objectives of the study. Dealt with the causes of construction dispute according to its nature of occurrence during the construction process which and to identify its impact on client’s organizations. It also evaluate and determine the significance of each cause and impact of construction disputes on client’s organizations based on the point of views of major parties involved in construction process.

The data obtained from the structured questionnaires, which were circulated to the research respondents, namely, architects, quantity surveyors, engineers, construction managers, construction project managers, project managers and other professionals that were involved in construction projects in Gauteng Province, South Africa.

The analysis of the data and interpretation of the results were obtained from the questionnaires and this served as the basis of this quantitative data presentation. A total of 140 questionnaires were distributed, while 104 were completed and returned which reflects a 74 per cent response rate. The questionnaire was structured in sections. The first section the background information of the respondents; the second section dealt with looked at the causes of construction disputes in construction projects, and the effects of disputes in construction projects, while the third part of the section looked at the methods of resolving disputes, and strategies for preventing disputes in construction projects.

7.2 DATA ANALYSIS
The questionnaire contained statements on diverse variables being investigated. Responses to some statements were in the form of a five-point Likert scale, where 1 = To no extent (NE), 2 = To a small extent (SE), 3 = To a moderate extent (ME), 4 = To a large extent (LE) and 5 = To a very large extent (VE). The completed questionnaires were collected from the respondents and checked to ensure they were usable before being processed further. Since the quantitative data was pre-coded by listing different numerical codes against different responses, transforming the data format from textual to numerical was done by coding and
inputting data on SPSS so as to enable analysis using the relevant statistical techniques as also used by (Henn, Weinstein, and Foard 2006:203). Furthermore, other likert scales used were: 1= Extremely unlikely (EU), 2 = Unlikely, 3= Neutral (N) , 4= Likely (L) and Extremely likely (EL) and Very poor (VP), Poor (P) , Average (V) ,Good (G) and Excellent (E). The five-point scale was transformed to a mean item score (MIS) for each of the factors as assessed by the respondents, Also the chi-square was used to measure the internal consistency of the items and to compare the observed data with data that could expected to be obtained in accordance to a specific hypothesis. Following the mathematical computations, the criteria are then ranked in descending order of their relative importance index (from the highest to the lowest).

7.2.1 BACKGROUND INFORMATION OF RESPONDENTS

Figure 7.1 revealed that out of the 104 respondents, 68.3 per cent were male, while 31.7 per cent were female

![Figure 7.1: Respondents gender](image)

Findings relating to the respondents’ age group as shown in Figure 7.2 revealed that 7.7 per cent of the respondents were in the age group of 21-25 years old, 25 per cent of the respondents were in the age group 26-30 years old, 22.1 per cent were in the age group 31-35 years old, 21.2 were in the age group 36 - 40 years old, 11.5 per cent of the respondents were in
the age group 41-45 years old, 6.7 per cent were in the age group 46-50 years old, 1.9 per cent of the respondents were 51-55 years and 3.8 per cent of the respondents were 55 years and older.

Figure 7.2: Respondents’ age group

Figure 7.3 shows the respondents’ ethnicity, it reveals that 45.2 per cent of the respondents were black, 32.7 per cent were white, 11.5 per cent were either Indian or Asian and 10.6 per cent of the respondents were coloured.
Figure 7.3: Respondents ethnicity
Figure 7.4 represents the professional qualification of the sampled respondents and it reveals that 22.1 per cent were quantity surveyors, 21.2 per cent were engineers, 18.3 per cent were project managers, 12.5 per cent were construction managers, 11.5 per cent were architects, 3.8 per cent were construction project managers and 10.6% selected others, which included an estimator, project planners, and quality managers.

![Bar chart showing professional qualifications](chart)

Figure 7.4: Respondents professional qualification

Figure 7.5 represents the educational qualifications of the respondents. It showed that 50 per cent of the respondents had bachelor’s degrees, 31.7 per cent had diplomas, 12.5 per cent of the respondents had master’s degrees, 2.9 per cent of the respondents had other qualifications including MBAs and 1.9 per cent of the respondents had only certificates.
Also, figure 7.6 shows respondents’ current institution and it revealed that 52.9 per cent of the respondents were employees of contractors, 19.2 per cent of the respondents were employees of consultants and 16.3 per cent were client employee, 9.6 per cent were employed by the government/public sector and 1.9 per cent of the respondents were self-employed.
Figure 7.6: Respondents’ current institution

Figure 7.7 reveals that 22.8 per cent of the respondents most of the disputes are caused by the contracts conditions, 20.8 per cent agreed that these disputes are caused by construction process, 19.7 per cent attested that these disputes were purely based on a time based problem and another 19.7 per cent said the disputes were a client based problem and lastly 17 per cent ascribed disputes to the deficiencies in the design.

Figure 7.7: What are the disputes related to

Figure 7.8 reveals the most dominant disputes in the construction industry, 41.3 per cent being the financial matters, and 36.5 per cent being time related causes of disputes, 15.4 per cent identified the standard of workmanship and 6.7 per cent believed disputes were the results of relationship/people conflicts in the industry.
Figure 7.8: Most dominant dispute

Figure 7.9 shows whether the have been changes in disputes in the last three years, with 52.9 per cent agreeing that there has been an increased in the number of disputes, 27.9 per cent no change in the number of disputes, and 19.2 per cent revealed that there has been a decrease in the number of disputes over the past three years.

Figure 7.10 represents the number of changes in disputes over the past three years, with 52.9 per cent reporting no change in the type of disputes, while 36.5 per cent of the respondents
said there is an increased in the types of disputes. However, 12.5 per cent were of the opinion that there has been a decrease in the types of disputes.

![Pie chart showing changes in types of disputes](image)

**Figure 7.10: Changes in types of disputes over the past three years**

### 7.2.2. SECTION B: CAUSES OF DISPUTES IN CONSTRUCTION PROJECTS

The respondents were asked, based on their experience, which factor has been the cause of disputes in construction projects in Gauteng, South Africa. The causes of disputes were broken down into three categories, namely, client related causes of disputes, consultant-related causes of disputes and contractor-related causes of disputes. Under the client-related causes of disputes disagreements/ambiguities in the contract document was ranked first with a mean score of 3.73, standard deviation (SD) = 1.143, and chi-square $X^2 = 0.273$; Reluctant to check for clarity on construction documents was ranked second with a mean score of 3.43, standard deviation (SD) = 1.222 and chi-square $X^2 = 0.388$; poor management was ranked third with a mean score of 3.44, SD = 1.221 and chi-square $X^2 = 0.324$; poor supervision was ranked the fourth with a mean score of 3.44, SD = 1.18 and chi-square $X^2 = 0.182$; and failure to respond in a timely manner and failure to appoint project manager were ranked the least with the mean score of 3.2 & 3.13, SD = 0.896 & 1.259 and chi-square $X^2 = 0.317$ & 0.216 respectively (Table 7.1).
Table 7.1: Causes of dispute: client-related

