

Sources of disputes in South African construction contracts and the resolution techniques employed between clients and contractors

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DECLARATION

I declare that this research report is my own unaided work. It is being submitted for the Degree of Master of Science Building (in the Field of Project Management) to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

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(Signature of Candidate)

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Abstract

Disputes are a common characteristic of the construction industry, the underlying sources of disputes, most frequent dispute resolution techniques employed and the responsiveness of the industry towards the available techniques was explored including detailed literature review on disputes in the construction industry. Disputes can lead to the significant waste of resources on contracts; and they thereby undermine the concepts of sustainability and value-for-money in contracts, thus affecting the overall health of the construction industry. The methodology involved interviews conducted among professionals with experience, review of published cases, contracts and media reports on disputes in the construction industry. The scarcity of research in this field is discussed and the empirical work on the sources of disputes, dispute resolution techniques and proficiency in the industry was reviewed. It is concluded that contractual issues need more attention to deter disputes occurrence, while negotiation, arbitration and litigation techniques dominate the industry. The industry lacks professionals with dispute resolution skills, therefore workshops and stringent policies are needed to advise the professionals to acquire the skills for the development and improvement of commercial relationships in contracts.

Key words and phrases:

Disputes, dispute-resolution methods, adjudication, arbitration, mediation, litigation

Dedication:

To My God, my family and my friends

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3 Nomenclature:

Adjudication: the act of giving a judicial ruling, such as a judgment or a decree.

Amicable settlement: an agreement between two litigants to settle a matter privately before the Court has rendered its decision.

Arbitration: adversarial or non-adversarial trial, which may be for a lawsuit ready to go to trial, held – in an attempt to avoid a court trial – and conducted by a person or a panel of people, who are not judges.

Claim: a demand for money, for property, or for the enforcement of a right provided by law.

Clause: a part of a written law or legal document covering a particular subject of the whole law or document.

Conciliation: The process of adjusting or settling disputes in a friendly manner through extra-judicial means.

Constructivism: the construction of knowledge attained through interacting with certain individuals.

Expert determination: Determination by an expert of an issue or issues between the parties – in a manner that does not amount to arbitration.

Induction: the process or action of bringing about or giving rise to something.

Interpretivism: a term used to identify approaches to social science that share particular ontological and epistemological assumptions.

Litigation: any lawsuit or other resort to the courts to determine a legal question or matter.

Med-arb: a combination of mediation and arbitration procedures also known as Mediation-arbitration, where the third neutral party begins as a mediator and changes the role to an arbitrator where mediation efforts fail to resolve the dispute.

Mediation: the attempt to settle a legal dispute through the active participation of a third party (mediator), who works to find points of agreement and make those in conflict agree on a fair result.

Multi-method: the application of two or more sources of data or research methods for the investigation of a research question, or to different but highly-linked research questions.

Negotiation: give-and-take discussion or conference – in an attempt to reach an agreement, or settle a dispute.

Neutral evaluation: a process in which an informal presentation is made by the parties to a dispute to a neutral having respected credentials for obtaining an oral or written evaluation of the parties' positions.

Opportunistic behaviour: when a party takes advantage of knowledge that the other party does not have, in order to further their interests, and fails to tell the other party such information.

Procurement methods: methods used in both organising the works and allocating risks to different stakeholders.

Research Onion: The research onion is a diagram made up of concentric circles or "layers", like the skin on an onion that is used to describe the research methodological framework.

Research-Time Horizon: an estimated time length for a research to be completed with achieved objectives.

Risk distribution: the term mandates that enough independent risks of unrelated parties be pooled, in order to achieve a fair balance among the parties.

Snowballing sampling: a non-probability sampling technique that is used by researchers to identify potential subjects in studies where such subjects are difficult to locate.

4 List of Acronyms

AASA – Association of Arbitrators of Southern Africa

ADR – Alternative Dispute Resolution

cidb – Construction Industry Development Board

DAB – Dispute Adjudication Board

DRBs – Dispute Review Board(s) or Dispute Resolution Boards

FIDIC – French acronym for International Federation of Consulting Engineers

GCC – General Condition of Contract for Construction works

GDP – Gross Domestic Product

JBCC – Joint Building Contracts Committee

NEC – New Engineering Contract

RICS – Royal Institute of Chartered Surveyors

SA – South Africa

SAFLII – Southern African Legal Information Institute

CHAPTER 1

1 Introduction

1.1 Background

Commercial agreements or contracts bind parties together, in order to facilitate business transactions and project delivery. Contracts legally bind parties to undertakings primarily aimed at achieving certain defined objectives within time, budget and quality constraints (Reuter and Wächter, 1991). Construction contracts outline the obligations and relationships between parties (i.e. owner-contractor, owner-consultants, owner-subcontractor, or owner-nominated subcontractor, amongst others) (Zaghloul and Hartman, 2003). Clients/employers, with the help of project managers, decide on the contractual arrangements best suited for the project (cidb, 2005). Murdoch and Hughes (2008) established that contracts should accommodate all the available dispute-resolution methods. The relationships between the parties may depend on the procurement methods, the forms of contracts, as well as other factors, such as: human factors, economic situation, type and complexity of the project or the business dealing (Lord-Smith, 1994).

The assortments of commercial agreements may vary due to the varied nature of the construction industry and the economic situation locally and globally. The construction industry has a substantial impact on the Gross Domestic Product (GDP) of both the developed and developing nations (Ng et al., 2007; Maran et al., 2011). The public sector plays a significant role in the South African economy as the 2013 National Budget review revealed that, over R4 trillion worth of projects were underway – from both the public and private sectors; and over R3.6 Trillion worth of projects were from the public sector (www.treasury.gov.za, 2016a). The budgeted public sector investment was estimated at R847.3 billion – approximately 7%-10% of the GDP (Republic of South Africa, 2016; www.treasury.gov.za, 2016a; Statistics South Africa, 2014).

Construction contributes 2% – 3% of South Africa's Gross Domestic Product (GDP) (Statistics South Africa, 2014). During harsh economic times, risks tend to increase, as also do liability issues (Jahren and Dammeier, 1990), leading to increased dispute occurrences (Loosemore,

2009; Soo and Lam, 2012). These can cause significant losses and reduced profit margins as many construction companies depend on these projects to maintain their cash flows. A review of construction companies' annual reports revealed that they experience losses attributed to disputes (Murray and Roberts, 2013; WBHO, 2013; Group Five, 2013). Disputes are time-consuming and the resolution processes require a lot of attention from the parties involved (Richbell, 2008).

Several studies attest to the ongoing existence of disputes in the construction industry; and they expressed the view that it is unlikely to eliminate or decrease them (Cheung et al., 2000; Cheung and Yiu, 2006; Mahfouz and Kandil, 2009). Fenn and Gameson (2003) citing Yates (1998) indicated that the number of disputes reaching the courts in United Kingdom from 1973 to 1980, and later from 1980 to 1989, had increased by about 100% and 15%, respectively. Newey (1992) highlighted the construction industry's concerns over the dispute "epidemic" (Yiu, 2005; p. 21, Cheung, 2010; p. 169), thereby reinforcing the idea that disputes are increasing. Disputes have been referred to as: "plagues", "inevitable", and "endless" (Cheung and Pang, 2013; pp. 15, 21, Cheung and Yiu, 2006; p. 462, Fenn, 2007; p. 69, Wall and Fellows, 2010; p. 94, Richbell, 2008; p. 1, Cooperative Research Centre for Construction Innovation, 2009; p. 2).

Chong and Phuah (2013) expressed the need to reduce disputes and maximize dispute avoidance. The expressions used by authors indicate outbreaks that are unavoidable, together with the continuous existence of disputes in the construction industry. These must be reduced or possibly avoided. Powell and Nielsen (2013) also indicated that disputes would always exist in the built environment; and the pressure to resolve them swiftly and proficiently is continually growing. Claims and disputes are detrimental to contractual relationships, project deliveries, the construction industry, as well as the national and world economy (El-Adaway and Kandil, 2009).

There is a thin line between disagreements, conflicts and disputes. Love et al. (2011) and Fenn et al. (1997) revealed that disagreements or conflicts exist in almost every project worldwide – due to the differences in cultures, values, and personal interests. Conflicts are dispute precursors, which occur where mismatches of objectives and opinions exist amongst parties to a contract; while disputes often result from unresolved conflicts, based on issues of rights, regarding the interpretation of the contract (Murdoch and Hughes, 2008). The involvement of

human beings and the complexities involved in dealing with human nature contribute to disputes being unavoidable. Wall and Fellows (2010) suggested that conflicts are informal; while disputes are formalised conflicts, whose outcomes are determined by law.

The linkage between trust and contractual methods (Misztal, 2001), leads to the notion that the levels of trust can determine the risk distribution in contractual arrangements, hence it has been identified as the root cause of conflict and disagreements (Franks, 2003) in some instances. Franks (2003) links the lack of trust to the adversarial relationships that existed from the 1800s between the architects and the builders; and this author suggests that unstable relationships between the design team and the construction team originate from such a background. As a result, the anticipated risks tend to have some influence on the owners' choice of contracts and procurement methods (Yates, 1998).

In an attempt to reduce losses, owners shift the liability to contractors, by deleting, omitting, or modifying clauses, in order to counterbalance the risk distribution (Sertyesilisik, 2010). Sertyesilisik (2010) revealed that a significant amount of unfair modifications exist in the widely used FIDIC contracts in the Malaysian public sector. The alterations and omissions of vital clauses can trigger conflicts, which then lead to disputes. Pickavance (2007) ascertained the need to alter the standard forms of contract, in order to cover all the possible risks attached to the project. The clients expect contractors to accept the contract conditions, despite the risk burden loaded to the contractor, where the costs attached to accepting the liability can determine the future of the entity. However, the parties tend to assume defensive approaches (legal routes) when disputes occur, as opposed to accepting any liabilities.

Parties to contracts seem to protect their interests; and clients seek to minimize their expenditure by cutting spending on contractors on one hand; while contractors, on the other hand, aim to maximise their profits (Iwamatsu et al., 2008). This could be the underlying cause for misunderstandings in the traditional client-contractor relationships. Parties disregard the importance of contractual relationships and focus on obtaining their profits – by increasing costs, or reducing the revenues payable to the other party (Yates, 1998). The blaming tendencies between parties are likely to arise from similar bases. However, if parties would pay special attention to building and maintaining good contractual relationships, based on trust, such disputes could be minimised.

Several resolution mechanisms can be used to resolve disputes, such as arbitration, litigation, mediation, adjudication, negotiations, Dispute Resolution Boards or Dispute Review Boards (DRBs), Dispute Adjudication Boards (DAB), mediation and arbitration, fact-finding, mini-trials, early neutral evaluation, Rent-a-Judge, convening, conciliation, neutral evaluation, and expert determination (Bunni, 2000; McCreary et al., 2001; Seifert, 2005; Gebken II and Gibson, 2006). Lane (2012) suggested that some adjudication procedures should be adopted by arbitration, in order to reduce costs and time. The criteria used by industry to select the resolution mechanism are not well documented and the concentration on adjudication in the locally developed construction agreements in South Africa for the past four years (Maritz and Hattingh, 2015) might slowly dominate the use of other alternative dispute resolution (ADR) such as, mediation and arbitration in the South African construction industry.

Maritz and Hattingh (2015), further maintained that adjudication procedures have gained momentum in the South African construction industry, but raised some concern over the lack of knowledge on the adjudication procedures by the industry. Similarly, Povey et al. (2005) raised similar views over the mediation practices in the same industry.

The study used mixed methods to; identify the underlying issues leading to disputes construction contracts, ascertain the dispute-resolution methods which are frequently employed by the industry and assess the responsiveness of the industry on the dispute resolution methods. The succeeding section provided the rationale and motivation of the study.

1.2 Research Rationale and Motivation / Purpose of the study

Agreements between the parties to a construction contract sometimes end up in disputes, especially when issues contrary to the parties' interest begin to surface. Previous research indicates that contractual disputes are a common phenomenon in the South African construction industry; and disputes can affect the commercial relationship between parties in several ways (Povey, 2005). Disputes can also lead to the significant waste of resources on contracts; and they thereby undermine the concepts of sustainability and value-for-money in contracts, thus affecting the overall health of the construction industry.

Disputes are common characteristics of the construction industry in South Africa; but little attention has been focused on investigating the problem from a scientific perspective, in order

to generate a systematic understanding for dealing with the underlying issues for the development and improvement of commercial relationships in contracts. This has been an area of priority highlighted by the Construction Industry Development Board (cidb) (cidb, 2015; Maritz and Hattingh, 2012; Maritz and Hattingh, 2015). The rationale of this research is to examine and analyse the questions around the sources and resolution techniques of disputes in South African construction contracts – with a view to developing findings and recommendations for improving how contracts are set up and managed, in order to minimize the risk of disputes in the construction phase of projects. There is an urgent need for this kind of research. The research inquiry identified the sources of disputes in South African construction contracts, the common mechanisms employed for dealing with disputes when they occur in construction contracts, as well as the responsiveness of the construction industry towards the methods.

Clearly, for the South African construction industry and its national bodies, like the cidb, to improve the culture of disputes in construction contracts, a systematic and practical understanding of the phenomenon is required. The South African construction like other nations is transforming to match the international standards while embracing the national diversity embedded in the constitution. There is an urgent need to proactively identify the underlying sources and the appropriate methods to deal with them promptly, and the prevailing situation is critical to achieve such objectives.

The research used mixed method research design involving interviews (Creswell, 2014) and a detailed examination and analysis of cases, contracts and media reports relating to construction disputes across South Africa. In spite of the limited research and data on the subject the study considered a snowballing approach to identify the relevant professionals (Maree et al., 2012) dealing with disputes. The four sources of data provided sufficient data for analysis and enabled substantial findings which sufficiently addressed the objectives of the study. The lack of studies and understanding on the mechanisms in the South African industry required more robust data collecting methods in order to achieve sound conclusions and recommendations.

A single source of data or method of data collection may not be enough to depict the SA situation. The study considered responses from the respondents, the provisions in the contract, media reports as well as the cases. The consideration of the assortment of these methods would achieve different results and therefore validate the previous research findings.

The few publications drew conclusions which tend to be contrary to the situation in construction industry, for instance; the provisions in most government contracts in the GCC and JBCC type of contracts used the state provisions that stipulated litigation as the only form of dispute resolution. Yet, some studies concluded that mediation and adjudication were the dominant methods of dispute resolution in SA construction industry. Povey et al. (2005) draw the conclusions from 63 questionnaires obtained from mediators but clarity was not given whether the study was based on contracts in the private or public sectors. Neither mediation nor adjudication had provisions in state contracts, Maiketso and Maritz (2012) used structured and interviews as well as surveys and concluded that adjudication has gained momentum in SA, but has not been fully utilized due to lack of knowledge. Although, Maiketso and Maritz, (2012), ascertains the industry is more familiar with mediation, arbitration and litigation there is no clarity as to which method is more popular to the specific sector.

The study uses the data from the four vital methods to reinforce the findings using the triangulation methods (Bowen, 2009). The multiple-sources enabled the study to generalise as both the public and private possible sources of data were considered, hence the study adopted both qualitative and quantitative data collection and analysis methods (Creswell, 2014) to expose the reality of the construction industry.

1.3 The Research Problem

Commercial agreements are the basis for conducting business; but as a result of monetary issues and other issues that have a financial implication, these agreements often result in disagreements between parties – thereby leading to disputes (Zhu et al., 2010). There are no data to indicate the extent of disputes in the South African construction industry. Statistics SA, professional councils and associations, as well as the cidb, amongst others, do not keep data relating to disputes. However, clients seem to have become legalistic, in order to keep up with the litigious contracting environment (Galanter, 1983). This prompts the occurrence of common disputes in the construction industry.

While disagreements and disputes require a significant amount of time, and are a burden to the construction industry. The industry spends most of the valuable project time on resolving them (Hinchey and Perry, 2008). It is unclear as to what the sources of disputes are in the South African construction industry; since knowledge about the sources of disputes could help

practitioners to take active measures that would hinder the occurrence of disputes. The construction industry continues to suffer losses attributed to such disputes.

Problem statement: Construction contracts are associated with various problems that tend to be the sources of conflicts and disputes. These are detrimental to the commercial businesses and the entire construction industry. Consequently, a proactive approach (empirical) is needed; and it should start by identifying the sources of such disputes, as well as the dispute-resolution methods employed. The increase in disputes, unclear causes, or sources of disputes, as well as the lack of research in the area prevents practitioners from taking active measures to curtail disputes. Therefore, this research seeks to uncover the sources and the resolution methods practitioners use more, in order to reduce or prevent the occurrence of such disputes. It also evaluated the levels of understanding of the resolution methods by the construction industry.

1.4 Research Aims:

To ascertain the sources of disputes in SA construction contracts, and to develop a better understanding of the dispute-resolution methods employed by the parties

1.5 Research Objectives:

To identify the sources of disputes in SA construction contracts

To ascertain the dispute-resolution methods which are frequently employed by the industry

To assess the responsiveness of the industry about the dispute resolution methods

1.6 Research Questions:

What are the sources of disputes in South African construction contracts? And how do the parties resolve these disputes?

1.7 Research sub-questions:

What underlying issues contribute to disputes in construction contracts?

What techniques are frequently used to resolve disputes in construction contracts?

How familiar are the industry professionals to dispute resolution techniques?

1.8 Scope

The research was limited to Gauteng Province. This province is known as the commercial hub of South Africa (Central Statistics, 1997, Joburg, 2014). About 40% of the construction activities occur in Gauteng, followed by Western Cape, KwaZulu-Natal, Mpumalanga and Limpopo at 17.6%; 13.5%; 6.7% and 5.3%, respectively (Statistics South Africa. 2014, p. 12). Joburg (2014) claimed that Johannesburg contributes about 17% of the country's GDP; since most industry groups are concentrated in the Gauteng Province.

1.9 Structure of the Research Report

Chapter 1 – Introduction

Chapter 2 – The Literature review

Chapter 3 – The Research Design and Methods

Chapter 4 – The Data analysis and Results

Chapter 5 – Discussion of the results

Chapter 6 – Conclusion and Recommendations

CHAPTER 2

2 Literature review

2.1 Introduction

The perspective of the chapter is an overview of the previous studies, theories, and methodologies, as well as a general idea about the prominent authors on disputes and the resolution methods employed in construction contracts. While the study focuses on the outcomes, the inclusion of some theories and methodologies facilitates a link between the various outcomes, in order to achieve the goal of integration (Randolph, 2009). Tersely, the chapter comprises: theories around disputes; definitions of disputes; a definition of the concept of dispute-resolution, sources of disputes, dispute-resolution methods, and the chapter summary.

2.2 Theories on disputes

Researchers have been reluctant to explore theories in relation to the establishment and resolution of disputes. Of significance are the theories of: universality, conflicts, ideological functionalism and bargaining, among others (Cain and Kulcsar, 1981; Cheung and Yiu, 2006; Fenn, 2007; Richbell, 2008; Cooperative Research Centre for Construction Innovation, 2009; Wall and Fellows, 2010; Cheung and Pang, 2013). Dispute theories date back to the 1900s, as explored by other academic spheres, such as sociology and psychology which led to the emergence of the universality theory and the theory of conflicts (Cain and Kulcsar, 1981).

In the context of dispute-resolution mechanisms, the universality theory implies that disputes are universal (Cain and Kulcsar, 1981). There is a need to define the phenomenon based on the highest common characteristic: disputes defined as claims; as well as conflicts or disagreements, which render disputes universal (Cain and Kulcsar, 1981).

On the other hand, the theory of conflicts designates that conflicts are unavoidable or pandemic (Cain and Kulcsar, 1981). Several studies on disputes seem to infer that conflicts are unavoidable, or pandemic (Cheung and Yiu, 2006; p. 462, Fenn, 2007; p. 69, Richbell, 2008;

p. 1, Cooperative Research Centre for Construction Innovation, 2009; p. 2, Wall and Fellows, 2010; p. 94, Cheung and Pang, 2013; pp. 15, 21).