<table>
<thead>
<tr>
<th>CAUSES OF DISPUTES - CLIENT RELATED</th>
<th>$\sigma$X</th>
<th>$\bar{x}$</th>
<th>R</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagreements/ambiguities in contract documents.</td>
<td>1.143</td>
<td>3.73</td>
<td>1</td>
<td>0.273</td>
</tr>
<tr>
<td>Reluctant to check for clarity on construction documents</td>
<td>1.222</td>
<td>3.47</td>
<td>2</td>
<td>0.427</td>
</tr>
<tr>
<td>Poor management</td>
<td>1.221</td>
<td>3.44</td>
<td>3</td>
<td>0.324</td>
</tr>
<tr>
<td>Poor Supervision</td>
<td>1.18</td>
<td>3.43</td>
<td>4</td>
<td>0.182</td>
</tr>
<tr>
<td>Poor communication between team members.</td>
<td>1.062</td>
<td>3.37</td>
<td>5</td>
<td>0.411</td>
</tr>
<tr>
<td>Poor coordination efforts</td>
<td>1.089</td>
<td>3.31</td>
<td>6</td>
<td>0.335</td>
</tr>
<tr>
<td>Lowest price mentality in engagement of contractors and designers.</td>
<td>1.072</td>
<td>3.31</td>
<td>7</td>
<td>0.146</td>
</tr>
<tr>
<td>The lack of team spirit among the participants.</td>
<td>1.199</td>
<td>3.31</td>
<td>8</td>
<td>0.182</td>
</tr>
<tr>
<td>Reluctant to check for constructability</td>
<td>0.89</td>
<td>3.25</td>
<td>9</td>
<td>0.261</td>
</tr>
<tr>
<td>Inadequate tracking system for request of information.</td>
<td>1.134</td>
<td>3.23</td>
<td>10</td>
<td>0.367</td>
</tr>
<tr>
<td>Reluctant to check for completeness on construction documents</td>
<td>0.982</td>
<td>3.21</td>
<td>11</td>
<td>0.388</td>
</tr>
<tr>
<td>Failure to respond in timely manner.</td>
<td>0.896</td>
<td>3.2</td>
<td>12</td>
<td>0.317</td>
</tr>
<tr>
<td>Failure to appoint a project manager</td>
<td>1.259</td>
<td>3.13</td>
<td>13</td>
<td>0.216</td>
</tr>
</tbody>
</table>

$\sigma$X = Standard deviation; $\bar{x}$ = Mean; R = Rank; $X^2$ = chi square

Table 7.2 represents the respondent’s consultant - related causes of disputes. Incompleteness of drawings was ranked first with a mean score of 3.74, SD = 1.239 and $X^2 = 0.737$; incompleteness of specifications was ranked the second with a mean score of 3.61, SD = 1.202 and $X^2 = 0.758$; late information delivery was ranked third with a mean score of 3.56, SD = 1.060 and $X^2 = 0.451$, specification oversight was ranked fifth with a mean score of 3.45, SD = 1.140 and $X^2 = 0.600$; and over design was ranked the least with a mean score of 3.21, SD = 1.180 and $X^2 = 0.470$. 
Table 7.2: Causes of dispute; Consultant - related

<table>
<thead>
<tr>
<th>CAUSES OF DISPUTES - CONSULTANT RELATED</th>
<th>σX</th>
<th></th>
<th>R</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompleteness of drawings</td>
<td>1.239</td>
<td>3.74</td>
<td>1</td>
<td>0.737</td>
</tr>
<tr>
<td>Incompleteness of specification</td>
<td>1.202</td>
<td>3.61</td>
<td>2</td>
<td>0.758</td>
</tr>
<tr>
<td>Late information delivery</td>
<td>1.06</td>
<td>3.56</td>
<td>3</td>
<td>0.451</td>
</tr>
<tr>
<td>Failure to fulfil agreed responsibilities</td>
<td>1.088</td>
<td>3.51</td>
<td>4</td>
<td>0.385</td>
</tr>
<tr>
<td>Specification oversight</td>
<td>1.14</td>
<td>3.45</td>
<td>5</td>
<td>0.600</td>
</tr>
<tr>
<td>Design oversight</td>
<td>1.113</td>
<td>3.44</td>
<td>6</td>
<td>0.417</td>
</tr>
<tr>
<td>Underestimation</td>
<td>1.134</td>
<td>3.38</td>
<td>7</td>
<td>0.445</td>
</tr>
<tr>
<td>Over design</td>
<td>1.18</td>
<td>3.21</td>
<td>8</td>
<td>0.470</td>
</tr>
</tbody>
</table>

σX = Standard deviation;  \bar{x} = Mean;  R = Rank;  X² = Chi square

Table 7.3 below represent respondents’ contractor related causes of disputes, delay/suspension of works was ranked first with a mean score of 3.78, SD = 1.123 and chi-square  X² = 0.291; failure to execute changes of works was ranked second with a mean score of 3.53 ,SD =1.114 and X² = 0.324; misinterpretation of the contract agreement was ranked third with a mean score of 3.47,SD =1.414 and X² = 0.580; inadequate supervision of contractors was ranked the firth with a mean score of 3.32 ,SD = 0.948 and chi-square X² = 0.524; reluctance to seek clarification was ranked ninth with a mean score of 3.02 ,SD = 1.070 and chi-square X² = 0.121; inadequate CPM scheduling was ranked least with a mean score of  2.90, SD = 1.093 and chi - square X² = 0.259.
Table 7.3: Causes of dispute: contractor-related

<table>
<thead>
<tr>
<th>CAUSES OF DISPUTES - CONTRACTOR RELATED</th>
<th>$\sigma X$</th>
<th>$\bar{x}$</th>
<th>R</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay/suspension of works</td>
<td>1.123</td>
<td>3.78</td>
<td>1</td>
<td>0.291</td>
</tr>
<tr>
<td>Failure to execute the changes of works</td>
<td>1.114</td>
<td>3.53</td>
<td>2</td>
<td>0.324</td>
</tr>
<tr>
<td>Misinterpretation of the contract agreement</td>
<td>1.414</td>
<td>3.47</td>
<td>3</td>
<td>0.580</td>
</tr>
<tr>
<td>Failure to correctly bid or price the works</td>
<td>1.35</td>
<td>3.44</td>
<td>4</td>
<td>0.481</td>
</tr>
<tr>
<td>Inadequate supervision of contractors</td>
<td>0.948</td>
<td>3.32</td>
<td>5</td>
<td>0.524</td>
</tr>
<tr>
<td>Failure to keep an updated programme plan</td>
<td>1.177</td>
<td>3.2</td>
<td>6</td>
<td>0.332</td>
</tr>
<tr>
<td>Inadequate coordination of contractors</td>
<td>1.113</td>
<td>3.18</td>
<td>7</td>
<td>0.630</td>
</tr>
<tr>
<td>Inadequate management of contractors</td>
<td>1.157</td>
<td>3.11</td>
<td>8</td>
<td>0.580</td>
</tr>
<tr>
<td>Reluctance to seek clarification</td>
<td>1.07</td>
<td>3.02</td>
<td>9</td>
<td>0.121</td>
</tr>
<tr>
<td>Inadequate update requirements</td>
<td>1.161</td>
<td>2.97</td>
<td>10</td>
<td>0.56</td>
</tr>
<tr>
<td>Inadequate CPM scheduling</td>
<td>1.093</td>
<td>2.9</td>
<td>11</td>
<td>0.259</td>
</tr>
</tbody>
</table>

$\sigma X$ = Standard deviation; $\bar{x}$ = Mean; R = Rank; $X^2$ = Chi Square

7.2.3 SECTION C: EFFECTS OF DISPUTES IN CONSTRUCTION PROJECTS IN GAUTENG, SOUTH AFRICA

The respondents were asked to indicate the extent of possible outcomes or effects of a construction dispute in construction projects. Most of the respondents revealed that time overruns had a major effect on construction projects as it was ranked first with a mean score of 3.84, SD = 1.025 and chi-square $X^2 = 0.317$; loss of productivity was ranked second with a mean score of 3.83, SD = 1.019 and chi-square $X^2 = 0.400$; cost overruns was ranked third with a mean score of 3.78, SD = 1.132 and chi-square $X^2 = 0.317$; reworks was ranked the fourth with a mean score of 3.73, SD = 1.045 and chi-square $X^2 = 0.526$; loss of profitability was ranked fifth with a mean score of 3.69, SD = 1.089 and chi-square $X^2 = 0.473$; loss of
professional reputation was ranked the tenth with a mean score of 3.49, SD = 1.123 and chi-square $X^2 = 0.616$; loss of company reputation was ranked eleventh with a mean score of 3.34, SD = 1.062 and chi-square = 0.726 and litigation was ranked the least with a mean score of 3.31, SD = 1.0257 and chi-square $X^2 = 0.318$ (Table 7.4).

Table 7.4: Effects of construction disputes

<table>
<thead>
<tr>
<th>EFFECTS OF DISPUTES</th>
<th>$\sigma X$</th>
<th>$\bar{x}$</th>
<th>R</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time overruns</td>
<td>1.025</td>
<td>3.84</td>
<td>1</td>
<td>0.317</td>
</tr>
<tr>
<td>Loss of productivity</td>
<td>1.019</td>
<td>3.83</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>Cost overruns</td>
<td>1.132</td>
<td>3.78</td>
<td>3</td>
<td>0.317</td>
</tr>
<tr>
<td>Reworks</td>
<td>1.045</td>
<td>3.73</td>
<td>4</td>
<td>0.526</td>
</tr>
<tr>
<td>Loss of profitability</td>
<td>1.089</td>
<td>3.69</td>
<td>5</td>
<td>0.473</td>
</tr>
<tr>
<td>Additional expenses in management and administration</td>
<td>1.025</td>
<td>3.63</td>
<td>6</td>
<td>0.522</td>
</tr>
<tr>
<td>Loss of business viability</td>
<td>1.084</td>
<td>3.6</td>
<td>7</td>
<td>0.446</td>
</tr>
<tr>
<td>Relocation cost (men, equipment and material)</td>
<td>1.093</td>
<td>3.6</td>
<td>8</td>
<td>0.567</td>
</tr>
<tr>
<td>Loss of respect between parties</td>
<td>1.079</td>
<td>3.52</td>
<td>9</td>
<td>0.420</td>
</tr>
<tr>
<td>Loss of professional reputation</td>
<td>1.123</td>
<td>3.49</td>
<td>10</td>
<td>0.428</td>
</tr>
<tr>
<td>Loss of company reputation</td>
<td>1.062</td>
<td>3.37</td>
<td>11</td>
<td>0.569</td>
</tr>
<tr>
<td>Litigation</td>
<td>1.025</td>
<td>3.31</td>
<td>12</td>
<td>0.318</td>
</tr>
</tbody>
</table>

$\sigma X$ = Standard deviation; $\bar{x}$ = Mean; R = Rank; $X^2$ = Chi square

7.2.4 SECTION D: METHODS TO RESOLVE DISPUTES IN CONSTRUCTION PROJECTS

Respondents were asked to rank an effective and efficient dispute resolution method that could lead to a successful dispute resolution method in construction projects in South Africa. Most respondents ranked arbitration the highest with a mean of 3.72, standard deviation (SD) = 1.0378 and chi-square $X^2 = 0.662$; negotiations were ranked second with a mean score of 3.42, SD = 1.021 and chi-square $X^2 = 0.071$; expert determination was ranked third with a mean score of 3.35, SD = 1.003 and chi-square $X^2 = 0.302$; litigation was ranked fourth with a mean score of 3.30, SD = 1.069 and chi-square $X^2 = 0.629$; mediation was ranked fifth with a mean score of 3.29, SD = 0.910 and chi-square $X^2 = 0.285$; dispute review board was ranked sixth with a mean score of 3.31, SD = 0.860 and chi-square $X^2 = 0.343$; and mini-trial was ranked last with a mean score of 2.78, SD = 1.070 and chi-square $X^2 = 0.422$ (Table 7.5).
Table 7.5: Methods to resolve disputes

<table>
<thead>
<tr>
<th>METHODS TO RESOLVE DISPUTES</th>
<th>σX</th>
<th>x̅</th>
<th>R</th>
<th>X^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbitration</td>
<td>1.038</td>
<td>3.72</td>
<td>1</td>
<td>0.662</td>
</tr>
<tr>
<td>Negotiation</td>
<td>1.021</td>
<td>3.42</td>
<td>2</td>
<td>0.071</td>
</tr>
<tr>
<td>Expert determination</td>
<td>1.003</td>
<td>3.35</td>
<td>3</td>
<td>0.302</td>
</tr>
<tr>
<td>Litigation</td>
<td>1.069</td>
<td>3.3</td>
<td>4</td>
<td>0.692</td>
</tr>
<tr>
<td>Mediation</td>
<td>0.91</td>
<td>3.29</td>
<td>5</td>
<td>0.285</td>
</tr>
<tr>
<td>Dispute review board</td>
<td>0.86</td>
<td>3.31</td>
<td>6</td>
<td>0.343</td>
</tr>
<tr>
<td>Dispute resolution advisor</td>
<td>0.982</td>
<td>3.31</td>
<td>7</td>
<td>0.322</td>
</tr>
<tr>
<td>Adjudication</td>
<td>0.965</td>
<td>3.22</td>
<td>8</td>
<td>0.478</td>
</tr>
<tr>
<td>Hybrid alternative dispute resolution</td>
<td>1.083</td>
<td>3.17</td>
<td>9</td>
<td>0.395</td>
</tr>
<tr>
<td>Mini-trial</td>
<td>1.07</td>
<td>2.78</td>
<td>10</td>
<td>0.422</td>
</tr>
</tbody>
</table>

σX = Standard deviation; x̅ = Mean; R = Rank; X^2 = Chi square

7.2.5 SECTION E: CONSTRUCTION CONTRACTS TO RESOLVE DISPUTES

The various contracts used in the South African construction projects are presented in the table below. Respondents were asked to rank the different contracts according to which contracts cover dispute resolution and avoidance in the South African construction industry. FIDIC was ranked first with a mean score of 3.61, SD = 0.914 and chi-square X^2 = 0.233; NEC was ranked second with a mean score of 3.42, SD = 0.738 and chi-square X^2 = 0.182; GCC was ranked the third with a mean score of 3.32, SD =0.777 and chi-square X^2 = 0.078 and JBCC was ranked the least with a mean score of 3.16, SD = 0.724 and chi-square X^2 = 0150.

Table 7.6: Construction contracts used in SA projects

<table>
<thead>
<tr>
<th>Construction contracts used in SA</th>
<th>σX</th>
<th>x̅</th>
<th>R</th>
<th>X^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIDIC</td>
<td>0.914</td>
<td>3.61</td>
<td>1</td>
<td>0.233</td>
</tr>
<tr>
<td>NEC</td>
<td>0.738</td>
<td>3.42</td>
<td>2</td>
<td>0.182</td>
</tr>
<tr>
<td>GCC</td>
<td>0.777</td>
<td>3.32</td>
<td>3</td>
<td>0.078</td>
</tr>
</tbody>
</table>
Respondents were asked about strategies to prevent construction disputes in construction projects in South Africa. The majority of the respondents ranked facilitation of negotiations as the highest with a mean score of 3.79, standard deviation (SD) = 0.942 and chi-square $X^2 = 0.792$, early consideration, allocation of project risks and risk assessment were ranked second with a mean score of 3.7, SD = 0.954 and chi-square $X^2 = 0.536$; team building and partnering was ranked sixth with a mean score of 3.54, SD = 1.088 and chi-square = 0.783; increased education was ranked eighth with a mean score of 3.44, SD = 1.032 and chi-square = 0.793; lean construction and supply chain management were ranked least with a mean score of 3.21 & 3.18, SD = 0.900 & 0.856 and chi-square = 0.790 and 0.794 respectively (Table 7.7).