Fenn et al. (1997; p. 513) have used terms, such as the “theory of bargaining”, the “theory of conflict”, or the “theory of strategy”. They also referred to the “theory of games”, to portray the nature of conflicts, which include: unpredictability, prevalence, the unavailability of conflict perceived as triggered by the opportunistic nature of the participants (Love et al., 2010).

Similarly, the theory of ideological functionalism denotes that conflicts can be either functional or dysfunctional (Fenn and Gameson, 2003). Functional conflicts benefit the society; and the resolutions or settlement procedures are acts of beneficence; hence, their solution may be unsatisfactory to the party at fault (Cain and Kulcsar, 1981). The parties foreseeing the functional part of disputes are motivated to pursue the dispute; while the opposite is true of the party on the dysfunctional side; as they may be reluctant to concede defeat; or they seek opportunistic behaviour (Fenn and Gameson, 2003).

While the main objectives of the study may not be to investigate the theories, they were explored, in order to explain the objectives. The next section deals with the definition of disputes.

2.3 Definition of disputes

2.3.1 What is a dispute?

Disputes have been defined in several ways; Gebken II and Gibson (2006) embraced the definition recognised by Diekmann and Girard (1995, p. 355), which portrays disputes as “any questions or controversies” arising from a contract that cannot be settled by onsite management. For the purpose of the study, disputes are defined as queries or controversies of any kind between two or more people or groups in a construction contract, which are beyond their control, and require third parties’ interventions, in order to be resolved (Gebken II and Gibson, 2006).

The model of Kumaraswamy (1997) shows that, conflicts can arise from any contractual disagreement or question. These can directly lead to claims or disputes, in which the claims are

not settled timeously (Harmon, 2003a; Ho and Liu, 2004). However, studies have continued to make it difficult for the industry to distinguish between claims, conflicts and disputes.

Some studies define disputes in relation to conflicts (Fenn et al., 1997), leading to the confusion regarding what the sources of disputes are, and the difference between sources, root-causes and superficial causes. Various authors have confirmed the model of Kumaraswamy (1997), which regards conflict as the basis of every dispute (Gebken II and Gibson, 2006; Cheung and Pang, 2013); and where most sources of conflicts are regarded as the sources of disputes (Yiu and Cheung, 2007). Drawing from those authors who attempted to differentiate sources from causes and root-causes, the differences appear to be negligible (Love et al., 2011).

Conflicts have been portrayed as claims or disputes (Harmon, 2003a; Ho and Liu, 2004) by other authors, who maintain that claims and conflicts can be resolved by the parties to the contract – without third-party intervention (Love et al., 2011). Fenn et al. (1997) argued that the terms: disputes, conflicts or disagreements have been used interchangeably in some studies – leading to the conception that disputes are the same as conflicts and disagreements. This viewpoint differs from that of Gebken II and Gibson (2006) and Cooperative Research Centre for Construction Innovation (2007) who suggested that any differences or disagreements over contract-related issues are contractually acknowledged as disputes.

Disputes involve to some extent the way human beings think (Yiu and Cheung, 2006); and human thinking is influenced by perceptions that influence the mind (Pretorius, 2005). Moreover, some studies have used the claims or underlying conditions, as well as conflicts, to define disputes; hence, the subsequent section discusses these studies' perspectives.

2.3.2 Disputes defined as claims or underlying conditions

Generally, claims are written requests or declarations for compensation of work done, which is not covered or explicitly stated in the contract, as well as the modification, interpretation of contract terms or other relief in relation to the contract (Fish, 1996). Notwithstanding the fact that some authors have accentuated the fact that rejected claims can lead to disputes (Arditi et al., 1998; Cheung and Yiu, 2006), there are disputes that are not claim-related (Yiu and Cheung, 2006). Hence, the definition that regards disputes as claims may not cover the entire context of

disputes; consequently, disputes are more than rejected claims or claims; as any claim-related issue could lead to disputes (Yiu and Cheung, 2006).

The definition of a claim shows that claims may lead to disputes (Cheung and Yiu, 2006); although not all disputes emanate from claims. Felstiner et al. (1980) argued that disputes are not things, but social concepts that are beyond the economic and legal contexts often portrayed by the non-professionals. For the purpose of the study, it is assumed that any rejected claims could lead to disputes (Arditi et al., 1998). In order to gather sensible arguments around the sources of disputes, only the issues that lead to rejected claims were considered as factors capable of initiating disputes. Consequently, it can be argued that disputes comprise rejected claims because the act of rejection of the claim, prompts disputes (Cheung and Yiu, 2006).

Some of the underlying conditions on disputes have been used to define disputes, such as the rejection of claims by one party (Cooperative Research Centre for Construction Innovation, 2007). Hence, rejected claims can be regarded as precursors to conflicts and disputes (Cheung and Yiu, 2006). This viewpoint can be deduced from the work of Arditi et al. (1998), and the definitions compiled by Cheung and Yiu (2006). Reid and Ellis (2007) noted that a dispute situation is where the opposing party refuses to answer for a claim or fails to provide facts that are reasonable, or in accordance with the law that motivates the rejection of the claim. Gaitskell (2011) argued the condition, stating that it does not sufficiently address the concept of disputes in construction contracts.

While, the model proposed by Mitkus and Mitkus (2014) contradicts the notion that rejected claims lead to conflicts and disputes – in the absence of a timeous resolution. Love et al. (2008), on the other hand, commenting on the expandable use of the terms disputes, claims and conflicts, have shown an inclination towards the Halki Principle (Halki Shipping Corporation vs Sopex Oils Ltd, [1998], 1 WLR CA), which views disputes as rejected claims.

2.3.3 Disputes defined as conflicts

Several authors regard conflicts as disputes (Loosemore, 1994; Fenn et al., 1997; Gebken II and Gibson, 2006), leading to the notion that these two terms refer to the same issue. However, conflicts are defined as issues that emanate from unexpected occasions, which occur in three

dimensions, namely: traditional, human-related, and interactionist, implying that parties choose to avoid, to accept as a natural phenomenon, or to encourage those conflicts that would benefit from their positive results (Robbins, 2000; Fenn and Gameson, 2003).

In the same manner, Yates (1998) revealed three categories of conflicts, namely: historical, human and interactionist; while Jaffar et al. (2011) classified conflicts into behavioural problems, contractual problems, and technical problems. Cooperative Research Centre for Construction Innovation (2007), noted that the term is rarely used in construction contracts; as it is in academic contexts, due to the emotional discernment attached to it; because parties to the contract prefer disagreements and disputes. However, most authors continue to use the terms interchangeably (Loosemore, 1994; Fenn et al. 1997; Gebken II and Gibson, 2006).

It may be said that conflicts in the legal environment, pertain to civil issues, which may include political wars between different groups in a social setting (Habermas, 2015) that are not related to the construction industry. If disputes and conflicts are the same, then dispute-resolution and conflict-resolution would be the same, as far as the universality theory is concerned (Cain and Kulcsar, 1981). Therefore, it can be argued that disputes and conflicts relate to different notions from the perspective of construction contracts, leading to the need to separate the terms: dispute-resolution and conflict-resolution.

The lack of clarity regarding what disputes are; and when they come into existence legally, has been a cause for concern, as well as the neglect of natural justice, such as procedural unfairness (Reid and Ellis, 2007). Reid and Ellis (2007) opined that questions regarding what constitutes disputes, as well as whether the cases under adjudication or arbitration were essentially disputes, have been raised in courts. Notwithstanding the confusion caused by the inconsistent terminology concerning disputes (Fenn et al. 1997), the available studies provide valuable information regarding the disputes and their sources from a generic perspective. Thus the next section discusses the sources of disputes, as the term is employed in other studies.

2.4 Sources of disputes

Several studies have confirmed that there is no single source of disputes; since various interconnected factors combine to form disputes (Murdoch and Hughes, 2008; Cooperative Research Centre for Construction Innovation, 2007; Reid and Ellis, 2007). Murdoch and

Hughes (2008) argued that the varied nature of disputes complicates the identification of sources of disputes. Nevertheless, several factors have been identified as sources by some authors, and root causes by others (Kumaraswamy, 1997; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007).

The definition of sources or causes (Fenn et al., 1997), and the categorisation of factors leading to disputes are not precise. This could be the basis for the confusion encountered in identifying sources and the causes of disputes, conflicts and claims. Ostensibly, if conflicts and claims result in disputes (Kumaraswamy, 1997), then the unresolved conflicts and claims, as well as the causes for the failure to curtail them are the significant issues leading to disputes. Hence, the subsequent section deals with the identification of the sources from the literature.

2.4.1 Identification and analytical discussion of various sources in the literature

Several authors divulged what they perceive as the major issues behind the proliferation of disputes (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010); although the distinctions between the terms used to define disputes are not precise. As such distinctions would simplify the aspects surrounding disputes; henceforth, the study reviews the different perspectives (sources of claims, conflicts and disputes) (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010); as they are portrayed by different studies, in order to obtain clarity on the issues that initiate disputes.

2.4.1.1 Sources of claims

While other studies reveal issues in connection with the causes or categorisation of claims; only a few issues could be linked to rejected claims or disputes. The main categories portrayed in the studies relate to: time, productivity, revenue, site overheads, extension of time, variations (in quantities, specifications, drawings, site conditions, due to the changes by the client and design errors), unforeseen ground conditions and ambiguities in contract documents (Semple et al., 1994; Heath et al., 1994; Kumaraswamy, 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

Perversely, the category of revenue claims tends to be ambiguous; since most of the claims directly or indirectly relate to revenue; because time and productivity-related claims directly

and indirectly affect revenue; and consequently, all the claims can be linked to revenue. Similarly, the causes of claims include: acceleration, restricted access, weather/cold, scope increase, parties' unrealistic expectations, ambiguous contract documents, poor communication between the project participants, lack of team-spirit, failure to promptly deal with changes, and unexpected outcomes (Semple et al., 1994; Bristow and Vasilopoulos, 1995; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010). In addition, inaccurate or inadequate design information, slow client responses, poor communication and unrealistic time targets are some of the common sources of claims (Semple et al., 1994; Kumaraswamy, 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

On the other hand, the sources of claims include variations, negligence in tort, and delays (Bristow and Vasilopoulos, 1995; Love et al., 2008; Love et al., 2010). The distinction between categories and causes of claims is not precise because the studies hardly distinguish between the two, instead they have classified contractual ambiguities as either causes (Semple, et al., 1994) or categories of claims (Kumaraswamy, 1997). From another perspective the unforeseen ground conditions and unexpected outcomes literally refer to the same thing. Although acceleration may lead to claims, it may not necessarily lead to disputes. However, improper procedures and management's failure to manage the acceleration process can lead to disputed claims; and the same applies to variations, unforeseen ground conditions, or an increase in scope.

Subsequently, the sources of claims identified in the studies lack coherent authenticity; for example, the negligence in tort or natural justice is a secondary issue that can be linked to disputes, but cannot be quantified or expressed in monetary terms, although it can be used to justify a claim. Some authors contested the use of poor communication as a source, due to the lack of substance in the statement; since the poor element is not defined in the studies (Love et al., 2011). Thus, improved communication practices, such as improved information flow through use of technology or computer-aided design are not sufficient to diminish the incidence of disputes in construction; but, improved work procedures, and programmes, as well as a change of behaviour may deter the occurrence of disputes (Love et al., 2011).

2.4.1.2 Sources of conflict

Although some studies have focused on conflicts (Kumaraswamy, 1997), the sources of conflicts are rarely dealt with independently; as most studies use the term interchangeably with disputes in the construction context (Semple, et al., 1994; Fenn, et al., 1997). Fenn et al. (1997) dismissed the importance of differentiating conflicts from disputes; as the distinctions presented in several studies are incoherent. Kassab et al. (2006), noted that, unclear documents, late supply of material and equipment, and low profit margins in the industry were other factors put considered; while, behavioural problems, contractual problems and technical problems, due to uncertainty and lack of experience were identified as some of the root causes of conflicts (Jaffar, et al., 2011).

2.4.1.3 Issues contributing to disputes

On the other hand, the studies on disputes use terminologies, such as main areas, types, groupings, contributing factors, driving factors, as well as the root causes of disputes (Hewitt, 1991; Diekmann et al., 1994; Colin et al., 1996; Sykes, 1996; Fenn et al., 1997; Waldron, 2006; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010). Despite the terminologies, the issues are analogous, as may be seen in the subsequent subsections on the main areas, types, groupings, contributing/ driving factors and the root causes of disputes.

2.4.1.3.1 Main areas, types, groupings

Similarly, disputes have been split into areas, types or groupings, which include payment, performance, delay, quality, administration, changes of scope or conditions, disruption, acceleration and termination (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010). Furthermore, process problems, people issues, extensions of time, the availability of information and contract terms determine the groupings of disputes (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

2.4.1.3.2 Contributing / driving factors

Similarly, project uncertainty, contractual problems and opportunistic behaviour were cited as the factors that contribute to the occurrence of disputes (Mitropoulos and Howell, 2001;

Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010). Other factors leading to the development of disputes include, poor management, design errors, adversarial culture, poor communications, inadequate design, bid-development errors, unrealistic tendering, lawyers' influence, unrealistic client expectations, and inadequate contract drafting, as well as poor workmanship (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

2.4.1.3.3 Root causes of disputes

Cheung and Yiu (2006) opined that the main root causes of disputes are conflict, triggering events and contract provisions. While the conflict areas include communication obstacles, tensions and personality traits (Rhys-Jones, 1994; Diekmann et al., 1994), the triggering events involve non-performance, late payment and time (Cheung and Yiu, 2006). Furthermore, scope variations, contract interpretation, extension of time (EOT) claims, site conditions (Waldron, 2006), late, incomplete, or substandard information, obtaining approval, site access, quality of design, as well as the availability of resources were also shown to be the root causes of disputes (Love et al., 2008; Love et al., 2010).

Love et al. (2011) acknowledged that scope changes, poor contract documentation, restricted access, unforeseen ground conditions, and contractual ambiguities are contributors to disputes. Ideally, contractual ambiguities may lead to misinterpretation of the contract terms by the parties leading to the need for intervention by third parties to help with the interpretation (Schane, 2002); while the policies and procedures are arguably elements of contracts, which depend on the management for enforcement and adherence. It would be desirable to provide further details regarding the linkage of the components of practice, task and circumstance with other issues identified in other studies (Love et al., 2011).

Essentially, Cheung and Yiu (2006) identified three root causes of disputes, comprising conflict, triggering events and contract provisions. The components of conflict identified in the study include: task interdependency, differentiations, communication obstacles, tensions and personality traits. However, these issues are questionable; since the study fails to clarify whether the components are elements of conflict, or the causes of thereof. Taking cognisance of the definitions of conflict presented by Love et al. (2008), some of the elements identified by Cheung and Yiu (2006) cannot with certainty be linked to any of the definitions. While

tensions, differentiations, communication obstacles and personality traits can be linked to conflict, task interdependency does not define or necessarily indicate conflict.

As mentioned earlier, several studies raised similar issues as the main contributors to disputes, claims and conflicts, thereby making it difficult to draw the line between the issues associated with each element (Heath et al., 1994; Kumaraswamy, 1997; Hewitt, 1991; Diekmann et al., 1994; Colin et al., 1996; Sykes, 1996; Semple et al., 1994; Bristow and Vasilopoulos, 1995; Mitropoulos and Howell, 2001). Some issues found in the studies do not possess the merits of problems, for example: payment, communication, time, quality, contract terms and administration. Neither payments nor communication, time, quality, contract-terms administration, can initiate disputes; instead, the problems associated with these elements can themselves lead to disputes.

Generally, all disputes involve human beings, and are contract-related; hence regarding contract incompleteness as a source of disputes is arguable; since people's misconceptions regarding the purpose of contracts and issues around bounded rationality and uncertainty (Yates, 1998) can be linked to the sources of disputes. Contracts cannot specify how they should be read, interpreted or used in a contractual relationship, as well as providing for their own explanations. Instead, they stipulate the main variables about construction; and they can only be used as "guidelines" to "align responsibilities" between parties to the agreement (Fenn and Gameson, 2003; p. 127). Hence, the parties, driven by their opportunistic behaviours, use their contractual knowledge as a superiority stance for financial gain over the other party (Chang and Ive, 2007). For instance, parties may look for loopholes in the contract document; while the absence of any such gaps and successive design changes by the client can deter opportunistic behaviour and other adjustments in relation to the contract (Yates and Hardcastle, 2003; Cheung, 2014).

Gruneberg et al. (2007) suggested the need for project teams to shift from focusing on the contract structure to contract management, as paying considerable attention to contracts' structures inclines towards disagreements, because of the uniqueness of projects. Thus, contracts would not be complete; while the nature of projects continues to vary (Yates, 1998; Love et al., 2011; Cheung and Pang, 2013). Fenn and Gameson (2003) noted that contracts are like any other law that is set as a guide, rather than a manual on how to conduct specific duties. Consideration the nature of the sources or factors put forward by other authors, such as people

factors (Cheung and Pang, 2013), it can be argued that sources of disputes are either human-related (Spittler and Jentzen, 1992; Kumaraswamy, 1997) or contractual (Chan and Suen, 2005). Tables 2.1-3 show how sources have been categorised in the literature.

Table 2.1: Categories of sources from the literature (Main areas/types, groupings)

Main areas/types, groupings		
<p>Colin et al. (1996)</p> <ul style="list-style-type: none"> •Payment and budget •Performance •Delay and time •Negligence •Quality •Administration <p>(Colin et al., 1996)</p>	<p>Hewitt (1991)</p> <ul style="list-style-type: none"> •Change of scope •Change conditions •Delay •Disruption •Acceleration •Termination <p>(Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).</p>	<p>Diekmann et al. (1994)</p> <ul style="list-style-type: none"> •Process problems •Contract terms •People issues •Payments •Variations •Extensions of time •Nomination •Re-nomination •Availability of information <p>(Diekmann et al., 1994)</p>

Table 2.2: Categories of sources from the literature (Contributing/ driving factors)

Contributing/ driving factors	
<p>Mitropoulos and Howell (2001)</p> <ul style="list-style-type: none"> •Project uncertainty •Contractual problems •Opportunistic behavior <p>(Mitropoulos and Howell, 2001)</p>	<p>Rhys-Jones (1994)</p> <ul style="list-style-type: none"> •Project management procedure: change order, pre-award design review, pre-construction proceedings, and quality assurance •Poor management •Design errors: errors in drawings and defective specifications •Adversarial culture •Contracting officer: knowledge of local statues, faulty negotiation procedure, scheduling, bid review •Poor communications •Contracting practices: contract familiarity/client contracting procedures •Inadequate design •Site management: scheduling, project management procedures, quality control, and financial packages •Economic environment •Bid development errors: estimating error •Unrealistic tendering •Influence of lawyers •Unrealistic client expectations •Inadequate contract drafting •Poor workmanship <p>(Rhys-Jones, 1994)</p>

Table 2.3: Categories of sources from the literature (Root causes)

Root causes	
<p>Cheung and Yiu (2006)</p> <ul style="list-style-type: none"> •Conflict – task interdependency, differentiations, communication obstacles, tensions, personality traits •Triggering events – non-performance, payment, time •Contract provision <p>(Love et al., 2008; Love et al., 2010)</p>	<p>Waldron (2006)</p> <ul style="list-style-type: none"> •Variations to scope •Contract interpretation •Extension of time (EOT) claims •Site conditions •Late, incomplete, or substandard information •Obtaining approvals •Site access •Quality of design •Availability of resources <p>(Waldron, 2006)</p>

2.4.2 Discussion on the themes for sources of disputes

Several studies displayed similar and interconnected taxonomies of authors and sources of disputes (Fenn et al. 1997; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010; Love et al., 2011). These seldomly distinguish between claims, conflicts and disputes (Kumaraswamy, 1997). The factors identified in literature as indicated in Tables 2.1 -3 were grouped into main categories which include: contractual sources, management, design, human, external communication, quality and payment issues.