### Table 7.7: Strategies to Prevent Construction Disputes

<table>
<thead>
<tr>
<th>STRATEGIES TO PREVENT CONSTRUCTION DISPUTES</th>
<th align="right">$\sigma$X</th>
<th align="right">$\bar{x}$</th>
<th>R</th>
<th align="right">$X^2$</th>
</tr>
</thead>
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<td>1</td>
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</table>

σX = Standard deviation; \( \bar{x} \) = Mean; R = Rank; \( X^2 \)= Chi square

7.3 CONCLUSION
Data obtained from the well-structured questionnaire sent out and completed by the architects, quantity surveyors, engineers, construction managers, construction project managers, project managers and other professionals who are involved in construction projects in Gauteng was presented and analysed in this chapter. The next chapter will focus on the discussion of the findings from the research analysis in relation to the research questions and the research objectives that were formulated in Chapter one. The purpose for this is to establish whether the research objectives were met.
CHAPTER 8
DISCUSSION OF FINDINGS

8.0 INTRODUCTION
Chapter 8 discusses the findings from the research analysis in relation to the research questions. The findings are further discussed in relation to the reviewed literature in Chapters 2, 3, 4 and 5. This is with the view to ascertaining whether the defined research problems have been ‘answered’ from the findings analysis in Chapter 7. Results have been presented in relation to the research question and the relevant data as required.

8.1 BACKGROUND INFORMATION
This section discusses the profile of the respondents with regard to their demographic attributes, namely gender, race, age group, professional qualification, years of experience, highest qualification and type of employer.

8.1.1 BACKGROUND INFORMATION RESULTS
From the 104 usable questionnaires, the following information was gathered: of all the respondents, 68.3 per cent were male, while 31.7 per cent were female. Findings relating to the respondents age group revealed that the majority of the respondents were between the ages of 26 to 30 years at 35 per cent, followed by 21.20 per cent of the respondents who were between the ages of 31 to 35 years of age, while respondents between the ages of 46 to 50 years of age were the smallest group at 1.90 per cent. The findings further revealed that most of the respondents (45.2%) were from African; 32.7 per cent were white; 10.6 per cent were coloured and the Indians/Asians were the least at 11.5 per cent. Furthermore , the respondents results revealed that 50 per cent had bachelor’s degrees,31.74 per cent possessed diplomas; 12.5 per cent had a Master’s degree and 1.95 had certificates . It was further discovered that 52.9 per cent of the respondents were currently working for contractors ; 19.2 per cent were working for consultants;16.3 per cent were on the client side , 9.6 per cent were working for the government and only 1.9 per cent of the respondents were with other institutions” these include self-employed .

Approximately 22.1 per cent were quantity surveyors, 21.2 per cent were engineers, 18.3 per cent were project managers, 12.5 per cent were construction managers, 11.5 per cent were architects , 10.6 per cent included estimators, quality managers and planners, and 3.8 per cent were construction project managers. Findings further revealed that 41.3 per cent of the
respondents were currently experiencing disputes relating to financial matters, 36.5 per cent were experiencing time related disputes; 15.4 per cent were experienced standard workmanship and 6.7 per cent were experiencing disputes caused by relationships and people conflicts in the industry.

A further 52.9 per cent of the respondents said there has been an increase in the number of disputes over the past three years, 27.9 per cent said there has not been a change in number over the past three years while 19.2 per cent said there has been a decrease in the number of disputes. The results also showed that 51 per cent of the respondents said there has not been a change in the types of disputes over the past three years, with 36.5 per cent saying there has been an increase in the types of disputes in the past three years while 12.5 per cent of the respondents said there has been a decrease in the number of disputes over the past three years.

8.2 RESEARCH QUESTION 1

- What are the dominant causes of disputes in public sector infrastructure projects?

8.2.1 FINDINGS

According to the findings from the survey, the dominant causes of construction disputes in construction projects in Gauteng, South Africa were as follows:

The dominant causes were grouped into three categories, client-related, consultant-related and contractor-related causes of disputes, client-related causes ranked disagreements/ambiguities in a contract documents was ranked the highest with a mean = 3.73, SD = 1.143 and $X^2 = 0$. Reluctant to check for clarity on construction documents was ranked second with a mean score of 3.47, SD = 1.143 and $X^2 = 0.427$. Poor management was ranked third with a mean score of 3.44, SD = 1.221 and $X^2 = 0.324$. Poor supervision was ranked fourth with a mean score of 3.43, SD = 1.18 and $X^2 = 0.182$. Poor communication between team members was ranked firth with a mean score of 3.37, SD = 1.062 and $X^2 = 0.411$. Failure to respond timeously was ranked twelfth with a mean score of 3.21, SD = 0.896 and $X^2 = 0.317$ and failure to appoint a project manager was ranked the least with a mean score of 3.13, SD = 1.259 and $X^2 = 0.216$. These results are in agreement with a studies conducted by Rarooqui and Azhar (2014) and Zaghoul and Hartman, (2003), namely, that ambiguities in the contract play a significant role in dispute causation. The study of Bristow and Vasilopoulos (1995)
revealed that the primary causes of disputes includes unrealistic expectations by parties; ambiguous contract documents; poor communications between project participants; a lack of team spirit; and failure of participants to deal promptly with changes and unexpected outcomes. These agree with the findings of the current study.

Incompleteness of drawings was ranked first under the consultant-related causes of disputes with a mean score of 3.74, SD = 1.239 and X²= 0.737; incompleteness of drawings was ranked second with a mean score of 3.61, SD = 1.202 and X²= 0.758. Late information delivery was ranked third with the mean score of 3.56, SD = 1.06 and X²= 0.451. Failure to fulfill agreed responsibilities was ranked the fourth with a mean score of 3.51, SD = 1.088 and X² = 0.385. Specification oversight was ranked fifth with a mean score of 3.45 ,SD =1.14 and X² = 0.600. Design oversight was ranked sixth with a mean score of 3.44,SD =1.113 and X² =0.1417. Underestimation was ranked seventh with a mean score of 3.38,SD = 1.134 and X² = 0.445 and over design was ranked least with a mean score of 3.21 ,SD = 1.18 and X² = 0.470. These results are in agreement with those of Kumaraswamy (1997) which revealed that variations due to site conditions; variations due to client changes; variations due to design errors; unforeseen ground conditions; ambiguities in contract documents; inaccurate design information; inadequate design information; slow client response to decision; poor communication; unrealistic time targets are the major causes of consultant-related causes of disputes. Jordan (1997) also found that design errors, unavailability of information, inadequate or incomplete specification and poor quality work were the major causes of disputes in the consultant-related group.

The contractor-related group comprises delay/suspension of works which was ranked the highest with a mean score of 3.78, SD = 1.123 and X²= 0.291. Failure to execute the changes of works was ranked second with the mean score of 3.53, SD = 1.114 and X² = 0.324. Misinterpretation of the contract agreement was ranked third with a mean score of 3.47, SD = 1.414 and X² = 0.580. Failure to correctly bid was ranked fourth with a mean score of 3.44, SD = 1.35 and X² = 0.481. Reluctant to seek clarification was ranked the ninth with a mean score of 3.02, SD = 1.07 and X²= 0.121 . These results are in agreement with those of Hewit (1991) namely that delays are a major contribution to causes of disputes, as well as Watts and Scrivener (1992) study also discovered that delays and failure to execute the changes of work are the most frequent sources of disputes. These findings are also in agreement with studies conducted by Semple et al (1993) and Kumaraswamy (1997) who
also found that misinterpretation of the contract agreement, failure to correctly bid or price the works were part of the causes of disputes.

8.3 RESEARCH QUESTION 2
- What are the effects of disputes in public infrastructure projects?

8.3.1 FINDINGS
The respondents were asked to indicate the extent of possible outcomes and effects of a construction dispute not resolved timeously. Most respondents revealed that time overruns were ranked first with a mean score of 3.84, SD = 1.025 and \( X^2 = 0.317 \). Loss of productivity was ranked second with a mean score of 3.83, SD = 1.019 and \( X^2 = 0.4 \). Cost overruns were ranked third with a mean score of 3.78, SD = 1.132 and \( X^2 = 0.317 \). Reworks were ranked forth with a mean score of 3.73, SD = 1.045 and \( X^2 = 0.526 \). Loss of profitability was ranked the firth with a mean score of 3.69, SD = 1.089 and \( X^2 = 0.473 \). Loss of company reputation and litigation were ranked the least with a mean score of 3.37 & 3.31, SD = 1.062 & 1.025 and \( X^2 = 0.569 \) and \( X^2 = 0.318 \) respectively.