The study also categorised the contractual issues as key sources leading to disputes (Chan and Suen, 2005), which in the context of the study, relate to the nature and contents of the contracts involving issues, such as contractual ambiguities, unfair terms and misinterpretation of contracts (Mitropoulos and Howell, 2001; Love et al., 2008; Love et al., 2010). Other issues, often highlighted as contributors to disputes, include contractual ambiguities, misinterpretation and incompleteness (Jaffar et al., 2011; Love et al., 2011; Cheung and Pang, 2013). As such, ambiguities, misinterpretation, incompleteness, inadequate contract-drafting, variations in quantities, termination and unfair terms (Mitropoulos and Howell, 2001; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010) were set as the coding frames or sub-themes for the contractual category or main theme.

Some studies categorise contractual ambiguities (Kumaraswamy, 1997) under contract incompleteness; although the terms refer to different aspects of the contract (Cheung and Pang, 2013; Cheung and Pang, 2014). Despite the fact that the terms are interrelated, contractual ambiguities (Mitropoulos and Howell, 2001) are not always an outcome of incompleteness of contracts; since they refer to lack of clarity; while the latter refer to the omission of vital clauses or contractual information (Cohen, 2000). Considering the definition of contracts by Fenn and Gameson (2003), most project relationships depend on the nature of the contract and the project participants' collaborations regarding project execution. Hence, gaps in contract documents can lead to many issues, which include opportunistic behaviour (Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

Similarly, the management issues constitute the second contextual category or main theme; and these refer to the management matters, such as maladministration, inappropriate budgeting, inadequate planning or scheduling procedures, bureaucracy, biased organisational culture or

structure, unrealistic targets, maladministration of acceleration processes, changes in scope or client preferences (Colin et al., 1996; Fenn et al., 1997; Waldron, 2006; Cheung and Yiu, 2006; Love et al., 2010). The sub-themes or coding frames include issues, such as poor management, maladministration of processes (i.e. acceleration or changes in scope or client preferences), negligence, bureaucracy, poor site access, delayed approval, or the issuing of permits, site-access restrictions, unrealistic time targets, the unavailability of resources, and problems with the scheduling procedures (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2010).

The managerial problems frequently affect the workmanship, project quality, project duration; and they can even provoke strike actions (Fenn et al., 1997; Cheung and Yiu, 2006; Love et al., 2010). Pinnell (1999) showed that human-related issues are often caused by poor people skills; and this is frequently attributed to the lack of training by management.

The third category which pertains to the design issues; involves matters such as design changes, incomplete design, poor or inadequate design and design-related scope changes (Rhys-Jones, 1994; Waldron, 2006). The design issues can induce a plethora of issues capable of initiating disputes; and they are among the taxonomies developed by those studies already mentioned in this study (Love et al., 2011; Cheung and Pang, 2014). Therefore, issues such as design changes, incomplete design, poor or inadequate design and design-related scope changes (Rhys-Jones, 1994; Waldron, 2006) constitute the sub-themes or coding frames for the category of the main theme.

Sequentially, the human issues constitute the fourth category, which pertains to personality influences, power, dominance, egos, and cultural issues, or other differences between parties to the contract that lead to conflicts or disputes (Yiu and Cheung, 2007; Cheung and Pang, 2013). Since contracts are drafted and managed by human beings, the inherent elements considered in the context are those that relate to behavioural (human nature or tendencies) and sociological (cultural and environmental) issues (Yiu and Cheung, 2007; Cheung and Pang, 2013). Notwithstanding the fact that the human components are central to most issues, studies noted the linkage between the sources of disputes, these issues cannot initiate disputes in isolation (Love et al., 2011). As a result, the personality influences, power, dominance, egos, human nature or tendencies, behavioural issues (Yiu and Cheung, 2007; Cheung and Pang, 2013) and other differences between parties that lead to conflicts or disputes (Pinnell, 1999), constitute the coding frames for the context category.

Similarly, the external issues category which embraces those issues, that are unpredictable and beyond management's control, such as bad weather, strikes, economic environmental pressures (Kumaraswamy, 1997; Waldron, 2006), as well as lawyers' influences; although apt risk management and proper contract drafting may reduce this factor's effects (Taylor, 2008). The coding framework for the category comprises unpredictable issues, such as bad weather, strikes, economic and environmental pressures, lawyers' influences, as well as pressure from investors (Fenn et al., 1997; Harmon, 2003b; Cheung and Yiu, 2006; Love et al., 2008; Love et al., 2010).

In the same way, communication issues frame, which is the sixth context category, embraces issues, such as late, substandard, inaccurate or lack of information (Rhys-Jones, 1994; Diekmann et al., 1994), as well as the failure to distribute comprehensive information to the relevant parties promptly. The factors, such as poor communication, late or inadequate information that appear in previous studies (Fenn et al., 1997; Love et al., 2008) set up the coding frames used in the study for the contextual category. Studies have shown that communication (Cheung and Yiu 2006; Love et al. 2010) matters have the capability of instigating disputes. For that reason, the study classified such matters as communication issues.

The quality issues form the seventh contextual category. This refers to matters, such as poor performance, non-performance, poor quality and defects (Rhys-Jones, 1994; Colin et al., 1996; Mitropoulos and Howell, 2001). Thus, poor performance, non-performance, poor quality, as well as defects, form the sources of disputes; because sources of disputes are interconnected (Fenn et al., 1997; Cheung and Yiu 2006; Love et al. 2010). For instance, clients may withhold the contractors' payment, contending failure to conform to the specified quality standards, leading to work stoppages resulting from strikes caused by unpaid workers.

There are five issues pertaining to unrealistic performance expectations; poor quality, non-payment, delay and inadequate contract provisions (Rhys-Jones, 1994; Colin et al., 1996; Mitropoulos and Howell, 2001; Waldron, 2006) can be deduced from the example, which collectively lead to disputes. Although, the causal dependences in dispute occurrences suggested by Love et al. (2011) are not explicit; because disputes differ with different projects, the interdependency of variables is more realistic; since parties may use opportunistic behaviour, which could be contractual knowledge. For the purpose of the study, all issues that relate to quality (Rhys-Jones, 1994; Colin et al., 1996; Mitropoulos and Howell, 2001) were

classified as quality issues and the coding frames include: poor performance or quality, non-performance and defects.

Lastly, the payment issues conclude the context categories; and this applies to matters, such as non-payment, late payments and rejected claims (Diekmann et al., 1994; Cheung and Yiu, 2006; Waldron, 2006). The influence of claims in initiating disputes is shown in studies; as claims are used interchangeably with disputes; and the emphasis on rejected claims signals that claims play a crucial role in instigating disputes (Arditi et al., 1998; Cheung and Yiu, 2006). As a result, all issues concerning claims, late payment, non-payment, disallowed costs (Diekmann et al., 1994; Cheung and Yiu, 2006; Waldron, 2006) constitute the coding framework for the contextual category. Watts and Scrivener (1993) noted the contribution of payment issues to the development of disputes. Nevertheless, non-payments, delayed payments, disallowed costs are sources of disputes; and non-payments are linked to quality issues (e.g. poor workmanship and defective work), change of scope, ambiguity of contract terms, and incomplete contract documentation (Love et al., 2010). Generally, issues with payments and claims were reflected as payment issues in the study; and the coding frame includes non-payment, late payments and rejected claims (Diekmann et al., 1994; Cheung and Yiu, 2006). Accordingly, the contextual categories facilitate the analysis and evaluation of the results obtained from the fieldwork.

2.4.3 Development of the conceptual framework

The Conceptual Content analysis flow chart adopted is presented in Chapter 3; while links to the contextual categories in the conceptual framework are presented in this section in Table 2.4.

Table 2.4 Context categories or themes developed in the conceptual framework

Context categories in the conceptual framework								
“What are the sources of disputes in construction contracts?”								
	Contractual Issues	Management issues	Design issues	Human issues	External Issues	Communication issues	Quality issues	Payment issues
Coding frames	<ul style="list-style-type: none"> •Misinterpretation of contract terms/ contract unfamiliarity •Inadequate contract drafting •Termination •Ambiguous/ biased contract terms/ provisions / practices •Variations in quantities •Contract misinterpretation 	<ul style="list-style-type: none"> •Unrealistic time targets, tendering •changes- client variations/ site conditions, acceleration •Maladministration/ Poor Site management / Delayed approvals, Negligence, •Shortages of resources, skills, Unfamiliarity with local statues, poor workmanship/ Lack of team spirit •Delays in site access restrictions, construction related, work progress •Extension of time issues •Faulty negotiation, procedure, bid review, scheduling, bid development errors, estimating error, pre-construction proceedings, pre-award design review •Poor project management procedure, Process problems •Failure to deal with unexpected outcomes 	<ul style="list-style-type: none"> •Change in design, Change of scope, Change of conditions •Poor design quality, Inadequate design •Drawing changes, errors in drawings and defective specifications, Variations in specifications, •Design Delays Design errors: Variations due to design errors 	<ul style="list-style-type: none"> •conflicting cultural backgrounds, cultural clashes Political issues Behaviour issues, Egos, being difficult •Over-expectations / Unrealistic expectations by parties •Opportunistic behaviour •Conflict – task interdependency, differentiations, tensions, personality traits •Human behaviour parties: inter-parties’ problems •Adversarial culture Misunderstandings •Personality conflicts 	<ul style="list-style-type: none"> •Project uncertainty •Influence of lawyers •Nationwide shortage of skills •Economic environment pressures •High Financing costs •Depreciation in Rand Value, salaries / remuneration •Brain drain •Disruption •Project unpredictability •Labour unrest •unexpected events 	<ul style="list-style-type: none"> •Late, incomplete, or substandard information •Unclear Site instructions •Lack of information, unavailability of information •Language barriers •Lack of communication between project participants 	<ul style="list-style-type: none"> •non-performance •Defects •Poor quality • Poor quality control •Poor quality assurance 	<ul style="list-style-type: none"> •Non-payment •Delayed payments •Issues with claims

2.5 Definition of the concept of dispute resolution

Dispute resolution is rarely defined in studies pertaining to disputes; but it can be defined as a system or way of handling disputes (Atlas et al., 2000), which involves traditional court systems or alternative dispute resolution (ADR). ADR refers to the various ways employed in resolving disputes; and it is often divided into adversarial and non-adversarial, or private and public procedures (Atlas et al., 2000; p52; Pretorius, 2005; Gebken II and Gibson, 2006).

Generally, dispute resolution relates to the court systems (litigation) and arbitration processes (Newey, 1992; Pretorius, 2005). The growth in litigation cases has led to congestion in courts and delay in cases; as a result, other ADR became an option (Newey, 1992). While, development of arbitration involved the English Arbitration Act of 1697, the Arbitration Society of America founded in 1922, the United States Arbitration Act endorsed in 1925, integration of the Arbitration Society and the Arbitration Foundation into the formation of the American Arbitration Association (AAA) in 1926, which led to the development of dispute-resolution services and guidelines (Cooperative Research Centre for Construction Innovation, 2007).

ADR proliferated around 1938, when litigation procedures grew in the Federal Government, followed by the introduction of the Action Commission in 1979, which was aimed at reducing court costs and delays by the American Bar Association (ABA) (Peckham, 1984). It refers to the use of other dispute-resolution methods other than litigation. The primary aim was to accommodate parties' privacy, to reduce costs and time, as well as the number of cases brought for litigation (Mnookin, 1998).

The concept of disputes revolves around conflicts and claims in most publications relating to the construction industry (Fenn et al., 1997; Love et al., 2010). Disputes involve human decisions, sensitivities, and intentions; because most attributes to disputes have human input, from the lack of communication, technical issues, misinterpretation of contractual terms or changes of scope (Lieberman and Henry, 1986; Cheung and Yiu, 2006; Cooperative Research Centre for Construction Innovation, 2007 ; Cheung and Pang, 2013).

It can be argued that the human element dominates the concept of disputes (Yiu and Cheung, 2007; Cheung and Pang, 2013), because the diverse skills, backgrounds, nationalities, as well as the diverse cultures result in complex situations, varied judgements or sensitivities towards others. Project objectives including the manner in which other professionals execute their tasks. Henceforth, the need to add value or generate profit by each party complicates issues; since parties tend to use the gaps in the contract for financial gain by extracting as much profit as possible from the other party (Love et al., 2010). Fenn and Gameson (2003) best describe this concept as ‘the game theory’ or lawful opportunistic behaviour.

2.6 Dispute-resolution methods from the international perspective

Generally, dispute resolution is divided into litigation and ADR (Gill et al., 2015). This was developed for use in different parts of the world. Typically, ADR comprises: arbitration, mediation, adjudication, negotiations, Dispute Resolution Boards or Dispute Review Boards (DRBs), Dispute-Adjudication Boards (DAB), med-arb or mediation-arbitration, fact-finding, mini-trials, early neutral evaluation, rent-a-Judge, convening, conciliation, neutral evaluation, expert determination (Treacy, 1995; Fenn et al., 1997; McCreary et al., 2001; Cheung and Suen, 2002; Chan et al., 2006; Gebken II and Gibson, 2006; Moore, 2014; Gill et al., 2015). Med-arb or Mediation-arbitration refers to a combination of mediation and arbitration, where the third neutral party initiates as a mediator and changes the role to an arbitrator where mediation efforts fail to resolve the dispute (Chan and Suen, 2005).

Other ADR methods include partial summary judgment; and sometimes negotiation, as well as various officials and private individuals, such as appointed masters, special masters, neutral ombudsmen, and private judges (Lieberman and Henry, 1986; Gebken II and Gibson, 2006). Several studies have attempted to show the popularity of each method in various parts of the world; and there is significant evidence that indicates an increase in the use of the ADR methods, as opposed to litigation processes (Peckham, 1984; Edwards, 1985; Lieberman and Henry, 1986; Mnookin, 1998).

The choice of ADR depends on the nature of the outcomes (settlement or binding) and the third-party involvement (to either impose a decision or facilitate settlement) (Steen,

1994). Nevertheless, in a client-contractor relationship, the degree of choice is likely to differ, based on the issues of superiority and control (Bingham, 2004) of the entire contract. Bingham (2004), established two forms of control that exist in dispute resolution, namely, control of the dispute-system design (available provisions to deal with specific cases) and control of the case (outcome and procedure). Only clients in most cases have the control over the dispute-system design, the parties control the negotiated settlements; while third parties may impose the decisions on the parties, depending on the conditions of the contract (Bingham, 2004).

Gebken II and Gibson (2006) categorised the dispute-resolution methods, based on the costs associated with each method and the degree of hostility. Essentially, the study by Chan et al. (2006) explored the criteria used to select the resolution methods and concluded that: confidentiality, third-party control, the preservation of business relationships, the reduction of the adverse effect, due to cultural differences, enforceability and reduced cost and time, together constituted the selection criteria (Chan et al., 2006). Nevertheless, cost-saving, shorter time, reliable and satisfactory outcomes, as well as privacy and confidentiality tend to be the most important criteria that affect the use of each method (Stipanowich, 2010). Yet, the criteria hardly justify the consistent use of litigation and the arbitration procedures. Cooperative Research Centre for Construction Innovation (2007) further confirmed the acceptance of mediation, early neutral evaluation, dispute-adjudication boards, adjudication and other methods intended for casual, party-driven consensual resolution. Chan et al. (2006) stressed the importance of human nature in the resolution of disputes. While the costs, risks, unpredictability of the jury, and the internal costs attached to the entire procedure might be of concern, Posner (1986) conferred some irrationalities associated with the litigants and their lawyers, that cannot be precluded by other alternatives; as elements of emotions and ignorance tend to play a role.

Undoubtedly, litigation and arbitration methods still dominate the construction industry; as the industry seems not to comprehend the critics aligned against them; and their continued use might be proliferated by the superiority preference given them over adjudication (Stipanowich, 2010) and other methods. Other attempts, such as making adjudication procedures compulsory, tend to reduce the reliance on arbitration and litigation, because parties tend to have a false impression that adjudication and

mediation procedures are suitable for small-scale disputes. However, recent studies and provisions in the NEC conditions of contracts have shown that adjudication can be used to resolve disputes of any magnitude (Eggleston, 2015).

Henceforth, the outline of the resolution mechanism is presented under the (section 2.6.1) traditional courtroom litigation (section 2.6.2) imposed binding, third-party decision ADR (arbitration, adjudication and DAB) (section 2.6.3) voluntary, third-party negotiated settlement agreement ADR (mediation, DRBS, mini-trial, neutral evaluation, rent-a-judge, expert determination, med-arb) and (section 2.6.4) voluntary, negotiated settlement agreement between parties ADR (negotiations, conciliation, amicable settlement).

2.6.1 Traditional Courtroom (litigation)

While several studies reveal that litigation is a globally traditional way of resolving disputes between parties through courts, it involves the traditional court system procedures, where the judge runs the proceedings with the parties being legally represented by lawyers, who argue their cases – in an attempt to convince the judge through the facts of the law (cidb, 2005; Gaitskell, 2011). Although parties are interested in the final judgements, the procedure has been criticised for high costs, time delays and its lack of confidentiality (Hensler, 2003; Gaitskell, 2011).

Gaitskell (2007) showed a 46% decrease of litigation cases brought to the Technology and Construction Court (TCC) for trial between 1997 and 2004. Expressly, the decrease resulted from the transformations within the judicial system and the introduction of alternative methods that were more efficient, quick and cheaper compared to the costs of the court systems (Cooperative Research Centre for Construction Innovation, 2007). Apart from public exposure, and other criticisms, the use of litigation is still widespread; as the judgement is final and binding, incorporating factual findings based on law, which eliminate the possibility of relitigation (Cooperative Research Centre for Construction Innovation, 2007). Litigation faces pressure from the ADR, especially adjudication, mediation and arbitration, in their respective order of influence (Gaitskell, 2007).

2.6.2 Imposed, binding, third-party decision ADR (arbitration, adjudication, expert determination, med-arb, rent-a-judge and DAB)

While, arbitration, expert determination, adjudication, and DAB are binding decisions imposed by one or more third-parties subject to court application; they vary in the terms of procedure, outcome, costs and time taken to arrive at decisions (Gaitskell, 2007).

Adjudication in most cases precedes arbitration; and in some legislation, it is set as a compulsory method that can be superseded by arbitration or litigation. The use of adjudication came into force in United Kingdom (UK) in 1998; when the adjudication provisions were included in Housing Grants, Construction and Regeneration Act, 1996, following the Rudi Klein case, and Sir Michael Latham's efforts to improve subcontractors' cash flows (Gaitskell, 2007). Hence, Gaitskell (2007) noted its dominance in United Kingdom and the rest of the commonwealth countries over a short period. Its use tends to have increased, due to the support it gathered over the years as a compulsory method preceding arbitration.

In principle, it involves a third party, the adjudicator, who listens to both parties' perspectives of the issues in an open communication system. It was developed to resolve matters within the shortest time "28 days" to facilitate project completion (Ndekugri and Russell, 2006). The adjudicator's decision is binding with immediate effect until demurred by an arbitration award; and it incorporates a provision that prohibits dissatisfied parties from appealing the decision for a certain period after the adjudicator's determination. The courts established that dissatisfaction by parties regarding the adjudicator's determination or the expression through a notice of dissatisfaction could not be used as an excuse to reject the adjudicator's decision; since they are binding instantaneously (Gaitskell, 2007). This falls within the recent developments based on the proposed selection criteria mentioned earlier: matters resolved timeously, less costs, binding and therefore enforceable.

Maritz and Hattingh (2012), noted that the lack of knowledge on adjudication coupled with contractual, institutional and legislative framework challenges contribute to the reduced use of adjudication in the South African context; however, South Africa tends towards strengthening the use and acceptance of adjudication. Gebken II and Gibson

(2006) reported developments in adjudication procedures in the UK, Australia, New Zealand, Singapore, Hong Kong and South Africa. The application of adjudication procedures varies with countries. Singaporean procedures are similar to the Australian approach; a timeframe is stipulated, in which the adjudicator is expected to give the decision varies between the different countries: in the UK (28 calendar days), New Zealand (20 working days), Australia (10 working days), Singapore (7 days) (Gaitskell, 2007) and SA (42 days) (cidb, 2005).

Arbitration, on the other hand, is a private and binding method, which is regarded as a substitute for litigation (Stipanowich, 2010); as it involves private courtrooms, and specific provisions desired by both parties. It started in the United States after the formation of the Arbitration Society of America in 1922, followed by the Arbitration Foundation in 1924 and the subsequent enactment of the United States Arbitration Act in 1925, which fused with the American Arbitration Association (AAA) in 1926 (Treacy, 1995; Cooperative Research Centre for Construction Innovation, 2007). Treacy (1995) and Cooperative Research Centre for Construction Innovation (2007) further noted that the combination led to the formation of the arbitration clauses used in the standard forms of contract.

Its proceedings are practised throughout the world, although they may differ because of the differences in legislation and laws (Gaitskell, 2007). It is used as a final and binding mechanism, or is subject to appeal (Steen, 1994). In SA, it is regulated by the Arbitration Act, 42 of 1965, the provisions of which tend to be ambiguous; since it allows parties to adopt their own rules and regulations distinct from those stipulated by the Association of Arbitrators of Southern Africa (AASA) (Binnington Copeland and Associates, 2005).

Despite its global supremacy over the other ADR methods and litigation methods, its constraints are similar to those of litigation, as it has been linked with; high costs, lengthy resolution periods, lawyer's control, lack of qualified arbitrators, limited appeal, a gradual inclination to litigious procedures and predominance by lawyers (Stipanowich, 2010). Binnington Copeland and Associates (2005) added that the SA construction industry tends to be inclined to appointing attorneys and counsel as the representatives who employ the traditional adversarial procedures practised in court.

Accordingly, Gaitskell (2007) noted that the introduction of adjudication and mediation has led to a 33% reduction in arbitration cases; although it remains popular as an alternative for litigation and the final stage for adjudication and mediation (depending on the contractual arrangements).

Likewise, the DAB, expert determination, med-arb, rent-a-judge are other binding alternatives are all available for use in the construction industry. Expert determination involves one or more experts, who are chosen by parties to examine one or more issues, in order to suggest settlements or to impose determinations that are binding, with a limited gap for appeal; and unlike arbitrators, they are examined and can be charged for negligence (Gaitskell, 2007). These methods are less popular in the international arena. DABs are similar; as they involve three or more experts involved in the litigation until the commissioning of the project to monitor progress and advice and help resolve the disputes.

Med-arb, as implied by the term, combines mediation and arbitration procedures, which allow the case to be mediated and arbitrated successively; while rent-a-judge involves the selection of an expert, such as one or more retired judges, to decide on the disputes between the parties (Henry, 1987; Vorys, 2006; Bartel, 1991). Expert determination, rent-a-judge and mini-trial are somewhat similar; as they involve the appointment of one or more experts by both parties to decide the merits of the matter, where the parties decide whether to be bound by the decision, or not (Davies, 2011). Gaitskell (2007) noted that some of these methods were rarely used; and consequently, they were often omitted in the literature; since they are incorporated into the contracts through mutual agreement between the parties. As a result, the popularity of these methods cannot be determined in this study.

2.6.3 Voluntary, third-party negotiated settlement agreement ADR (mediation, conciliation, facilitation, DRBs, mini-trial, neutral evaluation, non-binding arbitration)

Since the predominant methods in this category are mediation and DRBs, expert determination, neutral evaluation, rent-a-judge, and med-arb tend to be rarely discussed (Gaitskell, 2007); thus, for the purpose of the study, the discussion was inclined to

mediation and DRBs. Mediation refers to a private, informal procedure, involving one or more third parties that facilitate a settlement amongst the disputing parties (Povey et al., 2005; Wall and Dunne, 2012).

Povey et al. (2005 pp 49-50) indicated that mediators assist in “---*developing trust and confidence, establishing a framework for co-operative decision-making, analysing the conflict, and designing appropriate interventions, promoting constructive communication, facilitating negotiation and problem-solving, educating the parties, empowering the parties, imposing pressure to settle, promoting reality, advising, evaluating and terminating the mediation*”.

Moreover, Wall and Dunne (2012) deliberated that mediation procedures are affected by four contexts, which involve conflict type, country, culture, and mediation institutions, which is in agreement with Gill et al. (2015), who noted that the nature of the relationship between the parties has a significant impact on the resolution processes. Moreover, the mediation paradigm proposed by Wall and Dunne (2012) fails to convey the roles of mediators; as it implies that mediation outcomes are threefold; and they are influenced by third parties, disputing parties and mediators. Mediators are not expected to impose outcomes in the mediation procedure (Wall et al., 2001); instead, they assist the parties to reach settlements, as mentioned earlier. Conciliation, on the other hand, is often referred to as some form of mediation; but the conciliator’s scope is broader; as it involves more active roles, such as talking parties into an agreement by imposing solutions, as well as advising them through private conferencing – as opposed to meeting both parties together (Cooperative Research Centre for Construction Innovation, 2007).

Generally, mediation practices have grown in the UK and the rest of the world (Stipanowich, 2004; Povey, 2005); although the consensual and non-binding nature of the outcome is often seen as being predisposed to opportunistic behaviours; since parties tend to use it to study the other party’s defence in preparation for arbitration and litigation procedures. Povey et al. (2005) further noted that dispute specialists are responsible for spreading the benefits of mediation; and this has been the most frequently used ADR method in the South African construction industry.

The growth in research helps create widespread knowledge about the benefits of mediation in commercial perspectives; as mediation practices have been reported in the UK, USA, South Africa, Australia, New Zealand, Singapore, China, Malaysia, Poland, Israel, Hong Kong and Japan, to name but a few (Treacy, 1995; Wall et al., 2001; Love et al., 2011; Moore, 2014). In Hong Kong in the 1990s, mediation became an integral form of dispute resolution in the public sector; while arbitration remained the main method in the private sector (Cheung, 1999).

Dispute Review Boards function as advisors to help curb disputes as they occur; but in some instances, the boards' powers are extended to impose binding decisions, such as the use of experts in the field to determine the matters, and to suggest or impose settlements, based on experience and extensive investigations into the disputes (Harmon, 2003b).

The DRBs involve three or more experts involved from the initial stages of the project until the commissioning stage responsible for monitoring progress; they advise and help resolve disputes, as they arise and are required to conduct site visits periodically, to keep them informed of the progress and the possible problematic issues (Treacy, 1995; Fenn et al., 1997). They are popular internationally, with a significant coverage in the USA, the UK and Australia, amongst other countries (Treacy, 1995).

2.6.4 Voluntary, negotiated settlement agreement between parties ADR (negotiations, amicable settlement)

Negotiation is a form of decision-making in which the parties engage in realistic talks to resolve their differences, a procedure based on the norms, i.e. the norm of mutual responsiveness that constrains parties to talk to each other, despite the prevailing differences (Eisenberg, 1976; Pruitt, 2013). Eisenberg (1976) highlighted the fact that norms play crucial roles in negotiations; but in the business sense, they tend to be much inclined to those parties with more bargaining strength. It should be noted that the parties move away from divisive interests to a point of compromise – for the sake of continued business relations. Thus, matters are settled through the collective effort that restores the relationship. Pickavance (2007) suggested that they were established around the 1970s.

The essence of negotiations lies in resolving disputes at jobsite level, quickly, efficiently, at reduced costs and disruptions, with access to better information, preserved relationships and reduced human resources (Eisenberg, 1976). Since issues of bargaining strengths tend to prevail in business, the existence of business norms is debatable; therefore, not all the parties would prefer negotiations, or have an option of using them or not; since the party with more bargaining strength may use it to get what it wants from the other party. Usually, the nature of negotiations depends on the goal and objectives set by the parties; since the negotiation system is not defined; and the procedure is generally non-binding; unless the parties decide on a legally binding contract at the end of the negotiation process (Cooperative Research Centre for Construction Innovation, 2007).

Inherently, negotiations can be between the disputing parties; or they can involve the third party (negotiator), where the former is divided into elevation or stepped negotiations, which are included in most standard forms of contracts globally (Bingham, 2004; Cooperative Research Centre for Construction Innovation, 2007). Table 2.5 specifies the studies on dispute resolution methods, as well as their usage globally.

Table 2.5 Studies on dispute-resolution methods and usage globally

Dispute resolution Method	Usage	Citation
litigation	UK, USA, Australia,	(Fenn et al., 1997; Chan et al., 2006; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007)
arbitration	UK, USA, Australia,	(Treacy, 1995; Fenn et al., 1997; Bingham, 2004; Chan et al., 2006; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007)
adjudication	UK, USA, Australia,	(Fenn et al., 1997; Cheung et al., 2002; Chan et al., 2006; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007 ; Moore, 2014)
mediation	UK, USA, Australia,	(Treacy, 1995; Fenn et al., 1997; Cheung et al., 2002; Bingham, 2004; Chan et al., 2006; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007 ; Moore, 2014)
negotiations	UK, USA, Australia,	(Fenn et al., 1997; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007)
Dispute-resolution boards (DRBs)	UK, USA, Australia,	(Treacy, 1995; Fenn et al., 1997)
Dispute-Adjudication Boards (DAB)	UK, USA, Australia,	(Fenn et al., 1997; Bunni, 2000; Seifert, 2005)
Dispute-Review Boards		Steen, 1994; Cooperative Research Centre for Construction Innovation, 2007.
med-arb		(Henry, 1987; Bartel, 1991; Vorys, 2006)
Fact-finding		(Steen, 1994; McCreary et al., 2001)
Mini-trials	UK	(Steen, 1994; Cheung, 1999; Chan et al., 2006)
early neutral evaluation		(Treacy, 1995; Bingham, 2004; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007)
Rent - a - Judge		(Steen, 1994; Chan and Suen, 2005)
convening		(McCreary et al., 2001; Cheung et al., 2002)
conciliation		(Fenn et al., 1997; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007)
neutral evaluation	UK	Gebken II and Gibson, 2006
Expert determination		(Fenn et al., 1997; Gebken II and Gibson, 2006; Chan et al., 2006; Cooperative Research Centre for Construction Innovation, 2007)

2.7 South African situation

As SA is still in its developmental stages, there is evidence of the lack of knowledge and research on dispute-resolution processes, more specifically in adjudication and mediation procedures (Povey, 2005; Maritz and Hattingh, 2012; Maritz and Hattingh, 2015). Povey et al. (2005) ascertained that mediation practice in the South African construction industry is not in accordance with the stipulated mediation rules; as they argue that the decision by parties to allow a mediator to make a binding decision is misaligned with mediation procedures.

In addition, the cidb (2005) linked the lack of adjudicators to the lack of interest in adjudication procedures in South Africa. On the other hand, Maritz and Hattingh (2015) confirmed the use of mediation, arbitration and litigation in South Africa, and noted that the application of adjudication procedures suffers from a lack of knowledge on adjudication.

Despite the lack of research in disputes from an SA perspective there is practical evidence of the dispute pandemic in the construction industry, specifically reported from the major projects such as the Gautrain, Soccer City Stadium, Greenpoint Stadium.

Despite the lack of research in disputes from an SA perspective there is evidence from court judgements of *Radon Projects v N V Properties & another*, which suggested that large construction projects provide considerable scope for several kinds of disputes to occur, during both the execution and post-completion stages.

Recent developments in the construction industry which include the involvement of courts in transforming the industry, reveal the indicament (Maritz and Hattingh, 2015).

2.8 South African provisions

Hahlo and Kahn (1968) defined law as the only enforced body of rules recognised by the statute that controls human conduct. Tager (1985) also acknowledged that the law is the universal guide recognised and enforced by the Constitution, when necessary, to regulate the human conduct. The South African law was mainly derived from the

Roman-Dutch Law, with some significant input from the English Law; as courts have relied on decisions derived from it (www.justice.gov.za, 2015). Ideally, the law is divided into public and private law; and the latter is distinguished as the law concerning the individuals' interests, which is further divided into the law of persons, the law of things, and the law of actions.

Congruently, the law of contracts falls within private law; and it is constrained by obligations defined as the legal bond compelling parties to perform for the benefit of each other, in accordance with the law (Christie and Bradfield, 2011). Notwithstanding the fact that the law is constantly evolving; cases are different from each other; the courts find themselves in difficult situations, where the provisions in law are insufficient to meet fair judgment. Thus, South Africa relies on the Constitution, judiciary decisions and other sources, as the main sources to update the law timeously (Christie and Bradfield, 2011).

In the framework of the South African Construction Industry Development Board (cidb), the main dispute-resolution methods available for use by parties in the construction industry include litigation, arbitration, mediation and adjudication, expert witnessing, negotiation and mini-trials, among others (cidb, 2005). While the extent of usage is not documented, the cidb and the general conditions of contracts provide a glimpse of the available dispute resolution methods, as well as the main standard forms of contracts, which include the:

- FIDIC (French initials for International Federation of Consulting Engineers) (1999) (Short contract and Red, Yellow and Silver Books).
- General Conditions of Contract for Construction Works (GCC).
- JBCC Series 2000 (Principal Building Agreement and Minor Works Agreement).
- New Engineering Contract (NEC3) (Engineering and Construction Contract and Engineering and Construction Short Contract).

Several methods are supported in the prescribed standard forms of contracts, which include negotiation, or amicable settlement, or mutual consultation, dispute-adjudication boards, adjudication, arbitration, mediation and litigation *inter alia*. The

order of application differs in all four; but the previous additions of the GCC and the JBCC endorsed negotiation, or amicable settlement, or mutual consultation as the first forms of dispute resolution referred to settlement by parties in clause 30.1 of the JBCC, 2013 edition 6.0. Conversely, the NEC omits negotiation, or amicable settlement, or mutual consultation and mediation, despite its emphasis on the essence of reciprocal trust and collaboration (Eggleston, 2015).

The FIDIC prescribes Dispute-Adjudication Boards as the first method to resolve disputes, followed by amicable settlement and the final arbitration method; while the NEC prompts adjudication, followed by arbitration and litigation (courts), as the final methods. The JBCC and FIDIC provide arbitration as the final dispute-resolution method; while the GCC and the NEC prescribe litigation as the final method. The JBCC provides separate State clauses that prescribe litigation, as opposed to arbitration. In addition, the FIDIC contains a provision for adjudication; while the NEC renders adjudication compulsory, and has a separate adjudicator's contract (Heaphy, 2012).

Table 2.6: List of Dispute-Resolution Methods endorsed in the Standard forms of contract

Dispute Resolution Methods	FIDIC	GCC	JBCC	NEC
Negotiation, Amicable Settlement, or mutual Consultation	Clause 20.5	Clause 27.1	Clause 30.1	
Dispute Adjudication Boards	Clause 20.2-4			
Adjudication		Clause 10, GCC 2010 Guidelines	Clause 30.3	Clause W1.1
Arbitration	Clause 20.6	Clause 10 GCC 2010 guidelines	Clause 30.5, Clause 30.7	Clause W1.4(5)
Mediation		Clause 27.2-4	Clause 30.8	
Litigation		Clause 27.3 and 5	State clause	Clause W1.4(4)

The Table 2.6 depicts the provisions in the four main standard forms of contract used in the SA industry. The FIDIC excludes mediation, traditional court room and adjudication and is the only option that provides for Dispute Adjudication Boards (DABs). The GCC, JBCC and the NEC make similar provisions although they differ in application as provided in the preceding Section 2.9.

2.9 Dispute-resolution methods in the standard forms of contracts

This section outlines the dispute-resolution procedures in each standard form of contract, in order to show how disputes are resolved in the standard forms of contracts, which include the JBCC, NEC, GCC and the FIDIC.

2.9.1 The JBCC

The Joint Building Contracts Committee (JBCC) is amongst the cidb-approved standard contracts appropriate for the public sectors; although it is also applicable in the private sectors (JBCC, 2014a). The JBCC (2014) noted that JBCC form of contract is often updated, when the need arises; and the main documents subject to revision, are: the Principal Building Agreement, the Nominated/Selected Subcontract Agreement and the Minor Works Agreement; and the recent 6th edition was forthcoming in 2014. The

dispute-resolution clauses are the same as those in the previous 5th edition; and it encompasses the JBCC Adjudication rules (JBCC, 2014b).

Essentially, the JBCC advocates several notices, which obligate parties to follow; and they include: the notice to declare a disagreement, the notice to refer the dispute to adjudication, and a notice of dissatisfaction. The set-up allows the parties to be cognisant of each other's intentions, as well as the existence of disputes in particular; as each notice is necessitated at each stage – from the existence of a disagreement to the final stages of a dispute resolution.

- Negotiations are the initial form of resolution stipulated in clause 30.1, which requires the procedure to be documented and signed by all the disagreeing parties. The disagreements automatically become disputes after 10 working days of failed negotiations (issue of notice of disagreement); although this clause disconnects with the definition of disputes provided in clause 9.1. The next steps involve adjudication, followed by final arbitration.

Like the negotiation procedure, the aggrieved party has 10 working days to issue a notice of adjudication, clearly defining the scope of the dispute and the relief required through adjudication. Failure to comply with the clause automatically leads to resolution by arbitration or mediation. The adjudication procedures are stipulated in the JBCC Adjudication Rules document. Thus, adjudication is an accelerated form of dispute resolution, in which a neutral person determines the dispute, as an expert with a binding determination, which can be enforced upon an application to the High Court by either party (See clause 6.2 of the Adjudication Rules Document 2014 edition).

The adjudicator's determination can be reviewed in court by one or more arbitrators. The adjudication rules provided by cidb are dissimilar in other aspects, such as the timeframes and the requirement to conduct hearings. The cidb prohibits adjudicators from conducting hearings; while the JBCC permits the adjudicator to conduct hearings (clause 5.5.1, JBCC, 2014a).

- Arbitration procedures in South Africa are governed by the Arbitration Act 42 of 1965; and the selection of the arbitrators is by mutual consent between

parties. It has a final bearing on the dispute, with limited appeal, which requires a bench of three arbitrators.

- Mediation is provided as an option; as it states that, the use of adjudication and arbitration procedures cannot prohibit parties from pursuing mediation.

2.9.2 NEC – New Engineering Contract

The NEC suit can be used with all forms of work; and it contains options W1 and W2; and the latter is used only in United Kingdom for contracts under the Housing Grants, Construction and Regeneration Act of 1996; while the former is used for contracts outside the Act (Eggleston, 2015). Adjudication is mandatory; and clauses W1.3 (1), (2), (10), W1.4 (1), and W1.3 (2), (10), W1.4 (2), are stringent on procedures and time issues. They state that arbitration cannot precede adjudication; and the adjudicator's decision is final and binding, unless either of the parties issues a notice of dissatisfaction with a decision to refer the matter to the tribunal. Since adjudication aims to resolve disputes timeously, clauses W1.3 (2), (10), W1.4 (2), (3) stress that neither party can refer the disputes to adjudication or arbitration, if the procedures and timeframes are not correctly followed.

Despite the fact that adjudication and arbitration are the explicit methods mentioned in the NEC; other methods, such as mediation and litigation, are not precluded; the wording in clause W1.4 (5) i.e. "If the tribunal is arbitration---" indicates that the tribunal is not limited to arbitration. In spite of the preclusion of voluntary non-binding mechanisms, such as mediation, conciliation, and negotiation among others, Eggleston (2015) argues that the preclusion of voluntary mechanisms contradicts the environment of mutual trust and co-operation intended by the contract. Whether the failure to mention them implies that parties can decide to include them is debatable; as such actions would contradict the main purpose of option W1 clause W1.1 (1), which clearly states that the disputes arising from the contract are referred to adjudication.

2.9.3 GCC – General Condition of Contract for Construction works

The GCC Section 27 dealing with disputes refers to disputes or differences between parties that should be resolved amicably through mutual consultation. Failure to resolve the disputes within 30 days permits either party to give a notice to commence with

mediation, which cannot proceed without the notice. If mediation procedures fail to resolve the dispute, it may be referred to court for a final decision, as stated in clause 27.3. Clause 27.5 designates that the notice referring a dispute for mediation and litigation cannot nullify the requirement of each party to continue with their commitments, according to the contract.

The use of the term “--may--” in clause 27.3 and 27.5, indicates that the GCC, does not preclude adjudication, arbitration or litigation procedures; instead the 2010 GCC guide notes that parties have the discretion to choose to use mediation or adjudication, followed by either arbitration or litigation. Moreover, negotiations, conciliation, mini-trial and neutral evaluation *inter alia*, are available for use, as stated in Clause 1.3 of the GCC 2010 guide that, “The parties may agree to modify any of the provisions of these procedures at any time” (<http://www.treasury.gov.za>, 2016b p. 163).