According to research previously done, by other authors, As a result of issues arising in projects, conflict and disputes may occur, which can lead to the disruption of construction schedules, increased project costs, and even adversely influence relationships between project participants (Yiu & Cheung, 2004). If a dispute is not resolved promptly, it may escalate, and ultimately require litigation proceedings, which can be extremely costly for the parties concerned (Cheung et al., 2004). Moreover, Allen (2011) identified five effects of construction disputes as follows; project delays; changes in the contract coast leading to cost overrun; deterioration of relationships or bad relationships leading to friction; parties not getting information on time; and neglecting client’s needs. At project level, unresolved disputes can lead to programme delays, increase tension and can cause long-term relationships (Cheung & Suen, 2002).

8.4 RESEARCH QUESTION 3
- What are the most effective construction dispute resolution methods in use by the public sector?
8.4.1 FINDINGS

Respondents were asked to rank an effective and efficient dispute resolution method that could lead to a successful dispute resolution method in construction projects in South Africa. Most respondents ranked arbitration the highest with a mean of 3.72, standard deviation (SD) = 1.0378 and chi-square $X^2 = 0.662$; negotiations were ranked second with a mean score of 3.42, SD = 1.021 and chi-square $X^2 = 0.071$; expert determination was ranked third with a mean score of 3.35, SD = 1.003 and chi-square $X^2 = 0.302$; litigation was ranked fourth with a mean score of 3.30, SD = 1.069 and chi-square $X^2 = 0.629$; mediation was ranked fifth with a mean score of 3.29, SD = 0.910 and chi-square $X^2 = 0.285$; dispute review board was ranked sixth with a mean score of 3.31, SD = 0.860 and chi-square $X^2 = 0.343$ and mini-trial was ranked last with a mean score of 2.78, SD = 1.070 and chi-square $X^2 = 0.422$.

It is interesting to note that the findings from the current study differ significantly from the study done by Love et al. (2007) and Madden (2001) where mediation at 85 per cent is believed to produce successful outcomes in construction disputes. Furthermore, Finlay (1998) suggests that the mediation process is beneficial for the disputing participants and the industry because it produces acceptable result in a cost-efficient and timely manner. However, in the current study the respondents felt that arbitration is the best mechanism that can be used to resolve construction disputes, since there would be the certainty of an outcome and it would be binding.

8.5 RESEARCH QUESTION 4

What are the different contractual methods used for dispute avoidance and resolutions?

8.5.1 FINDINGS

Respondents were asked to rank the different contracts according to which contract covers dispute resolution and avoidance in the South African construction industry. FIDIC was ranked first with a mean score of 3.61, SD = 0.914 and chi-square $X^2 = 0.233$; NEC was ranked second with a mean score of 3.42, SD = 0.738 and chi-square $X^2 = 0.182$; GCC was ranked third with a mean score of 3.32, SD = 0.777 and chi-square $X^2 = 0.078$ and JBCC was ranked least with a mean score of 3.16, SD = 0.724 and chi-square $X^2 = 0.0150$.

According to Binnington (2015), South African Standard Forms of Contract still draw, to a large extent, on their English historical counterparts.

The FIDIC makes provision for the creation of a disputes adjudication board (DAB), which is an impartial and independent panel of one to three suitably qualified persons who may be
appointed either when a project begins (a standing DAB) or as and when disputes arise (an ad
hoc DAB). However, Clause 20.4 of FIDIC (Yellow and Red Book) is the primary
mechanism for dispute resolution and describes the procedures required for a claimant to
refer a dispute to the DAB. In an event of a party being dissatisfied with the DAB's decision,
a Notice of Dissatisfaction may be delivered within 28 days after having received the
decision. A second type of construction contract available is the local non-profit company
Joint Building Contracts Committee (JBCC) contract, which concentrates on the compilation
of current contract documentation with an equitable distribution of contractual risk in the

He states that the JBCC is similar to FIDIC and has issued its own set of standardised
construction contracts, of which the current revision is known as the 'JBCC Series 2000'.

"Clause 40 of the JBCC contains a mechanism for dispute resolution, which is similar to that
of FIDIC" “However, in terms of the JBCC, when a dispute arises, the party declaring the
dispute must notify the other party of the dispute and call on that party to resolve the dispute
within ten working days,” Pritchard explains hence, if the dispute is not resolved, it is
referred to adjudication or arbitration. Disputes referred to adjudication are governed by the
JBCC Adjudication Rules, which sets out the rules for the appointment and powers of the
adjudicator, the procedures followed in declaring a dispute and the determination of disputes.
Provisions similar to those of FIDIC apply in terms of a dissatisfied party being empowered
to refer the matter further to arbitration. The JBCC also allows for disputes to be referred to
mediation.

8.6 RESEARCH QUESTION 5
What are the best and appropriate prevention strategies to be developed to prevent the
occurrences of construction disputes in public sector infrastructure?

8.6.1 FINDINGS
Respondents were asked their opinions about strategies that could be developed to prevent
the occurrences of dispute. Most respondents ranked facilitating of negotiations as first with a
mean score of 3.79, SD = 0.942 and $X^2 = 0.792$, early consideration, allocation of project
risks and risk assessment were ranked second with a mean score of 3.70, SD = 0.954 and $X^2 =
0.536$, Communication of potential problems or claim at the earliest opportunity were ranked
third with a mean score of 3.67, SD = 1.038 and $X^2 = 0.785$. Team building and partnering was
ranked sixth with a mean score of 3.54, SD = 1.088 and $X^2 = 0.783$. Increased education was ranked the eighth with a mean score of 3.44, SD = 1.032 and $X^2 = 0.793$. Alliancing was ranked the least with a mean score of 3.23, SD = 0.988 and $X^2 = 0.794$. It is interesting to note that the results of the study conducted by Love et al. (2007) are in agreement with the findings from the current study. In the study done by Love et al. (2007), they emphasise that the industry has been repeatedly admonished and encouraged to embrace modern management concepts such as partnering and alliancing with an emphasis being placed on early involvement in the decision-making process by the key stakeholders including clients, contractors and building users to avoid dispute causation in construction projects.

In the study by Love et al. (2007), supply chain management was ranked the highest, whilst alliancing was ranked the highest as a strategy to reduce disputes in construction projects. They also state that the relatively recent emergence and rapid uptake of alliancing is testament to the movement towards the creation of dispute-averse relationships. The fundamental premise with respect to dispute avoidance is that the likelihood of disputes occurring will be significantly reduced if a pro-active project environment can be created in which change management is an acceptable tool. Whilst procurement methods such as alliancing are seen as being conducive to a creating a non-adversarial environment, that is not to say that co-operative relationships cannot be achieved in more traditional forms of contracting such as lump sum and design and construct.

8.7 CONCLUSION

The data obtained from the questionnaires as answered by the respondents on the causes and effects and methods of minimising construction disputes construction projects in Gauteng, South Africa, were presented and analysed in relation to the research questions. The data was also analysed in relation to the reviewed literature. The findings from the research analysis and results were able to address the research questions. In the next chapter, the conclusion and recommendations of the research are discussed in relation to the research objectives of the study.
CHAPTER 9
CONCLUSION AND RECOMMENDATIONS

9.0 INTRODUCTION

The aim of this research was to explore the dominant causes of disputes in construction projects, the effects of disputes in construction projects, and an effective construction dispute resolution method. In addition, the study set out to identify the different contractual methods used for dispute avoidance and resolution and to develop strategies to prevent dispute occurrences in public sector infrastructure project. In this chapter the conclusions and recommendations of the research study are presented and discussed in relation to the objectives of the study. The research objectives were as follows:

1. To evaluate the causes of disputes in public sector infrastructure projects;
2. To evaluate the effects of disputes in public sector infrastructure projects;
3. To evaluate the most effective construction dispute resolution in use by the public sector;
4. To identify the different contractual methods used for dispute avoidance and resolution; and
5. To identify and develop strategies to prevent dispute occurrences in public sector infrastructure projects.