2.9.4 FIDIC – French acronym for International Federation of Consulting Engineers

Likewise, the FIDIC clause of 1999 (clause 20) involving claims, disputes and arbitration, requires the parties to refer the dispute to the contract engineer. Failure by the engineer to intervene, leads to the referral of the dispute to the Dispute Adjudication Board (DAB) (clause 20.4) comprising one to three experts. DABs serve as advisors, as well as imposing decisions, depending on the cases (Harmon, 2003b). As with adjudication, the decision is final and binding, if no notice of dissatisfaction is raised by either party within 28 days after the decision.

The DAB has 84 days to give a decision (or as agreed); and if no such decision is given within the stipulated time, either party can issue a notice of dissatisfaction, stating the reason and intention to refer the matter further. Once the notice has been issued accordingly, the parties are expected to attempt to find an amicable resolution procedure for 56 days, before the matter can be referred to arbitration (according to clause 20.6). Arbitration is administered by the rules of the arbitration institution stipulated in the contract data, conducted under the rules of arbitration of such institution, so specified in the Contract Data, as governed by the Arbitration Act 42 of 1965. If the rules are from the Arbitration Foundation of Southern Africa (AFSA), the parties may decide

between AFSA commercial rules and AFSA expedited rules (for smaller, less complex issues).

In the absence, or upon the expiry of DAB's Appointment in Clause 20.4, matters cannot be referred to either the DAB or for amicable settlement, but can be referred directly to arbitration sub-clause 20.6. Parties can also agree on the inclusion of other methods. Essentially, in the context of cidb, the application of adjudication is not restricted to the nature, type, or magnitude of matters in dispute; while at the same time, the adjudicators' decisions are binding with immediate effect, hence a 28 days cooling period is set to prevent appeals against the adjudicator's decision.

2.10 Chapter summary

Inferring from the various definitions provided in construction contracts and published articles, claims were noted as sources of disputes; although the distinction between claims and payments was rarely mentioned; while the study conceptualised such issues into payment issues (Fenn et al. 1997; Kumaraswamy, 1997; Cheng, 2006; Love et al., 2010). Although there are no significant dissimilarities between the sources of disputes compiled by various authors, throughout the world, such as communication problems, claims problems, opportunistic behaviour, delays (Semple et al., 1994; Fenn et al., 1997; Reid and Ellis, 2007), the assertions were tested in the South African context through interviews and case analyses. In addition, contractual problems do not occur in isolation; they are interrelated, thereby making it difficult to pinpoint individual sources of disputes (Love et al., 2011).

Notwithstanding the assortment of dispute-resolution methods, only a few have been discussed in the studies. These include: litigation, arbitration, adjudication, mediation and negotiation, among others. Correspondingly, litigation and arbitration practices have been exposed to the pressures of reduction in terms of preferences, of which litigation has recorded a 46% reduction in usage between 1997 and 2004, with a third reduction in arbitration (Stipanowich, 2010). Adjudication has shown some growth in the success rate of over 80%, preceding mediation at a 60% success rate (Gaitskell, 2007).

Voluntary processes, such as mediation and negotiations function on the principle of the willingness of the parties to settle; and any imposed procedures generally result in failed negotiations or mediation procedures; but from another perspective, if the parties are exposed to such processes, they are likely to resolve the matter without referral to any binding procedure (Cooperative Research Centre for Construction Innovation, 2007). Povey et al. (2005)'s findings reveal that mediators do not follow the mediation procedures. Instead, they are zealous to resolve disputes, as opposed to facilitating the parties to reach an agreement. These issues raise questions on the qualification of mediators, and the knowledge of mediation procedures in the Construction industry, which should come from the qualified professionals.

Stipanowich (2004) noted the growth of ADR in commercial sectors – with a significant growth of mediation, in particular, in recent years. Undoubtedly the dispute resolution in the Construction industry has evolved; and parties have become cautious, when drafting contracts – especially on issues around the selection of clauses to include in contracts; while the engagements in mediation and partnering discussions indicate the industry and the practitioners' interest in establishing efficient dispute-resolution systems capable of restoring relationships (Cooperative Research Centre for Construction Innovation, 2007).

In order to establish the sources of disputes in Construction contracts, including the techniques used to resolve disputes in Construction contracts, a conceptual framework, based on the sources revealed in the studies, was used to evaluate the responses from the construction professionals and documents that relate to Construction contracts. The framework involved eight categories, namely: contractual, management, design, human, external, communication, quality and payment issues. On the other hand, regarding the second objective, which pertains to ascertaining the dispute-resolution methods, similar procedures would be used to identify the methods used in the SA industry. However, unlike objective 1, the identification of techniques did not require the design of context categories; as the terminology used for the techniques is quite specific. Therefore, the next chapter describes the entire research design and the methods used to answer the research questions; this was followed by the presentation and interpretation of the results in Chapter 4.

CHAPTER 3

3 Research Design and Methods

3.1 Introduction

Research entails process, proposal, literature, methodology and analysis; and the research design is a procedure that researchers follow from the inception of the research to the end (Yin, 2009). Accordingly, this chapter describes the research design and the methodological choices followed in the fieldwork, as well as the explanations for implementing the framework. It comprises seven main sections, which include: the research methodology or paradigm, the population and the sample, the research instrument and the procedure for the data collection, the data analysis and the interpretation, validity and reliability issues.

In particular, the main research question investigated in this study was: “What are the sources of disputes in South African construction contracts; and how do the parties resolve their disputes?” To be able to address this question comprehensively, a detailed research design was necessary; since the research question is mainly qualitative in nature. It requires access to contracts and cases that have resulted in disputes, as well as professionals with experience in construction disputes and the resolution methods. Essentially, the sections are based mainly on the framework of the research onion, as in Saunders et al. (2012).

The research question was split into two sub-questions:

- What underlying issues contribute to disputes in construction contracts?
- What techniques are frequently used to resolve disputes in construction contracts?
- How familiar are the industry professionals to dispute resolution techniques?

3.2 Research methodology / paradigm / methodological choices

In essence, the research design and the methods adopted in the study are based on the nature of the research question. Different textbooks on research methods use different

terminologies, which may sometimes refer to the same thing; however, for the sake of conformity, the terminologies adopted here, are grounded on those of Saunders et al. (2012). The section discusses: the research philosophy, the research approach, the research methodological choice, the research strategy, the research time horizon, in addition to the research techniques and procedures. In the first instance, the “Research process onion” (Saunders et al., 2012) is used as a framework to discuss and develop appropriate methodological choices in relation to: the research philosophy, the research approach, the research methodological choices, the research strategy, the research time horizon and data collection, as well as the analysis techniques for the study.

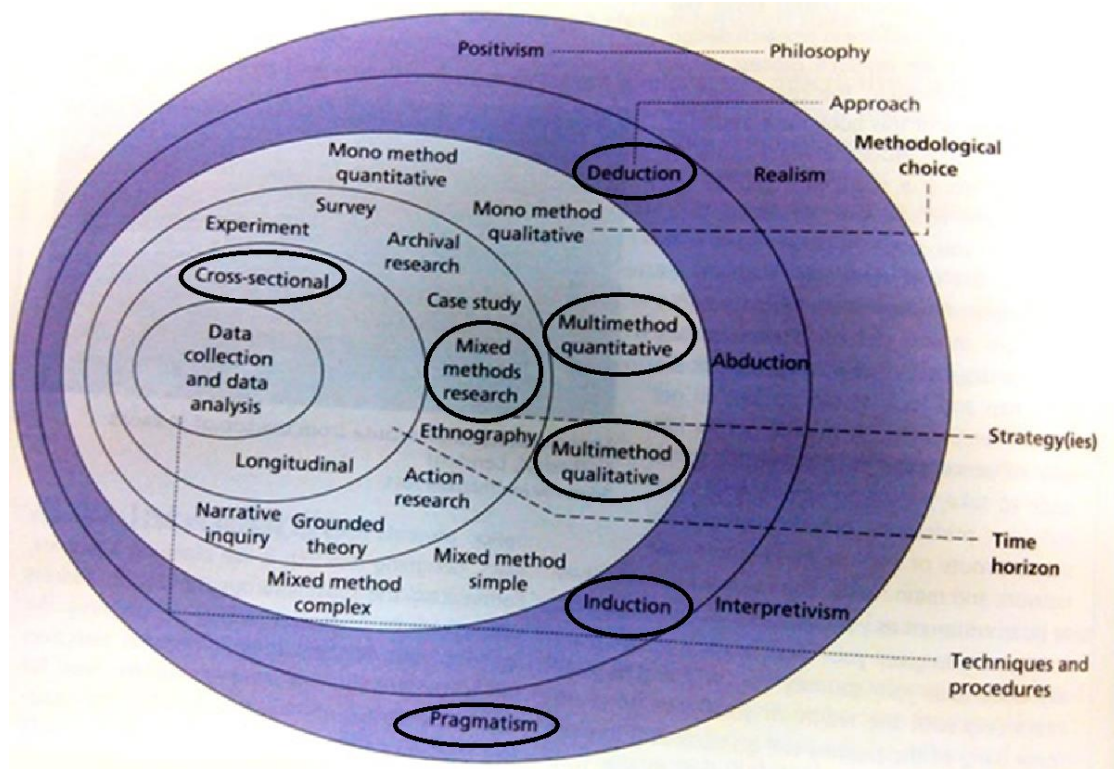


Figure 3.1: The Research Framework adopted

Source: Saunders et al., 2012 (6th edn. p. 160)

The figure depicts the research onion which was used as a guideline in the study, however it omits the epistemology and ontology rings which are vital in the explanation of the philosophical stances. Furthermore the position of the pragmatism philosophical perspective should have been in the middle of positivism and interpretivism philosophies because it is a combination of the two divergent philosophies. However, the research perceptions, sequence and preferences from the outer skin of the onion to

the inner ring followed the order indicated by circles in the onion ring depiction. Thus, the study adopted the pragmatism philosophy which used both inductive and deductive approaches, multimethod qualitative and multimethod quantitative methodological choices which are mixed methods strategies carried over a cross-sectional time horizon. The methods of data collection and analysis used include semi-structured interviews, cases, media reports and documents such as contracts which were analysed using content analysis which involves thematic coding which was conducted on transcribed interview data, cases, media reports and contracts data. The development of themes or codes used in the study was developed from literature review as detailed under the content analysis section.

3.2.1 The Research Philosophy

The study considered the principles of good research which include the assumptions about how the world is perceived and how it can be best understood, as underpinned by various schools of thoughts which alluded positivism or post-positivism, intepretivism or constructivism, realism and pragmatism philosophies (Creswell, 2014, Saunders at el. 2012) amongst others. The nature of the inquiry which required the expert opinions or perceptions about the sources of disputes and documented cases, compelled the study to consider both the post-positivism and intepretivism philosophical stances. Interpretivism was developed due to critics over epistemological and ontological stances of the positivism philosophy and it upholds that there is no distinction between the researcher and the object that is being researched (Krauss, 2005; Cohen and Crabtree, 2006). The post positivism follows an objectivist approach that utilises quantitative methods, while intepretivism uses a subjectivist approach and follows a qualitative research design (Creswell, 2014) and were both useful stances needed by the study.

Essentially, the study adopted the two major systems of reasoning in modern research linked to these philosophies known as inductive and deductive methods of reasoning which are “bottom up” and “top-down” approaches respectively, where the former is more open-ended and exploratory while the latter is more narrow and is concerned with confirming or testing hypotheses (Trochim, 2006). Trochim (2006) further explained the philosophy of science by the distinction between epistemology and methodology,

in which the former refers to the philosophy of knowledge that is, how we come to know, while the latter is concerned with a much more practical nature of how we come to know (Knight and Cross, 2012).

Other philosophies such as pragmatism and realism among others developed over time as researchers suggested alternatives that were not covered by the two conflicting philosophies or separate from their debates (Creswell, 2014; Biesta, 2010; Melles, 2008). Although interpretivists and positivists differ in epistemological and ontological inferences the two perspectives were considered collectively to address the research problem with necessary measures that nullified their weaknesses to benefit from their strengths (Creswell, 2014). Realism was not central to the study therefore its details are beyond the scope of the study, while pragmatism philosophy is a modern philosophical stance that combines the merits of post-positivism and interpretivism (Creswell, 2014) and is detached from the extremist beliefs and perspectives under positivism or post-positivism and interpretivism or constructivism philosophies (Holden and Lynch, 2004). Thus, the philosophy allowed the researcher to combine the design methods sequentially to yield better research outcomes with limited bias, improved reliability and validity (Creswell, 2014; Biesta, 2010; Tashakkori and Teddlie, 2010; Melles, 2008; Holden and Lynch, 2004). Cohen and Crabtree (2006) recognised and recommended the link between qualitative and quantitative methods, which is detached from the paradigm debate between the positivist and the interpretivist. So, the pragmatism philosophy allowed the researcher to use all the possible means to achieve the research objectives which automatically addressed the research question (Holden and Lynch, 2004; Creswell, 2014).

The study combined qualitative and quantitative research designs into mixed design methods (Creswell, 2014; Biesta, 2010; Melles, 2008; Holden and Lynch, 2004). Mixed methods emerged from various field such as evaluation, education, management, sociology, and health sciences around the late 1980s and early 1990s and have spread to other fields throughout the world. Bendassolli (2013) argued that induction does not involve a logical base because the general statements are not statements about the entire population, therefore induction lacks logical connections between statements, as it relies on empirical connections based on recurrence of experience. Therefore, the combination of the methods helped overcome such critics as Holden and Lynch (2004)

argued that the researcher can only match philosophy, methodology, and the research problem by using an intermediate philosophical approach.

Mixed methods were used in order to combine the strengths on both qualitative and quantitative research while minimizing the limitations of both approaches and allowed the researcher to group and compute the qualitative data in form of themes or codes to form quantitative measures (Creswell, 2014; Biesta, 2010; Melles, 2008; Holden and Lynch, 2004). Qualitative data was obtained from transcribed interviews, and from documents such as cases, contracts and media reports. The themes or codes that were used to extract data from transcripts and documents mentioned earlier, were developed from literature review (Biesta, 2010).

This study used mixed methods research to explore the; underlying issues that contribute to disputes in construction contracts, techniques that are frequently used to resolve disputes in construction contracts as well as the familiarity of the industry professionals to dispute resolution techniques (Creswell, 2014; Biesta, 2010; Melles, 2008; Holden and Lynch, 2004).

The researcher sought to; identify the sources of disputes in SA construction contracts, ascertain the dispute-resolution methods which are frequently employed by the industry and to assess the responsiveness of the industry about the dispute resolution methods. The study initiated with an exploratory, qualitative phase of interviews with professionals dealing with disputes in the industry (Creswell, 2014).

The themes or codes used in qualitative thematic analysis were development through the extensive literature reviews and they went through several testing and improvements which involved detailed scrutiny by other experts in the construction field dealing with disputes as measures to ensure good construct validity (Bell, 2014; Holden and Lynch, 2004). Thus, the study initiated with qualitative data collection followed by qualitative data analysis which was connected to quantitative analysis that enabled the generalisation of the outcome (Creswell, 2014).

The research design adopted by the study as supported by the pragmatism philosophical stance was the exploratory sequential mixed methods and the best suited diagram would

be QUAL QUAL quant (Creswell, 2014). The QUAL QUAL quant diagram best represents the study because of the emphasis on the qualitative methods as opposed to quantitative ones, although the latter outweighs the former in the outcome to enable the generalisation of outcomes (Creswell, 2014).

3.2.2 The Research Approach

The inductive and deductive approaches cascade from the pragmatism research philosophy; because it is compatible with the research philosophy adopted in the study (Creswell, 2014; Trochim, 2006) as indicated in Figure 3.1 discussed earlier. Fundamentally, its adoption in the study stems from its connotation to the social construction of knowledge, by creating concepts, themes, or models from the raw data which can be combined with quantitative measures (Holden and Lynch, 2004). Therefore, it facilitated working back and forth between themes and the research database to formulate a comprehensive set of themes (Ketokivi and Mantere, 2010), as discussed in the content analysis section. The qualitative data was sequentially used for quantitative analysis (Creswell, 2014). Succinctly, the research approach precedes the methodological choice discussed in the subsequent section.

3.2.3 The Research-Methodological Choice

The study adopted both multi-method qualitative and multi-method quantitative methodological choices (Saunders et al., 2012), which provided a wider scope for rich data collection; as they focus on the research tools and procedures (Guba and Lincoln, 1994). Hence, more than one data collection methods were used and analysed qualitatively and quantitatively to reinforce the findings, in order to improve the quality of the research results (Polhill et al., 2010). Accordingly, the methodological choice connects the research approach and the research strategy.

3.2.4 The Research Strategy

The mixed methods were used as informed by the nature of: the research questions and objectives, the research philosophy, the research approach, the purpose of the study, the extent of existing knowledge, the availability of resources and time, as well as the access to the sources of data and the participants (Creswell, 2014). Predominantly, the mixed-methods combined both qualitative and quantitative methods, in order to address

the research questions and the objectives (Creswell, 2014; Biesta, 2010; Melles, 2008; Holden and Lynch, 2004).

The strategy allowed for the triangulation of the data obtained from the interviews, cases, contract documents and media reports on disputes; because different data collected from various sources within a study were used to produce the correct meaning (Bell, 2014; Merriam, 2009). The qualitative data, obtained from the documents, was grouped and quantified to provide meaningful information (Ketokivi and Mantere, 2010). Therefore, the adopted strategy overcame the lack of records on disputes in the South African context, which was prompted by the reluctance or the unwillingness of the organizations and practitioners to either keep or disclose records to third parties on disputes resolved by non-adversarial methods (Povey et al., 2005). Correspondingly, the autonomous use of qualitative and quantitative methods would not have achieved the research objectives, owing to the challenges mentioned above (Creswell, 2014).

In that regard, the option to pursue the subjective insights of professionals and documentary analysis (Trochim, 2006; Holden and Lynch, 2004) was the most appropriate to address the questions; as professionals were asked for details on sources and methods used when disputes occur. The questions were adequately answered by mixed methods via the documentary-analysis technique and interviews; and these were adopted to generate an understanding of the common sources of disputes and the dispute-resolution methods used (Creswell, 2014; Trochim, 2006; Holden and Lynch, 2004). The sources of the data comprised secondary data (Bell, 2014) obtained from the Southern African Legal Information Institute (SAFLII) online cases. The combination of various sources of data, such as documents (court cases, media reports and contracts) and interviews complemented each other; since contracts encompass the methods available for parties to deal with disputes when they occur; judgements (cases) contain the details on sources; while professionals provide the details on both sources and resolution methods (Bell, 2014).

As the research strategy of the “onion ring” lies beneath the research methodological choice, as shown in Figure 3.1, it follows that, the strategy conformed to the preceding three rings (Saunders et al., 2012). It represents the plan taken in answering the research question or methodological link between the philosophical standpoint, the data

collection and the analytical methods used (Saunders et al., 2012). Therefore, the mixed-methods explored the research phenomenon within its context, or a number of actual contexts; since they have the ability to address the “what?” and the “how?” questions, as well as to demonstrate both literal and theoretical replications (Yin, 2009).

3.2.5 Research Time Horizon

In coherence with the preceding “onion ring” for the research strategy (mixed methods), the cross-sectional time-frame was pertinent to the study (Saunders et al., 2012). Consequently, a cross-sectional perspective was motivated by the instantaneous availability of the data from the experts who had accumulated knowledge over the years, and from documents, such as cases, law reports and media reports (Creswell, 2014). Interviews were conducted over a short period of time, as well as from the data collected from the documents (Saunders et al., 2012). Longitudinal studies were not used because of time and resource constraints. Finally, the research time horizon “onion ring” encircles the research techniques and procedures.