9.1 RESEARCH OBJECTIVE 1

- To evaluate the causes of disputes in public sector infrastructure projects

9.1.1 FINDINGS

Literature revealed the dominant causes of construction disputes are client-related, comprising disagreements/ ambiguities in contract documents, reluctance to check for clarity on construction documents, poor management, poor supervision, poor communication between team members, poor coordination efforts, lowest price mentality in engagement of contractors and failure to respond in a timely manner were amongst the causes relating to the client. Consultant- related causes comprise incompleteness of drawings, incompleteness of specifications, late information delivery, failure to fulfil agreed responsibilities, specification oversight, design oversight, underestimation and over design.
Contractor-related causes comprises of delay/suspension of works, failure to execute the changes of works, Misinterpretation of the contract agreement, failure to correctly bid or price works, Inadequate supervision of contractors, failure to keep an updated programme plan, Inadequate coordination of contractors, Inadequate management of contractors, reluctance to seek clarification, inadequate update requirements and inadequate CPM scheduling.

Moreover, the questionnaire survey obtained from the randomly selected respondents revealed that the dominant causes were grouped into three categories, namely client-related, consultant-related and the contractor-related causes of disputes. Client-related causes ranked disagreements/ambiguities in a contract documents was ranked highest. Reluctant to check for clarity on construction documents was ranked the second. Poor management was ranked third. Poor supervision was ranked the fourth. Poor communication between team members was ranked fifth. Failure to respond in timely manner was ranked the twelfth and Failure to appoint a project manager was ranked least. From both the literature review and the distributed questionnaire, the first research objective was achieved.

9.2 RESEARCH QUESTION 2

- To evaluate the effects of disputes in public sector infrastructure projects.

9.2.1 FINDINGS

Literature revealed that the effects of disputes in construction projects most respondents revealed that time overruns were ranked first. Loss of productivity was ranked second. Cost overruns were ranked the third. Reworks were ranked forth. Loss of profitability was ranked the firth. Loss of company reputation and litigation were ranked t least. However, According to research previously done, by other authors, As a result of issues arising in projects, conflict and disputes may occur, which can lead to the disruption of construction schedules, increased project costs, and even adversely influence relationships between project participants (Yiu & Cheung, 2004). From the review of literature and from the information obtained from the structured questionnaire, it can be concluded that this research objective was achieved.

9.3 RESEARCH OBJECTIVE 3

- To evaluate the most effective construction dispute resolution in use by the public sector
9.3.1 FINDINGS

Respondents were asked to rank an effective and efficient dispute resolution method that could lead to a successful dispute resolution method in construction projects in South Africa. Most respondents ranked arbitration the highest; negotiations were ranked second; expert determination was ranked third; litigation was ranked fourth; mediation was ranked fifth; dispute review board was ranked sixth and mini-trial was ranked last. Moreover, it is interesting to note that the findings from the current study differ significantly from the studies done by Love et al. (2007) and Madden (2001) where mediation at 85 per cent is believed to produce successful outcomes in construction disputes. Furthermore, Finlay (1998) suggests that the mediation process is beneficial for the disputing participants and the industry because it produces acceptable results in a cost-efficient and timely manner. Hence in the current study the respondents felt that arbitration is the best mechanism that can be used to resolve construction disputes, since there would be the certainty of an outcome and it would be binding.

9.4 RESEARCH QUESTION 4

- To identify the different contractual methods used for dispute avoidance and resolution

9.4.1 FINDINGS

FIDIC was ranked first; NEC was ranked second; GCC was ranked third and JBCC was ranked the least. According to Binnington (2015), South African Standard Forms of Contract still draw, to a large extent, on their English historical counterparts. FIDIC makes provision for the creation of a disputes adjudication board (DAB), which is an impartial and independent panel of one to three suitably qualified persons who may be appointed either when a project begins (a standing DAB) or as and when disputes arise (an ad hoc DAB). However, Clause 20.4 of FIDIC (Yellow and Red Book) is the primary mechanism for dispute resolution and describes the procedures required for a claimant to refer a dispute to the DAB, as a result should a party be dissatisfied with the DAB’s decision; a Notice of Dissatisfaction may be delivered within 28 days after having received the decision. A second type of construction contract available is the local non-profit company Joint Building Contracts Committee (JBCC) contract, which concentrates on the compilation of current contract documentation with an equitable distribution of contractual risk in the building industry, explains Pritchard.
He states that the JBCC is similar to FIDIC and has issued its own set of standardised construction contracts, of which the current revision is known as the ‘JBCC Series 2000’.

"Clause 40 of the JBCC contains a mechanism for dispute resolution, which is similar to that of FIDIC" “However, in terms of the JBCC, when a dispute arises, the party declaring the dispute must notify the other party of the dispute and call on that party to resolve the dispute within ten working days,” Pritchard explains hence, If the dispute is not resolved, it is referred to adjudication or arbitration. Disputes referred to adjudication are governed by the JBCC Adjudication Rules, which sets out the rules for the appointment and powers of the adjudicator, the procedures followed in declaring a dispute and the determination of disputes. Provisions similar to those of FIDIC apply in terms of a dissatisfied party being empowered to refer the matter further to arbitration. The JBCC also allows for disputes to be referred to mediation. From both the literature review and the distributed questionnaire, the third research objective was achieved.

9.5 RESEARCH QUESTION 5

- To identify and develop strategies to prevent dispute occurrences in public sector infrastructure projects.

9.5.1 FINDINGS

Literature revealed that dispute causation can be minimised by using strategies such as stakeholder management, relational contracting, supply chain management, partnering, alignment and lean construction. However, the survey results obtained from the respondents were that negotiations and early consideration, allocation of project risks and risk assessment were ranked amongst the highest. The industry has been repeatedly admonished and encouraged to embrace modern management concepts with an emphasis being placed on early involvement in the decision-making process by the key stakeholders including clients, contractors and building users to avoid dispute causation in construction projects. The strategies to minimise construction dispute are clearly aimed at creating a non-adversarial culture between the various stakeholders. From the review of literature and from the information obtained from the structured questionnaire, it can be concluded that this research objective was achieved.
9.6 CONCLUSION
The literature review revealed that the dominant causes of disputes in construction projects have been highlighted. These are the client-related causes, consultant-related causes, contractor-related causes, and causes related to external factors. Findings from the current study prove that there is a higher incidence of disputes in the construction project caused by clients and contractors. Client-related causes are disagreements/ambiguities in contract documents, reluctance to check for clarity on construction documents, poor management, poor supervision, poor communication between team members, and poor coordination efforts, being amongst the highest ranked causes of disputes.

Concerning the effect of construction disputes, time overruns, loss of productivity, cost overruns, reworks, loss of profitability were amongst the highest ranked in this study.

In terms of dispute minimisation or dispute avoidance, the following strategies have been identified, facilitation of negotiations was ranked the highest, and this included early consideration, allocation of project risks and risk assessment, communication of potential problems or claims at the earliest opportunity. There is also widespread recognition of the fact that the industry has a high incidence of disputes and is a leader in the development of dispute resolution systems and processes. Hence, when a dispute does occur, there is an extensive range of dispute resolution procedures available to a disputing party. The parties would choose the best mechanism to sort out their dispute and an advantageous dispute resolution mechanism will ideally seek to settle a dispute with an acceptable outcome within the least amount of time, as cost-effectively as possible, with the least amount of resources and hopefully the preservation of the working relationship between both parties (Mashwama, 2016).

9.7 RECOMMENDATION
The following recommendations are made to minimise disputes on constructions sites.

Clients must pay particular attention to the following factors:

- Progress payments must be paid to contractors as and when they are due. It means that sufficient financial arrangements must be made before construction projects are initiated. Additionally, the long bureaucratic processes involved in honouring payments of contractor’s claims must be curtailed to conform strictly to the provisions of the contract;
• Resources and capabilities of contractors must be thoroughly investigated prior to awarding of contract to the lowest bidder or any bidder;

• A comprehensive and thorough brief to the design team is necessary to enable it prepare detailed contract documents which leave no doubt in the minds of the contractor regarding what the must be constructed. This is a key to avoiding design errors and omissions and the consequent variations on site; and

• All members of the design team must be employed at the onset and must be involved in the evolution and production of working drawings. There must be proper coordination of the design process.

**Contractors must consider the following factors:**

• The right calibre of administrative and technical staff should be assigned to projects to handle all administrative and technical issues including pricing, planning and scheduling, interpretation of production drawings, receipt of instructions from consultants or project managers, and general supervision of works;

• Resources must be made available as and when required on site to achieve minimal interruption of the programme of works. This must involve proper management of financial resources, cash flow planning, the deployment of sufficient and motivated labour, and the provision of the right plant and equipment; and

• Contract documents must be reviewed and related to one another and all ambiguities, inconsistencies, and deficiencies must be brought to the attention of consultants before construction begins.

**Consultants must take note of the following:**

• Sufficient time must be allowed for design production. Adequate and quality information must be obtained from the client, site, and market to achieve comprehensive design and specification and
• Design must be coordinated; all members must be involved and nothing must be left “to be sorted out” on site. Without fully coordinated drawings and specifications, the project will most certainly lead to variations and increase in cost.

9.8 RECOMMENDATION FOR FURTHER STUDIES
The following recommendation is made in terms of further research:

- **Dispute prevention strategies in SA**

  It appeared that there is little or no published data on the cost of disputes in South Africa.

- **Project management**

  Research should be conducted to evaluate how good project management can minimise in South Africa.

- **Cost of construction disputes**

  There was very little information regarding the cost of construction disputes, therefore more research needs to be conducted under this pillar.
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APPENDICES
TO WHOM IT MAY CONCERN

Dear Sir/Madam;

LETTER OF INVITATION FOR RESEARCH SURVEY

The Department of Construction Management and Quantity Surveying at the University of Johannesburg is undertaking a research project to assess the “CAUSES AND EFFECTS OF DISPUTES IN PUBLIC SECTOR INFRASTRUCTURE PROJECTS”.

To this end, we kindly request that you complete the following short questionnaire. It should take no longer than 20 minutes of your time. Your response is of the utmost importance to us. To protect your anonymity, please do not enter your name or contact details on the questionnaire. Summary of the results of this research will be available at the department of Construction Management and Quantity Surveying in November, 2016.

Should you wish to know the findings of the research, you are welcome to contact Lungisile Maseko. Telephonically at: +27785464302/ or at:lungisilemaseko@gmail.com or Prof Aigbavboa C.O. at: +2711-559-6398 or at:aigclinton@gmail.com. The faculty will gladly send you a summary of the results.

Thanking you in advance

Lungisile Maseko.
QUESTIONNAIRE ON AN ASSESSMENT OF THE OCCURRENCES OF DISPUTE IN PUBLIC SECTOR INFRASTRUCTURE PROJECTS: A CASE STUDY OF GAUTENG, SOUTH AFRICA.

INSTRUCTIONS:

PLEASE ANSWER THE FOLLOWING QUESTIONS BY CROSSING (X) ON THE RELEVANT BLOCK OR WRITING DOWN YOUR ANSWER IN THE SPACE PROVIDED.

EXAMPLE of how to complete this questionnaire:
What is your gender?
If you are female:

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
</tr>
</tbody>
</table>

SECTION A - BACKGROUND INFORMATION
This section of the questionnaire refers to background or biographical information. Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents. Once again, we assure you that your response will remain anonymous. Your cooperation is appreciated.

1. What is your Gender?

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
</tr>
</tbody>
</table>

2. What is your age group?

<table>
<thead>
<tr>
<th>Age Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21 years – 25 years</td>
<td>1</td>
</tr>
<tr>
<td>26 years – 30 years</td>
<td>2</td>
</tr>
<tr>
<td>31 years – 35 years</td>
<td>3</td>
</tr>
<tr>
<td>36 years – 40 years</td>
<td>4</td>
</tr>
<tr>
<td>41 years – 45 years</td>
<td>5</td>
</tr>
<tr>
<td>46 years – 50 years</td>
<td>6</td>
</tr>
<tr>
<td>51 years – 55 years</td>
<td>7</td>
</tr>
<tr>
<td>55 years &amp; Above</td>
<td>8</td>
</tr>
</tbody>
</table>

3. What is your ethnicity?

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>African</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>2</td>
</tr>
<tr>
<td>Coloured</td>
<td>3</td>
</tr>
<tr>
<td>Indian or Asian</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Which of the following best describes your professional work?

<table>
<thead>
<tr>
<th>Professional Role</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Architect</td>
<td>1</td>
</tr>
<tr>
<td>Quantity-Surveyor</td>
<td>2</td>
</tr>
<tr>
<td>Engineer</td>
<td>3</td>
</tr>
<tr>
<td>Project Manager</td>
<td>4</td>
</tr>
<tr>
<td>Construction Manager</td>
<td>5</td>
</tr>
<tr>
<td>Construction project manager</td>
<td>6</td>
</tr>
<tr>
<td>Others: please specify</td>
<td>7</td>
</tr>
</tbody>
</table>

5. What is your highest educational qualification?

<table>
<thead>
<tr>
<th>Qualification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>1</td>
</tr>
<tr>
<td>Diploma</td>
<td>2</td>
</tr>
<tr>
<td>Bachelors-degree</td>
<td>3</td>
</tr>
</tbody>
</table>
6. What type of institution do you currently work for?

<table>
<thead>
<tr>
<th>Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>1</td>
</tr>
<tr>
<td>Consultant</td>
<td>2</td>
</tr>
<tr>
<td>Contractor</td>
<td>3</td>
</tr>
<tr>
<td>Government/Public sector</td>
<td>4</td>
</tr>
<tr>
<td>Others: please specify</td>
<td>5</td>
</tr>
</tbody>
</table>

7. Are the disputes related to any of the following? (mark all applicable)

<table>
<thead>
<tr>
<th>Issue</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The contract conditions</td>
<td>1</td>
</tr>
<tr>
<td>Deficiency in the design</td>
<td>2</td>
</tr>
<tr>
<td>The construction process</td>
<td>3</td>
</tr>
<tr>
<td>A client-based problem</td>
<td>4</td>
</tr>
<tr>
<td>A time based problem</td>
<td>5</td>
</tr>
</tbody>
</table>

8. Which stakeholder(s) is/are most likely to cause disputes in your projects? (Mark all applicable)

- **The Client**
  - A public sector client: 1
  - A private sector client: 2

- **The Consultant**
  - A quantity surveying consultant: 3
  - A design Consultant: 4
  - A project management consultant: 5

- **Contractor**
  - The main contractor: 6
  - A sub-Contractor: 7
  - A nominated contractor: 8

9. Which of the following dispute is the most dominant in the construction industry?

<table>
<thead>
<tr>
<th>Dispute</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial matters (claims and payment)</td>
<td>1</td>
</tr>
<tr>
<td>Time related disputes (delayed process)</td>
<td>2</td>
</tr>
<tr>
<td>Standard of workmanship</td>
<td>3</td>
</tr>
<tr>
<td>Relationship / people conflict in the industry</td>
<td>4</td>
</tr>
</tbody>
</table>

10. Has there been a change in disputes in the past three years?

<table>
<thead>
<tr>
<th>Change in number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No change</td>
<td>1</td>
</tr>
<tr>
<td>Decreased</td>
<td>2</td>
</tr>
<tr>
<td>Increased</td>
<td>3</td>
</tr>
</tbody>
</table>

11. Has there been a change in types of disputes in the past three years?

<table>
<thead>
<tr>
<th>Change in type of disputes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No change</td>
<td>1</td>
</tr>
<tr>
<td>Decreased</td>
<td>2</td>
</tr>
<tr>
<td>Increased</td>
<td>3</td>
</tr>
</tbody>
</table>
SECTION B: CAUSES OF DISPUTES IN CONSTRUCTION PROJECTS

This section of the questionnaire explores the causes of disputes in construction projects in Gauteng, South Africa.