3.2.6 Research Techniques and procedures

The research techniques and procedures comprising the data collection and the analysis methods are situated at the core of the “research onion ring”, subsequent to the research time horizon (Saunders et al., 2012). Most of the data used in the study were obtained from documents (contracts, law reports, cases [public records], magazines and publications), as well as from interviews, which were rich sources of first-hand information (Corbin and Strauss, 2014; Cooper and Schindler, 2003). Primarily, the research techniques and procedures relate to the tools used to accomplish the data collection and the data analysis, as well as the primary data comprising the documentary data in the form of text (Corbin and Strauss, 2014; Cooper and Schindler, 2003). Sub-section 3.2.7, provides further details on the research instruments used.

3.2.7 Research instruments and the Procedure for the data collection

Research instruments are devices for obtaining information, which include questionnaires, interviews, focus groups, observation, and research of what people do and say (Wilkinson and Birmingham, 2003). Interviews and documents were used to achieve the objectives of the study (Bell, 2014). Thereafter, the interviews were

recorded for content analysis, and the information was stored securely in electronic form (Corbin and Strauss, 2014; Wilkinson and Birmingham, 2003; Cooper and Schindler, 2003), in line with the ethical requirements; and they would be available for reference purposes for a period specified by the University of the Witwatersrand. The documents were collected and information regarding the types of contracts, the causes of disputes, contract value, contract duration, dispute-resolution provisions, parties involved and the nature of disputes was captured in an Excel spreadsheet for content analysis.

3.2.7.1 Interviews

The purpose of interviews was to allow for probing and the clarification of responses for the participants to give their detailed perspectives on disputes. Primarily, the interviews involved semi-structured questions to allow the researcher to gather valid and reliable data, thereby making sure that they answered within the confines of the research objectives (Wilkinson and Birmingham, 2003). They consisted of four key questions; and given the sensitivity involved in disputes, the interviews allowed personal contact; as the participants tended to develop some trust in face-to-face situations, as opposed to questionnaires (Lindhjem and Navrud, 2011). The researcher's skills and understanding of the subject were pivotal in ensuring that the participants focused their attention on the vital details and on the subject at the emergence of new lines of inquiry during the investigation (Bell, 2014).

In addition, the questions were flexible – to allow the respondents to think and give detailed responses. The questions asked were:

- What are the sources of disputes in construction contracts?
- What are the dispute-resolution methods used to resolve disputes in the construction industry?
- Which types of contracts have you used in the construction industry?
- Give an example of a case in which you were involved, including the dispute-resolution methods used.

In addition, follow-up questions were used to ensure that the participants remained within the research objective (Wilkinson and Birmingham, 2003). The procedure

initiated with stakeholder identification (Bell, 2014), which included South African professional bodies for project management, quantity surveying, dispute resolution, engineering and architecture. The details of specific professionals dealing with disputes regularly were sought from the bodies. Although thirty (30) participants were identified via a snowball-sampling process, only eighteen (18) participants were interviewed, mainly because some participants:

- Were too busy for the interview;
- Failed to honour their promises;
- Could not be reached via the contact details provided;
- Declined – indicating that they were not experts in the area.

However, the key role-players in the dispute-resolution processes were identified. Other sampling methods, such as probability and random sampling were not used, in order to avoid the omission (Bell, 2014) of other key professionals in dispute resolution. The referrals helped smooth the way and minimized the problems associated with the lack of trust amongst the participants (Lindhjem and Navrud, 2011). Heckathorn (1997) revealed that the lack of trust could induce discomfort to the participants; since they tend to fear disclosing confidential information, which is valuable to the subjects concerned.

Construction contracts involve the client-contractor relationships; so a wide range of professionals was involved. Since, disputes require specialised proficiencies; senior professionals were used in the study, where some of the participants had extra qualifications in adjudication, mediation, arbitration and expert witnessing. Fourteen professionals had extra skills in mediation, arbitration, adjudication and expert witnessing; four had all the dispute-resolution skills; while four had no dispute-resolution qualifications.

3.2.7.2 Documents

Despite the use of primary data from the interviews, the secondary data from documents were also consulted (Wilkinson and Birmingham, 2003). In fact, cases, newspapers, law reports, journals and books were used as documentary evidence (Bell, 2014). The same participants were used to provide cases or contracts for case analysis (Bell, 2014), voluntarily. Twenty contracts were obtained from the participants through referrals.

The technique facilitated access to contracts drafted, according to the JBCC, NEC, GCC, FIDIC standard conditions of contracts. Only the media reports that addressed the disputes in construction contracts were considered from reputable newspaper articles and magazines articles, such as the Mail and Guardian, the Business Times and the Engineering news (Bell, 2014).

This was achieved through use of key words (Bell, 2014), such as “disputes in construction South Africa, dispute resolution, mediation, arbitration, adjudication, claims” – or a combination of these words – until a saturation point was reached (a point where further combinations achieved the same articles). As for cases, the same procedures were used to serve for the fact that other cases were obtained from the SAFLII website, which contains all the cases on property, land rights, construction, leases – to mention a few, of which only fifteen pertained to the construction contracts; while the other five were obtained from the participants.

Cases were extracted from the SAFLII database. The keywords used for searching (Bell, 2014) purposes were “disputes, construction contracts, Johannesburg, Pretoria”, in order to obtain the cases that were within the research Gauteng. Ten (10) cases were selected from one hundred and eight (108) results returned from the search; because they matched the research purpose. Only those relating to construction contracts were considered; because the list involved various subjects (Bell, 2014), such as insurance, lease, labour, environmental and land-related issues. Other cases were obtained from the training materials; they were obtained online or from anonymous participants (Bell, 2014).

Newspaper articles, engineering reports and law reports were obtained through the online search engines and websites (Bell, 2014), such as Business News, the Mail and Guardian, The Star, as well as Engineering News. The keywords “construction contracts and disputes”, as well as the names of complex projects, such as “Gautrain disputes”, “Soccer-City disputes” were used to obtain an assortment of articles on disputes in construction contracts. Twenty-seven (27) articles were extracted from the websites; but only twelve (12) articles were linked to disputes in construction. The selection procedure of relevant articles involved reading the articles to understand the

context; and only the relevant ones were selected for analysis. Finally, the participants voluntarily offered the 20 contracts used in the study.

In order to achieve a central coverage literature search, the most substantial citations were obtained from the conference and the journal articles selected from the Scopus website (Randolph, 2009); while the rest of the articles were repeatedly identified from the reference lists of the selected articles – until a saturation point was reached (Cooper, 1988; Randolph, 2009; Rhoades, 2011). Thus, the literature review initiated with more generic views of what is known about disputes in the construction industry and the essential areas that were crucial to achieve the objectives of the study (Randolph, 2009).

The secondary data and the primary data in the form of journals, conference proceedings and textbooks were the reference tools used to identify the relevant work, and to guide the data-collection requirements (Bell, 2014; Wilkinson and Birmingham, 2003), and to counter the lack of information on disputes in the South African context; since most of the proceedings are fundamentally private (Povey et al., 2005); therefore, contracts, cases and media reports were used. Since disputes involve human beings, other publications from several academic spheres, such as sociology and psychology, were also considered; while the contracts used comprised the Red Book FIDIC 1999 Edition, JBCC 2014 Edition, GCC 2010 and the NEC.

The core bibliographies in this study comprised several studies that dealt with problems leading to disputes (Fenn et al., 1997; Cheung and Yiu 2006; Love et al., 2008; Love et al. 2010). Several prominent authors compiled assortments of taxonomies on the causes of disputes from several studies conducted on issues leading to the initiation of disputes (Fenn et al., 1997; Cheung and Yiu 2006; Love et al., 2008; Love et al. 2010; Love et al., 2011; Cheung and Pang, 2013; Cheung and Pang, 2014).

The initial search for articles comprised the search for key words, such as disputes, contracts and construction, followed by the review of titles and abstracts of articles obtained through the search by using keywords (Bell, 2014). All articles not pertaining to construction contracts and the resolution of disputes were excluded. The procedure was repeated – until a sample comprising the relevant articles was achieved. The relevant articles contained the statements addressing the sources of disputes and the

resolution methods. Boote and Beile (2005) argued that when encountering too much literature on the topic, the focus must be drawn to the best evidence, or a small number of central conceptual sections followed by justification.

3.3 Data analysis and interpretation

Data analysis and interpretation pertain to the techniques and procedures used in the study as in Figure 3.1. This is also likened to separating the onion rings and placing them together again (Creswell, 2014). Content analysis and documentary analysis were used; while the study involved mixed methods, of which the data collection, analysis and the write-up of the interviews took place, whilst other interviews were still going on (Wilkinson and Birmingham, 2003). This helped to gain a better understanding of the respondents' lines of thinking and approach to questions. The study developed a conceptual framework that helped in the identification and analysis of the findings, as shown in the succeeding sections, which deal with the detailed content-analysis procedure employed in the study.

3.3.1 Content analysis

The conceptual content analysis was used; and this involved the development of coding frames or sub-themes obtained from the literature, which were further combined into eight main themes or contextual categories. (Bell, 2014; Wilkinson and Birmingham, 2003). The sub-themes or coding frames comprised varied issues raised in studies that could be grouped into main themes, such as contractual ambiguities, the misinterpretation of terms, or the omission of vital terms; where some of the coding frames or sub-themes comprised the main theme or the contextual category on contractual issues (Creswell, 2014; Wilkinson and Birmingham, 2003). The procedure of conceptual-content analysis (Wilkinson and Birmingham, 2003) is further detailed in the next section, which deals with the development of the conceptual framework.

3.3.2 Development of the conceptual framework

The Conceptual Content analysis flow chart adopted represents the main steps that were taken to establish the whole framework (Wilkinson and Birmingham, 2003). It involves the identification of the research topic, the establishment of contextual categories, the

testing of the categories that were developed, the data collection and the analysis of the results (Wilkinson and Birmingham, 2003).

Table 3.1: The Conceptual Content analysis-flow chart adopted
Source: (Wilkinson and Birmingham, 2003)

Steps of Content analysis	
1. Identification of the research topic	<p>The research question of the study was; “What are the sources of disputes in South African construction contracts; and how do the parties resolve their disputes?”</p> <p>This was divided into two sub-questions, namely, “What are the sources of disputes in construction contracts?” and “What techniques are used to resolve disputes in construction contracts?” – as established in Chapter 1.</p>
2. Establishment of context categories	<p>Context categories involved a vigorous or thorough reading of literature pertaining to disputes, dividing the literature into smaller components, which were carefully examined for similarities and differences. Similar issues were grouped into to form the main theme or context category. Dissimilar issues created individual themes or context categories. Eight context categories were established altogether. The establishment of the context categories was based on the issues raised by various authors shown in Tables 2.4 on conceptual category and coding frames. The development is explained with relevant literature.</p>
3. Testing categories generated	<p>The categories were tested with the factors found in literature as well as through use of experts in the field to make sure they are relevant and comprehensive such that the identified sources can be easily classified under these categories. As shown in several studies, factors were fundamentally similar, the clarity of the coding frames helped in identifying and classification of codes identifies in transcripts and documents. For instance the variations in scope could be classified either as a design issue or management issue based on the main cause of such change, thus variations in scope due to design errors constitute a design issue, while the general scope variations are management issues because apt management procedures can deal with variation issues.</p>
4. Data collection	<p>Data collection was divided into data needed to construct the context categories obtained from literature as well as the data from the field work (Interviews and documents). Interviews were recorded and stored in electronic devices and transcribed to enable content analysis. In vivo coding was used to identify the codes as most of the terminology used in relation to sources and disputes was precise. The codes were extracted and recorded in Excel tables to facilitate the computation of the number of occurrence of each theme or category. The context categories served as frameworks used to identify and analyse the data obtained from the field. At the same time the words or phrases in the transcripts, cases and media reports were identified and categorized into the defined categories, which was then evaluated and numbers were assigned to each category to support coding for frequency of occurrence of concepts. Chapters 4 and 5 deal with the presentation, evaluation, analysis and discussion of the data obtained from the field.</p>
5. Analysis of context of data and results	<p>The identified codes were recorded in Excel spreadsheets and the number of times each code occurred were computed to establish the frequencies of occurrence, as shown in Chapter 4</p>

3.3.3 Definition of the concepts

3.3.3.1 Coding frames for each concept, theme, or phrase

The coding frame for the themes or contextual categories included all the words or phrases that pertain to the conceptual category, as shown in Table 2.4 on conceptual categories, which were identified from the literature (Wilkinson and Birmingham, 2003). The coding frames enabled the identification of issues that belong to the context category.

3.3.3.2 Coding for frequency of occurrence of concepts

For the purpose of the research, the coding was done for the frequency of occurrence of themes, in order to identify the most popular sources (Creswell, 2014) as well as the most used dispute-resolution methods in the South African contracts. The coding for the incidence of themes would not serve the purpose of the research; since it excludes the details on the popularity of the issues investigated (Wilkinson and Birmingham, 2003). It serves to confirm the presence of the phenomenon with a limited perspective, as opposed to the emphasis on the importance and commonality aspects.

3.3.3.3 The establishment of coding rules

Transitional rules as adopted from Wilkinson and Birmingham, (2003):

- Coding rules incorporated in the study include:
 - All the negative issues regarding quality;
 - Claims that are payment issues;
 - Scope variations that are design issues;
 - Planning issues, and site issues that are management issues;
 - Issues that can be curtailed by proper management practices are classified as management issues.
 - Issues beyond management control, such as the weather, the state of the economy, were categorised as external issues.

3.3.3.4 Trawling through the information

All the content that could not be coded was excluded; while similar and dissimilar issues were grouped accordingly. These enabled the refining and classification of the codes (Bell, 2014; Wilkinson and Birmingham, 2003).

3.3.3.5 Coding the information

As discussed earlier, the coding for frequency was adopted, which involved assigning numbers to the coding frames (Creswell, 2014). The procedure involved listing the coding frames on Excel, followed by allocating alphabetic characters to each conceptual category and the use of Excel count functions to compute and assign numbers to each conceptual category (Bell, 2014; Creswell, 2014; Wilkinson and Birmingham, 2003), as indicated in Table 4.4.

3.3.3.6 Analysis of the results

The analysis guidelines used included embracing the essence of transparency and the methodical approach used in qualitative research, which states that the analysis of the data should be public, in order to enable the readers to have a detailed perspective on the methods and the procedures involved in arriving at the findings (Yin, 2011). Therefore, all the procedures, coding, extracts from transcripts, identification and computational procedures were included in the study for public scrutiny (Yin, 2011). The figures and analysis details considered the assessment of positive and negative results, the importance of each source; since conceptual analysis is used to quantify the presence and occurrence of a concept that is chosen for examination (Jabareen, 2009), as a result, the figures were expressed as percentages. Furthermore, the literature findings were matched with the findings of the study to reinforce the findings.

3.4 Population and sample

This section explains the size of the population, the sampling methods used to select the amount, and the specific data and the motivation for the choices taken.

3.4.1 Population

The population refers to the total number of objects, groups or people in the context of the study in a given area or time with similar characteristics; while a sample refers to a portion or subset of objects, groups or people within the total population (Saunders et al., 2012). To understand the sources, the most appropriate sources were interviews (with professionals) and documents (cases); while the resolution techniques employed by the parties were obtained from the interviews and the contracts. Subsequently, 18 interviews, 12 media reports, 15 cases, and 20 contracts were used to achieve the research aim. The professionals dealing with the disputes included: quantity surveyors, engineers, project managers, construction managers, attorneys and contract managers, as shown in Figure 4.1. Although there are some dispute-resolution practitioners in South Africa; there are hardly any updated lists with contact details of the experts in dispute resolution. Since qualitative research is not dependent on the size of the population for high-quality research (Coyne, 1997), the study involved the development of themes, which stopped at saturation point (Cooper, 1988; Randolph, 2009; Rhoades, 2011).

3.4.2 Sample and sampling method

The purposive sampling method was used in the study; it involves selecting cases and participants, which facilitated the answering of the research questions, sometimes known as judgemental sampling (Saunders et al., 2012; Coyne, 1997). The method facilitated access to construction contracts to help answer the question on the dispute-resolution methods used in the South African construction industry. The selected participants addressed the specific objectives; since this conforms to purposive sampling (Maree et al., 2012; Coyne, 1997). Likewise, cases from the online database SAFLI were obtained in a similar manner.

The snowballing or chain-referral sampling (Maree et al., 2012) as a form of purposive sampling, was used to identify those professionals with dispute-resolution experience, who also voluntarily provided the 20 contracts used in the study. The technique helped in the identification and collaboration of the participants in answering the research questions satisfactorily. Altogether, the study used the purposive sampling method in

selecting the cases; the media reports were obtained via online searches, as explained previously.

3.5 Limitations of the study

The lack of records, data and the private nature of disputes limit the amount of data available for use, and the information available on other alternative dispute-resolution methods.

There are limited data on disputes and on the resolution methods employed, due to the lack of research on the subject (Povey et al., 2005).

Data collection and analysis can be time-consuming, because the procedure involves making appointments with people, who are under time constraints in most cases. Consequently, some potential participants were not interviewed.

The study did not focus on establishing the relationships that exist between the established sources leading to the initiation of disputes; since such a focus would constitute another study. However, the test for the existence of the sources, according to the conceptual framework was adequate to cover the objects of the study.

3.6 Assumption

The term professional is not used within the contexts of the professional bodies; because the construction industry is in its transitional stages, attempting to register all professionals. Several professionals have practised without institutional recognition; and consequently, the study considered all those respondents with more than five years of experience as professionals. It also embraced the assumption that the information obtained from Statistics South Africa provides a better reflection of the state of the construction industry.

3.7 Validity and reliability

The study used three methods of data collection to enhance the principles of validity and reliability (Bell, 2014; Creswell, 2014). These included the court proceedings (observations), interviews, and case analysis (documentary analysis). They helped to improve the trustworthiness (validity); since they enabled the use of triangulation, which confirmed the accuracy of the findings (Bowen, 2009). The use of triangulation, the clarification of researcher's bias, negative information that runs counter to themes, and the use of an external editor – to review the entire project – were some of the key steps that were taken (Bell, 2014; Creswell, 2014). Validity relates to the degree of capability of instruments to measure or describe the intended variables or subjects; while reliability refers to the ability of a study to yield the same results when repeated under constant conditions (Leedy and Ormrod, 2010; Bell, 2014). These terms have been amended or modified for use in qualitative research; for instance, “dependability” for “reliability”; and “dependability” for “internal validity” (Yin, 2011).

Since validity depends on reliability; and the validity can be used to prove the reliability (Maree et al., 2012), qualitative research has significant strengths in validity; as it determines the accuracy of the findings from the researcher, the respondent and the readers' perspectives (Creswell, 2014). The researcher, as part of the research instrument was aware of the threats of face validity in the qualitative approach, such that the questions posed to the participants considered the study's objectives, face validity; and important themes and aspects indicated by other participants were discussed. In order to supplement the knowledge about disputes not yet acquired from the quantity-surveying background, further procedures were taken such as:

- Attending court proceedings;
- Further reading about cases and published papers on disputes;
- A neutral position was maintained in interviews, in order to extract the realities from the experts' opinions and experiences.

Observations were not included in the analysis; as they were intended to enhance the skills of the researcher.

In order to build trustworthiness and credibility, the study focused on the transparency, as well as the methodical adherence to evidence (Yin, 2011). The findings were

documented in a manner where the readers had access to all the data and the procedures used, to enable them to understand the findings; and other direct quotes from the respondents were presented as explicit evidence relating to the findings (Yin, 2011).

CHAPTER 4

4 Data Presentation and the Analysis of the findings

This chapter provides a detailed presentation and description of the results obtained from the data collected via interviews and documents. Some additional records are displayed in a separate disk, to facilitate a continuous flow in the research report. In order to cover all the objectives, the chapter comprises 7 main sections on Results pertaining to Objectives 1, 2 and 3, and a summary of the results. The sections on results are divided into the presentation of the results and the analysis of the results. In order to obtain a glimpse of the data-collection instruments used, see Table 4.1

Table 4.1: Research Objectives and the Research Instruments adopted

Objectives	Data-Collection Methods		
1. To identify the sources of disputes in the construction industry	18 Interviews	12 Media reports	15 Cases
2. To ascertain the dispute resolution methods which are frequently employed in the construction industry	18 Interviews	12 Media reports	20 Contracts
3. To assess the responsiveness of the industry about the dispute resolution methods	18 Interviews		

4.1 Responses

The study used four methods of data collection, which included interviews, cases, media reports, and contracts. On the other hand, the interviewing procedure initiated with the stakeholder identification, which included South African professional bodies for project management, quantity surveying, dispute resolution, engineering and architecture, who provided the details of specific interviewees, dealing with disputes on a regular basis. The interviews involved four semi-structured questions that ascertained responses within the confines of the research objectives, as well as securing valid and reliable data.