Based on your experience please indicate to what extent each factor has led to a dispute in the projects you have worked on in the past years? Please indicate extent using the following 5-point scale where:

1. = To no extent (NE)
2. = To a small extent (SE)
3. = To a moderate extent (ME)
4. = To a large extent (LE)
5. = To a very large extent (VE)

12. Extent to which each factor is a cause of disputes in construction projects in Gauteng, South Africa?

<table>
<thead>
<tr>
<th>Category</th>
<th>Causes of Disputes</th>
<th>NE</th>
<th>SE</th>
<th>ME</th>
<th>LE</th>
<th>VE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR1</td>
<td>Failure to respond in timely manner.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>DCR2</td>
<td>Poor communication between team members.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>DCR3</td>
<td>Inadequate tracking system for request of information.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>DCR4</td>
<td>Poor management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR5</td>
<td>Poor Supervision</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR6</td>
<td>Poor coordination efforts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR7</td>
<td>Lowest price mentality in engagement of contractors and designers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR8</td>
<td>The lack of team spirit among the participants.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR9</td>
<td>Reluctant to check for clarity on construction documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR10</td>
<td>Reluctant to check for constructability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR11</td>
<td>Reluctant to check for completeness on construction documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR12</td>
<td>Failure to appoint a project manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR13</td>
<td>Disagreements/ambiguities in contract documents.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultants -related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR1</td>
<td>Failure to fulfil agreed responsibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR2</td>
<td>Over design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR3</td>
<td>Underestimation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR4</td>
<td>Late information delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR5</td>
<td>Design oversight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR6</td>
<td>Specification oversight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR7</td>
<td>Incompleteness of specification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCR8</td>
<td>Incompleteness of drawings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR1</td>
<td>Inadequate management of contractors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR2</td>
<td>Inadequate coordination of contractors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR3</td>
<td>Inadequate supervision of contractors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR4</td>
<td>Delay/suspension of works</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR5</td>
<td>Failure to keep an updated programme plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR6</td>
<td>Failure to execute the changes of works</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCOR7</td>
<td>Failure to correctly bid or price the works</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SECTION C: EFFECTS OF DISPUTES IN CONSTRUCTION PROJECTS
This section of the questionnaire assesses the effects of construction disputes in construction projects.
To what extent are the following outcomes likely to occur on your projects as a result from a dispute? Please indicate your answers using the following 5-point scale where:

1. = Extremely unlikely (EU)
2. = Unlikely (U)
3. = Neutral (N)
4. = Likely (L)
5. = Extremely likely (EL)

13. What are the effects of construction disputes in a project?

<table>
<thead>
<tr>
<th>Effects of disputes</th>
<th>EU</th>
<th>U</th>
<th>N</th>
<th>L</th>
<th>EL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDC1 Additional expenses in management and administration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC2 Litigation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC3 Loss of company reputation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC4 Loss of profitability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC5 Loss of business viability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC6 Time overruns</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC7 Cost overruns</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC8 Loss of professional reputation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC9 Loss of respect between parties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC10 Reworks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC11 Relocation cost (men, equipment and material)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EDC12 Loss of productivity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

SECTION D: METHODS TO RESOLVE DISPUTES IN GAUTENG, SOUTH AFRICA
This section of the questionnaire explores methods to resolve construction disputes in Gauteng, South Africa.
To what extent are the following likely to resolve disputes in construction projects? Please indicate your answers using the following 5-point scale where:

1. = Extremely unlikely (EU)
2. = Unlikely (U)
3. = Neutral (N)
4. = Likely (L)
5. = Extremely likely (EL)

14. Based on your experience or knowledge of dispute resolution, please rate how likely each of the following possible dispute resolution methods could lead to successful dispute resolution in the Gauteng construction industry. Please rate each method using the scale provided.

<table>
<thead>
<tr>
<th>Methods to Resolve Construction disputes</th>
<th>EU</th>
<th>U</th>
<th>N</th>
<th>L</th>
<th>EL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRD1 Litigation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD2 Arbitration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD3 Mediation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD4 Negotiation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD5 Adjudication</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD6 Expert determination</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD7 Mini-trial</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MRD8 Hybrid alternative dispute resolution</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
SECTION E: CONSTRUCTION CONTRACTS TO RESOLVE DISPUTES IN GAUTENG, SOUTH AFRICA

This section of the questionnaire explores the different construction contracts used and how they cover dispute avoidance and resolutions in Gauteng, South Africa.

15. Which of the following construction contracts do you use for your projects? (Choose all applicable)

<table>
<thead>
<tr>
<th>Construction contracts used in SA projects</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRD1 JBCC</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRD2 FIDIC</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRD3 NEC</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRD4 GCC</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

16. Please rate how well each of the following construction contracts covers aspects of dispute avoidance and resolution for the Gauteng construction industry?

Responses are:
1. = Very poor (VP)
2. = Poor (P)
3. = Average (V)
4. = Good (G)
5. = Excellent (E)

<table>
<thead>
<tr>
<th>Construction contracts used in SA projects</th>
<th>VP</th>
<th>P</th>
<th>A</th>
<th>G</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRD1 JBCC</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CRD2 FIDIC</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CRD3 NEC</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CRD4 GCC</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

SECTION F: STRATEGIES TO PREVENT THE OCCURENCES OF CONSTRUCTION DISPUTES GAUTENG, SOUTH AFRICA

This section of the questionnaire explores the different prevention strategies that can be developed to prevent the occurrences of construction disputes in Gauteng, South Africa.

Based on your experience and knowledge please indicate how likely each of the following actions would prevent or reduce dispute occurrences in construction projects? Please indicate your answers using the following 5-point scale where:

To what degree are the following likely to prevent dispute occurrences in construction projects? Please indicate your answers using the following 5-point scale where:
1. = Not at all likely (NL)
2. = Unlikely (U)
3. = Neutral (N)
4. = Likely (L)
5. = Extremely likely (EL)
17. What is the likelihood each of the following actions would lead to prevention or reduction in dispute occurrences in Gauteng construction projects?

<table>
<thead>
<tr>
<th>Construction Dispute Prevention Strategies</th>
<th>NL</th>
<th>U</th>
<th>N</th>
<th>L</th>
<th>EL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDPS1 Provision of adequate contract documentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CDPS2 Early Consideration, Allocation of Project Risks and Risk Assessment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CDPS3 Team Building and Partnering</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CDPS4 Communication of Potential Problems or Claims at the Earliest Opportunity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CDPS5 Realistic Assessment of the Value and Impact of the Claim</td>
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<td>CDPS7 Facilitation of negotiations</td>
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<td>CDPS8 Thinking outside the box / Thinking ahead</td>
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<td>CDPS9 Stakeholder management</td>
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<tr>
<td>CDPS10 Supply chain management</td>
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<td>CDPS11 Lean construction</td>
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<tr>
<td>CDPS12 Alliancing</td>
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Thank you for your co-operation in completing this questionnaire and for also helping the South African construction industry with the knowledge of construction disputes.