Furthermore, follow-up questions were subjectively used to obtain clarity on some issues, as well as to ensure that the participants remained within the research objectives' confines.

4.2 Documents

The data used consisted of transcripts and documents, which included summaries from cases, media reports and contracts. Cases were extracted from the SAFLII online database; while newspaper articles, engineering reports and law reports were obtained through the online-search engines and websites, such as Business News, and the Mail and Guardian, The Star, as well as Engineering News. 108 results were returned from the search, using keywords, such as: "disputes, construction contracts, Johannesburg, Pretoria" or their combinations, as the study was limited to Gauteng. Only 10 cases were selected; since they were linked to construction contracts; because the list involved various subjects such as insurance, lease, labour, environmental and land-related issues. The other five cases were obtained from the training materials, obtained online, or from anonymous participants.

The media reports were sought using keywords, such as "construction contracts and disputes", "Gautrain, disputes", "Soccer City, disputes" to obtain the assortments of articles on disputes in construction contracts; 27 articles were extracted from the websites and only 12 articles were linked to disputes in construction.. The selection procedure of relevant articles involved reading the articles to understand the context; and the relevant ones were selected for analysis (Wilkinson and Birmingham, 2003). The 20 contracts were obtained from the participants on a voluntary basis.

4.3 Code Development

Code development involved reading through the literature, which was refined into pieces, compared for relations, similarities and dissimilarities leading to the formation of eight categories of sources of disputes, which were marked by codes used to identify them. In order words, the coding frames were developed to define the contextual categories, to simplify the identification and classification of emerging issues into relevant categories. For example, contractual issues were defined by issues, such as

contractual ambiguities, unfair terms and misinterpretation; while management issues were delineated by the management matters, such as maladministration, inappropriate budgeting, inadequate planning or scheduling procedures, bureaucracy, biased organisational culture or structure, unrealistic targets, maladministration of acceleration processes, or changes in client preferences. Table 4.5 shows the context categories in the conceptual framework.

The interviews were recorded and transcribed to enable conceptual content analysis; while the coding frames or themes were developed from the literature, as shown in Table 4.5, as established in the previous chapters. Table 4.3, shows the identification of sub-themes from the transcripts, as well as the grouping into relevant main themes or context categories, which were computed to show the number of occurrences of each theme, as shown in Table 4.3 and Table 4.4. The identification and classification of themes involved reading through the transcripts and noting the sub-themes on a separate column (Table 4.3). This is known as *in vivo* coding, followed by the allocation of the letters of the alphabet from A to H (Table 4.3) and computing the frequencies of occurrences in Table 4.4. This shows how the allocations in Table 4.3 were computed.

The identification of the codes was not complex, due to the common terminologies used by the interviewees to describe the issues around disputes; and as a result, *in vivo* coding dominated the coding system, as noted in Table 4.3. For instance, in Table 4.3, the respondent began by listing the issues, “*Communication, Opportunistic behaviour, incompetence, late payments and claims*” and further explained how the issues occurred: “*The client decided to communicate with the contractor without our involvement; and, as a result, things went wrong without our knowledge*”.

In such instances, *in vivo* coding was used to single out the issues, as mentioned by the respondents. However, the client’s action indicated “lack of communication among the project participants”. The same applies to opportunistic behaviour, “*---contractors tend to claim for the work they have not done, taking advantage of the government*”. The statement indicates opportunistic behaviour by the contractor for which *in vivo* coding would have been relevant.

Table 4.2: Extract from the interviews showing the identification of sources according to the coding frames

<p>Interviewee 1</p> <p>What are the sources of disputes in construction contracts?</p> <p>“There are many sources of disputes such as Communication, Opportunistic behaviour, incompetence, late payments and claims. There is currently a dispute that is going on that was initiated by poor communication. The client decided to communicate with the contractor without our involvement as a result things went wrong without our knowledge. It has become a blame game because we cannot accept the responsibility of other people’s acts. Opportunistic behaviour exists as well; contractors tend to claim for the work they have not done taking advantage of the government. That is why the government is tightening the qualification procedures regarding the tenders adjudication and award. The government has a long problem of skills shortages as I speak we have no qualified quantity surveyor in the whole department; I am the only qualified professional in the whole department. We are real struggling on that area. Many contractors also have no knowledge whatsoever of what they are doing, at the end of the day they can’t complete their projects on time. The municipality reporting system is not efficient in the sense that it takes too long for documents to be approved as a result, contractors always experience late payments. Contractors end up struggling to pay their bills as a result the projects becomes affected and disputes arise when contractors refuse to continue without payment.”</p>	<p>Identified Sources:</p> <ul style="list-style-type: none"> •Lack of Communication •Opportunistic behaviour •incompetence •skills shortages •late payments •poor workmanship/ Lack of team spirit •bid development errors •Incompetent contractors •late approvals •insufficient municipal reporting systems •refusal to work without payment •delayed project completion by contractors •claims
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Table 4.3 Grouping of the identified codes into context categories

Sources of disputes from interviews	Number Of Appearances	Context Category
Rejected Claims	18	E
Payment Issues	17	E
Non-Performance	16	A
Communication	15	B
Scope Changes/ Variations	14	D
Termination	14	C
Time Delay	14	G
Opportunistic Behaviour	13	F
Unrealistic Expectations	13	F
Fast Tracking	11	D
Contractual Terms/ Ambiguities	10	C
Special Clauses	7	C
Tender Process	7	C
People	7	F
Incomplete Design/ Lack Of Information	7	D
Skills Shortage	6	H
Poor Contract Documentation	6	C
Poor Planning, Scheduling And Management	5	G
Time Estimation	3	G
Unpredictability/ Uncertainty	3	H
Bureaucracy	2	G
Incompetence	2	A
Claims	2	E
Labour Unrest	2	H
Site Conditions	2	D
External Interference	2	H
Contractual Issues	1	C
Cost (external)	1	H
Quality	1	A
Dependence On External Consultants	1	G
Contract Administration	1	C
Economics	1	H
Weather Conditions	1	H
Quantifying Costs	1	H
Total	226	

Table 4.4: Quantification of context categories in the conceptual framework

Context categories in the conceptual framework							
“What are the sources of disputes in construction contracts?”							
Quality related issues	Communication issues	Contractual Issues	Design issues	Payment related issues	Human issues	Management issues	External Issues
A	B	C	D	E	F	G	H
16	15	14	14	18	13	14	3
2		10	11	17	13	5	2
1		7	7	2	7	3	2
		7	2			2	1
		6				1	1
		1					1
		1					1
							6
19	15	46	34	37	33	25	17

Table 4.5: Context categories in the conceptual framework

Context categories in the conceptual framework								
“What are the sources of disputes in construction contracts?”								
	Contractual Issues	Management issues	Design issues	Human issues	External Issues	Communication issues	Quality issues	Payment issues
Coding frames	<ul style="list-style-type: none"> •Misinterpretation of contract terms/ contract unfamiliarity •Inadequate contract drafting •Termination •Ambiguous/ biased contract terms/ provisions / practices •Variations in quantities •Contract misinterpretation 	<ul style="list-style-type: none"> •Unrealistic time targets, tendering •changes- client variations/ site conditions, acceleration •Maladministration/ Poor Site management / Delayed approvals, negligence, •Shortages of resources and skills, unfamiliarity with local statues, poor workmanship/ Lack of team spirit •Delays in site access restrictions, construction related, work progress •Extension of time issues •Faulty negotiation, procedure, bid review, scheduling, bid development errors, estimating error, pre-construction proceedings, pre-award design review •Poor project management procedure, Process problems •Failure to deal with unexpected outcomes 	<ul style="list-style-type: none"> •Change in design, Change of scope, Change of conditions •Poor design quality, Inadequate design •Drawing changes, errors in drawings and defective specifications, Variations in specifications, •Design Delays Design errors: Variations due to design errors 	<ul style="list-style-type: none"> •conflicting cultural backgrounds, cultural clashes, Political issues Behaviour issues, Egos, being difficult •Over-expectations / Unrealistic expectations by parties •Opportunistic behaviour •Conflict – task interdependency, differentiations, tensions, personality traits •Human behaviour parties: inter-parties’ problems •Adversarial culture Misunderstandings •Personality conflicts 	<ul style="list-style-type: none"> •Project uncertainty •Influence of lawyers •Nationwide shortage of skills •Economic environment pressures •High Financing costs •Depreciation in Rand Value, salaries / remuneration •Brain drain •Disruption •Project unpredictability •Labour unrest •unexpected events 	<ul style="list-style-type: none"> •Late, incomplete, or substandard information •Unclear Site instructions •Lack of information, unavailability of information •Language barriers •Lack of communication between project participants 	<ul style="list-style-type: none"> •non-performance •Defects •Poor quality •Poor quality control •Poor quality assurance 	<ul style="list-style-type: none"> •Non-payment •Delayed payments •Issues with claims

4.4 Demographic analysis

The snowballing approach was used to identify 30 interviewees; but only 60% participated in the interviews. Quantity surveyors constituted 40% of the professionals interviewed, followed by engineers, construction managers, architects and lawyers /attorneys. Thus, the majority were from quantity-surveying backgrounds; whereas 20% were from engineering and construction management; whilst 10% each came from architecture and lawyers / attorneys, as shown in Figure 4.1. In addition, the participants had over 11 years of varied experiences in the construction industry on average from clients, contractors' perspectives, or from both, as shown in Figure 4.3.

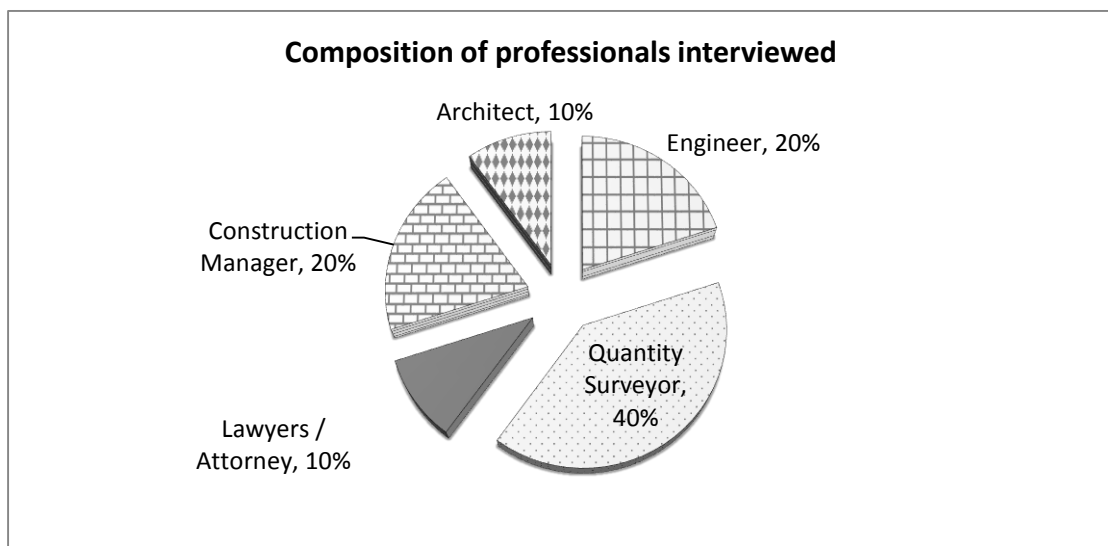


Figure 4.1: Demographics of professionals interviewed

Most professionals had experience from both sides. For instance of the 40% quantity surveyors, 29% were from the client side of the contractual relationship; while the remaining 11 % were on the contractors' sides. The same applies for engineers with 10% each, followed by construction managers with 13% and 7% on the client and contractors' sides, respectively, while architects and layers / attorneys had 5% each for both sides, as shown in Figure 4.2. The interviewees had more experience on the client side of the contractual relationship at 62% compared to 38% on the contractor's side; and an additional analysis was done on those who had experience from both sides, as well as those who held executive positions, such as directors. As many as 71% had experience on both sides; while 61% held directors positions, as depicted in Figure 4.2.

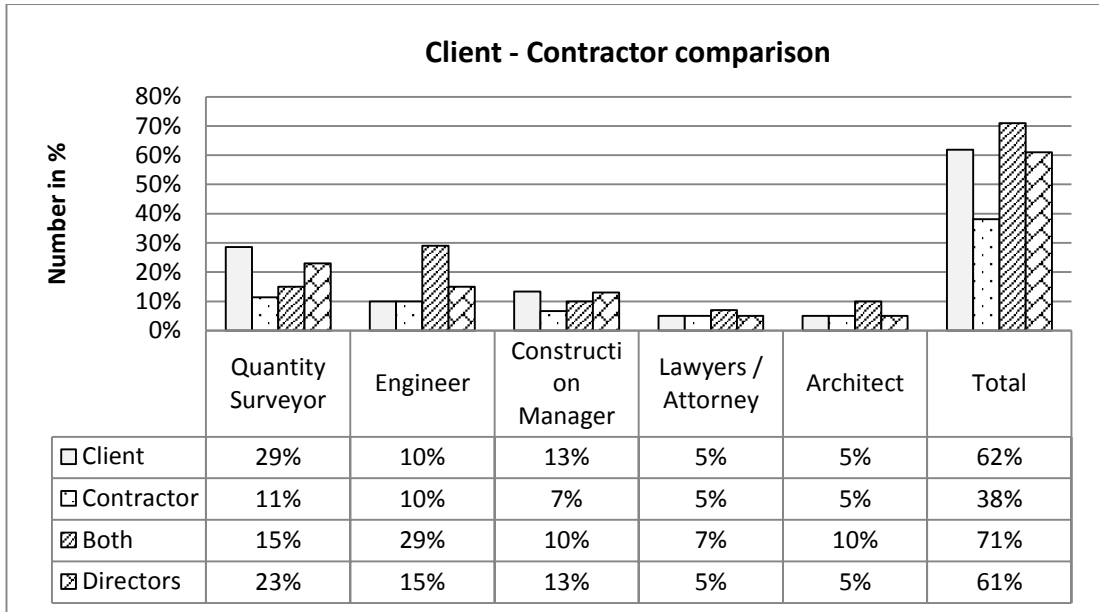


Figure 4.2: Professionals interviewed Client - Contractor comparison

The Figure shows the number of interviewees from different backgrounds and their experiences on either side of the contractual relationship, or both. It further portrays the levels of seniority of the participants.

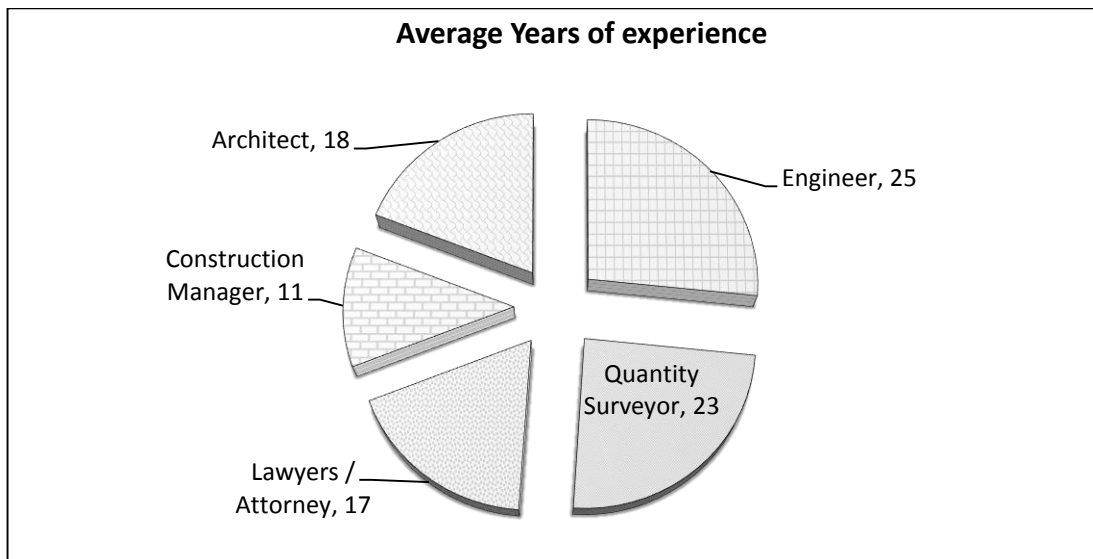


Figure 4.3: Professionals interviewed - Average Years of experience

Figure 4.3 shows the average years of experience of the participants. The engineers were more experienced, with an average of 25 years of experience, followed by quantity surveyors, architects, lawyers/ attorneys and construction managers with 23, 18, 17, and 11 years of experience, respectively. Other skills in dispute resolution were also found amongst the interviewees, which included arbitration, adjudication, mediation,

expert witnessing, and those who had all the four of the skills mentioned. Figure 4.4 depicts the professionals' experiences in dispute-resolution procedures.

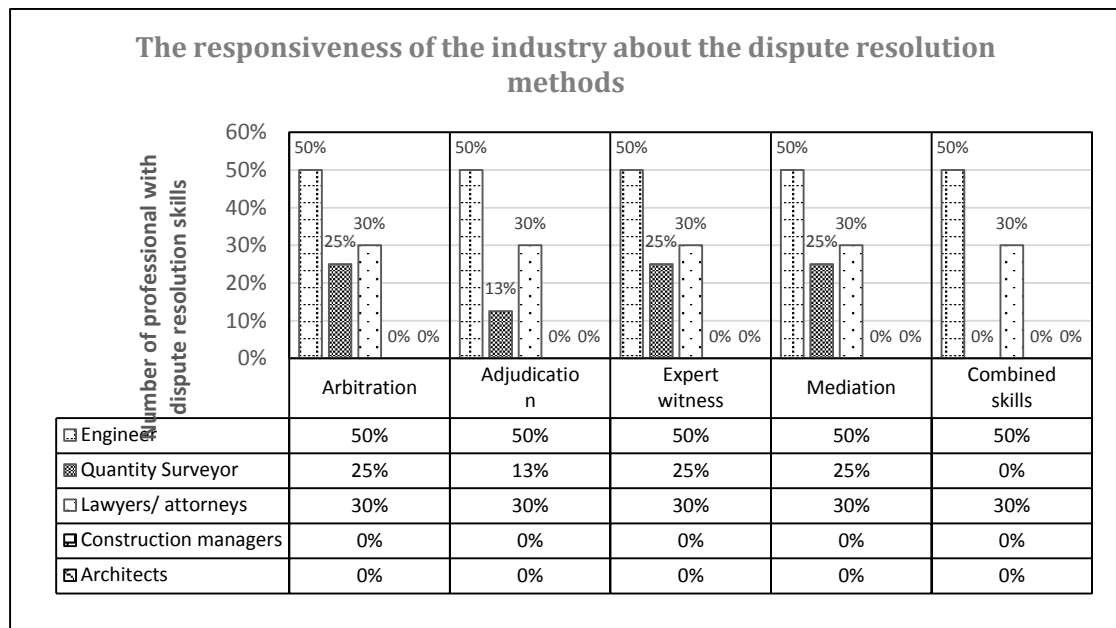


Figure 4.4: Professionals' experiences in dispute resolution procedures

Only 22% of the professionals possessed all the four dispute resolution skills and they comprised engineers and lawyers with 11% each, and their average years of experience confirm the extensive experiences they had in the construction industry. The percentage of quantity surveyors with the individual dispute-resolution skills was higher than engineers and lawyers at 17%, except for the adjudication skills, which was 9%. None of the construction managers and architects had any dispute-resolution skills.

4.5 Sources of disputes identified

As discussed in Chapter 3, conceptual-content analysis was used to analyse interviews, cases and media reports to simplify the identification, classification and quantification of the sources from the transcripts, which were weighed on an Excel spreadsheet to calculate the number of occurrences for each category. The section involves figures displaying the findings to facilitate the evaluation and analysis.

4.5.1 Presentation of findings pertaining to sources of disputes

As part of the research process, this section depicts the presentation of the results stage, which helped to achieve the first objective concerning the identification of sources of disputes. The section represents the results obtained from interviews, cases and media reports; thus, 226 factors were identified from the interviews and analysed, as shown in Figure 4.5.

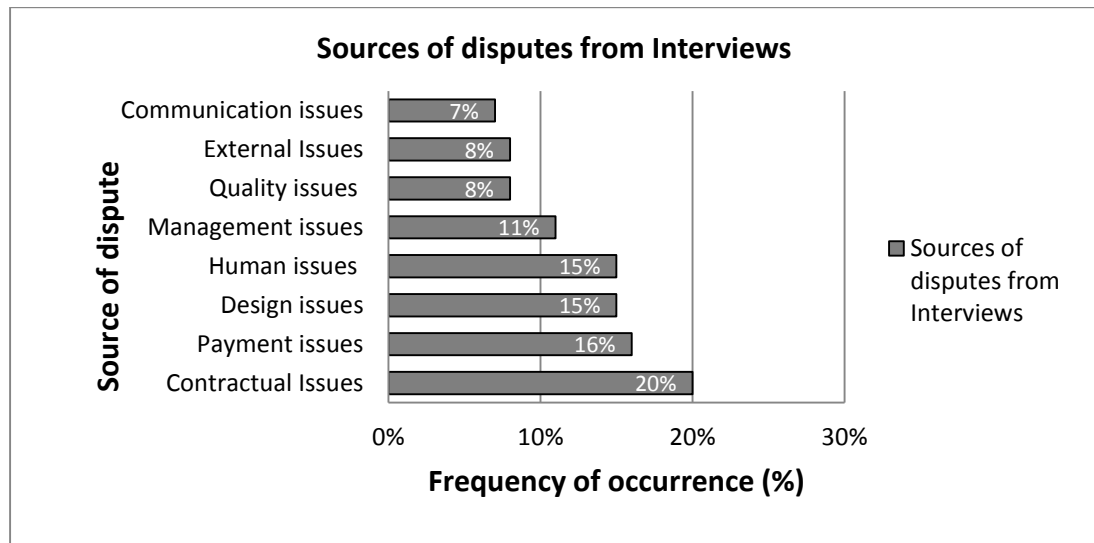


Figure 4.5: Sources of disputes from interviews

Figure 4.5 illustrates the results obtained from the analysis of the interviews, and the sizes of the bars expressed in percentages indicate the level of commonality of each theme or context category. The interviews were conducted, based on the specific research objective, of which the responses were transcribed and analysed by using the conceptual framework, as discussed in Chapters 2 and 3. Therefore, the issues mentioned were categorised into specific contexts, according to the coding frames, which were computed to calculate the frequency of occurrence of each contextual category. Likewise, the same principle was applied to the other data obtained from other sources, as shown in Figure 4.6.

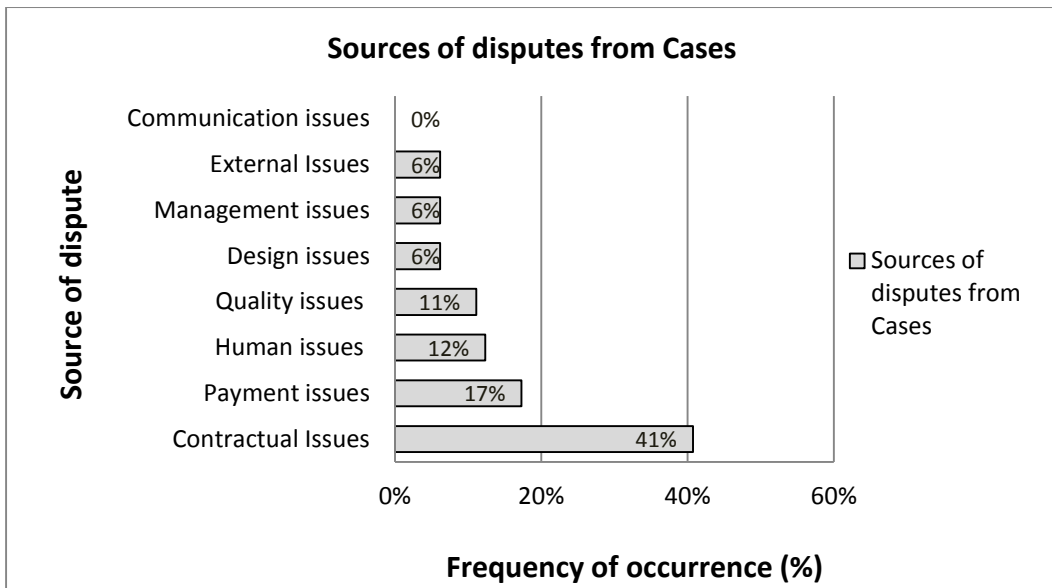


Figure 4.6: Sources of disputes from cases

Similarly, Figure 4.6 represents the sources that were identified from cases and their frequency of occurrence in percentages. The issues identified, according to the coding frames were extracted from the sample of 15 cases, which were put together under the relevant contextual categories in an Excel spreadsheet. Therefore, the coding frames were computed to show the frequency of occurrence for each category, which were expressed as a percentage of the number of issues identified. Similar procedures were used for media reports, as shown in the subsequent Figure 4.7.

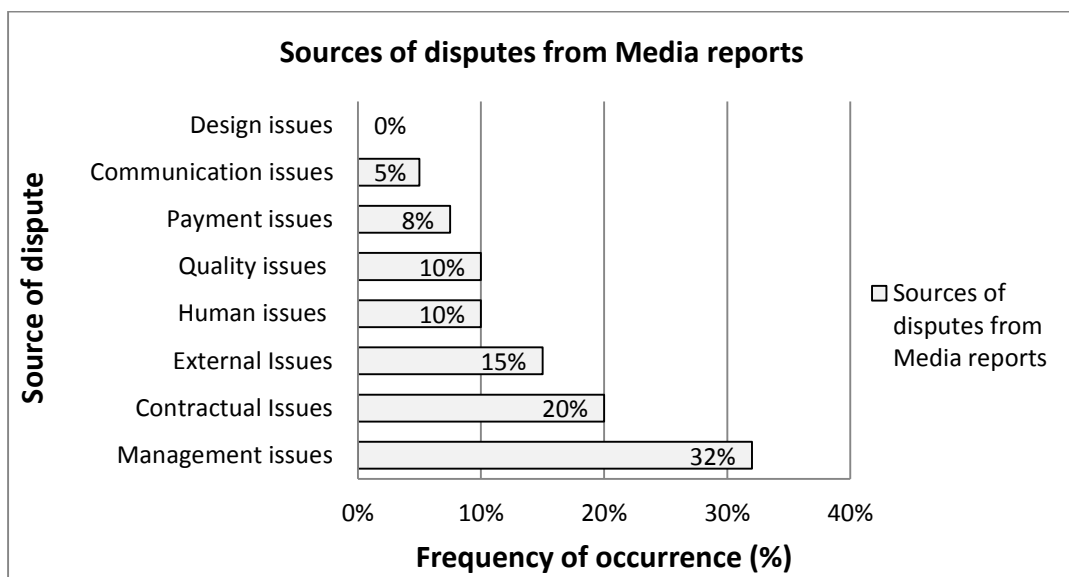


Figure 4.7: Sources of disputes on media reports

The Figure 4.7 illustrates the frequency of occurrences of the sources obtained from the 12 media reports and the same conceptual framework was used. As for the media reports, those articles that were related to disputes were identified through word search and extracted from the internet. Akin to the cases, the coding frames were used to identify and classify the issues, according to the contextual categories; and this was followed by quantifying the frequency of occurrences, as depicted by Figure 4.7. In addition, Figure 4.7 precedes Figure 4.8 to Figure 4.10, which represents the comparison of all sources of disputes from interviews, cases and media reports, the combined results from interviews and cases, as well as the combined results from all the data sources used, respectively.

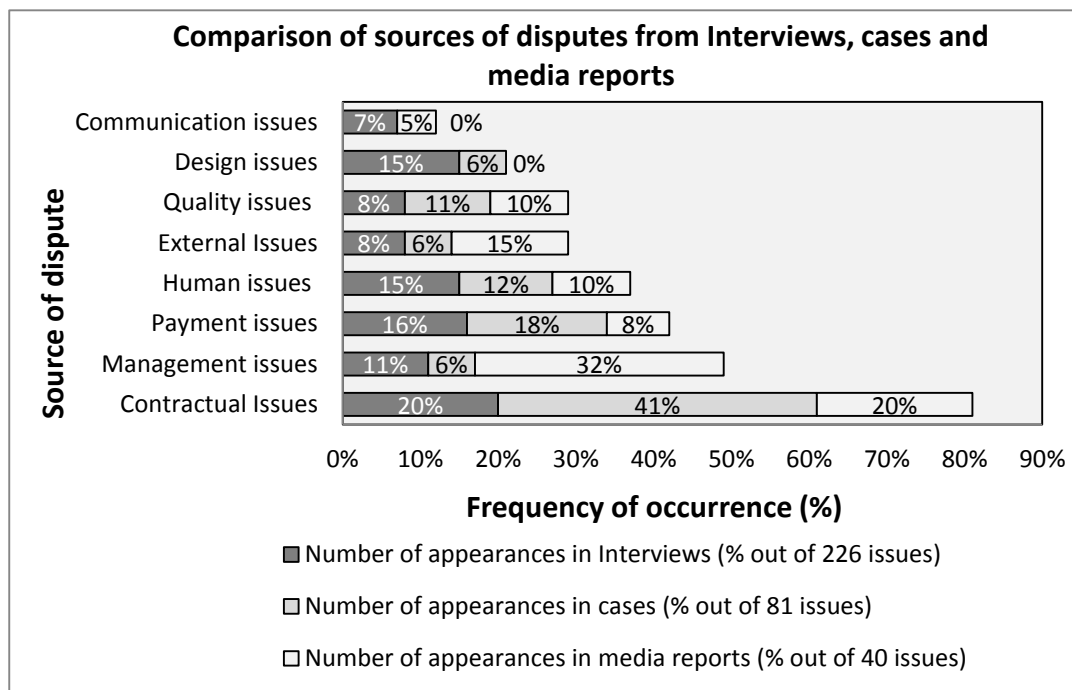


Figure 4.8: Sources of disputes from Interviews, cases and media reports

Parallel to displaying the individual results according to the data source (Figure 4.5 to Figure 4.7), Figure 4.8 represents the comparison of the frequencies of the sources expressed as a percentage of the number of issues found in each data source, i.e. interviews (226), cases (81) and media reports (40 issues found and sorted, according to the conceptual framework). Hence, the sizes of the bars and percentages indicate the level of commonality of each theme or context category; while at the same time, the combined results from the interviews and cases were sorted, as shown in the subsequent Figure 4.9.

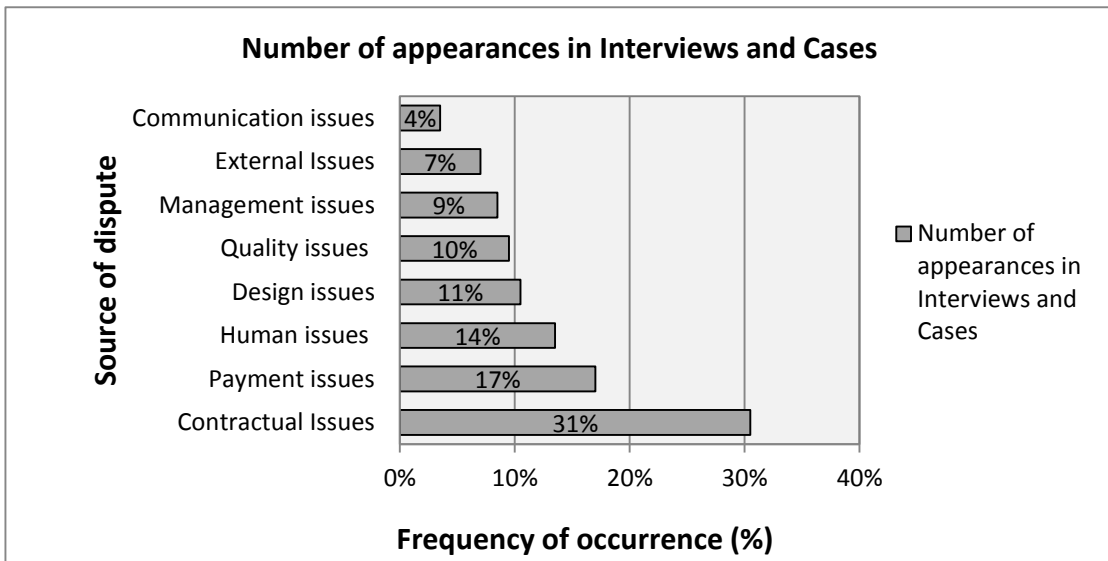


Figure 4.9: Sources of disputes from Interviews and cases

To enable simplified analysis of the results, the outcomes from the interviews and cases were combined; and the findings are represented by Figure 4.9. Like Figure 4.5 to Figure 4.8, this shows the order of sources of disputes in terms of frequency of occurrence from interviews and cases, which were expressed as percentages. In other words, the depiction comprises averages of frequencies of occurrences of sources from interviews and cases. Henceforth, the combinations of all the findings from interviews, cases and media reports are depicted in the succeeding Figure 4.10.

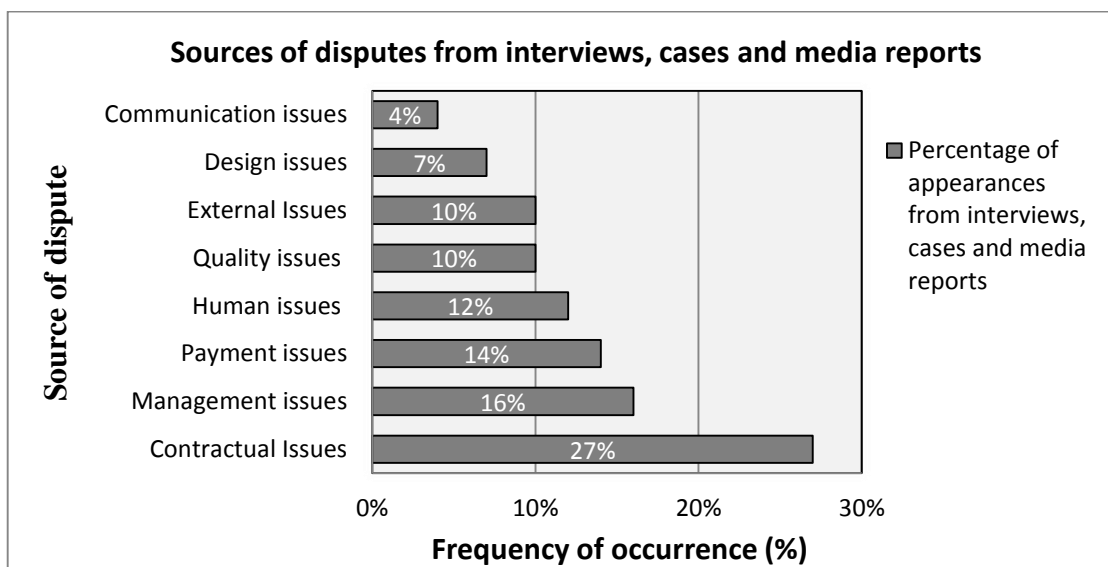


Figure 4.10: Sources of disputes from all sources (Interviews, cases and media reports)

Analogous, to Figure 4.5 and to Figure 4.9, Figure 4.10 combines all the sources obtained from the interviews, the cases and the media reports. It illustrates the order of commonality of the sources based on the frequency of occurrence of the sources of disputes obtained from different data sources (expressed in percentages). In other words, the figure depicts the overall results of the study in the context of objective one that pertains to the identification of the sources of disputes in the construction industry. Henceforth, the next section pertains to the analysis of the results, as depicted in Figure 4.5 to Figure 4.10.

4.5.2 Analysis of results on sources of disputes

In the context of Figure 4.5 relating to interviews, 226 issues regarding sources of disputes emerged; and the conceptual framework facilitated the categorisation of the issues. Contractual issues, payment issues, design and human issues emerged as the most prevalent sources of disputes. The management issues were moderate with 11% frequency of occurrence; while contractual and communication issues were the highest and least-occurring issues, respectively. Amongst the least, were the quality, external and communication issues. The human and quality issues had the same frequency (15%), along with quality and external issues, which were both at (8%).

In the same way, 81 issues were obtained from cases and contractual issues; and these were the most prevalent sources, followed by payment issues, human and quality issues, with 17%, 12% and 11% frequency of occurrence, respectively. On the other hand, design, management and external problems emerged as the lowest sources, at 6% frequency of occurrence; but the communication issues were not mentioned in all the cases analysed, as indicated.

Despite the use of the same conceptual framework, different results were obtained from the media reports, as depicted in Figure 4.7, where 40 factors were identified as being according to the coding frames. Contrary to the results obtained from the cases and interviews, design issues were not mentioned in the media reports. The management issues were the highest, with 32% frequency of occurrence, followed by contractual issues and external issues at 20% and 15%, in that order. The human and quality issues were moderate both at 10%; while payment issues and communication issues were the

least appearing issues; but the design issues were not mentioned. The frequencies for management, contractual and design issues had the greatest variances compared to the findings obtained from the interviews and cases; while other issues, such as the external, human, and quality issues had the lowest number of variances, as they maintained their intermediate positions.

In Figure 4.5 to Figure 4.9, the factors identified from the interviews (226), cases (81) and media reports (40) were similar, despite the noteworthy variances found. Some remarkable variances were in the management, payment, external and design issues; while quality and human-related issues were moderate in all the scenarios. Conversely, communication issues revealed the lowest appearances in all the situations; whereas contractual issues remained the most frequent sources in all circumstances considered, irrespective of the management issues' dominance in media reports.

Since the results from the interviews were not dissimilar from the ones obtained from the cases, the combined effect yielded similar results; such that communication and payment issues were the highest; while the external and communication issues were the lowest. The most significant variances were with issues, such as design, quality and management; although the human issues maintained the third position in all scenarios, followed by the design, quality and management issues. In addition, Figure 4.10 shows the combined results from all the data sources.

According to the perspective of Figure 4.10 derived from Figure 4.5 to Figure 4.9, the contractual issues were the most dominant source in the South African construction industry, followed by management and payment issues. The Figure is akin to Figure 4.5 and Figure 4.9 concerning the results from the interviews and the cases, although the management, design and external issues showed the most variances in frequencies. The human, quality and external issues assumed the middle frequencies of 12% and 10% each correspondingly; while the design and communication issues were the least at 7% each and 4%, respectively.

Notwithstanding the divergences, contractual issues dominated the sources in all scenarios; while the payment, human and quality issues maintained their modal frequencies between 10% and 17%. Henceforth, the contractual issues were the most

dominant source, followed by management, payment, human, quality and external issues; while design and communication issues were the least-common sources. Despite the variations in the frequencies of occurrences or levels of commonality, the results indicate that contractual, management, payment and human issue are core to dispute initiation; while quality, external and the design issues were the modal issues leading to disputes. On the other hand, the communication issues had the least influence on disputes initiation. The next section deals with the presentation and analysis of the results pertaining to the second objective.

4.6 Results of the dispute-resolution methods employed in the South African construction industry

Analogous to the previous section, the presentation of results precedes the analysis of the results; and it comprises a combination of four figures derived from the interviews, the media reports and the contracts. The depiction of the sample of contracts used forms part of the presentation of the results; as it aids in the analysis of the results pertaining to contracts.

4.6.1 Presentation of results on the dispute-resolution methods employed in the South African construction industry

Analogous to the presentation section on the sources of disputes, this section presents the results on dispute-resolution methods employed in the construction industry, to achieve the second objective: “To ascertain the dispute-resolution methods employed in the construction industry”. Thus, Figure 4.11, Figure 4.12 and Figure 4.14 depict the results obtained from the interviews, the media reports and the contracts.

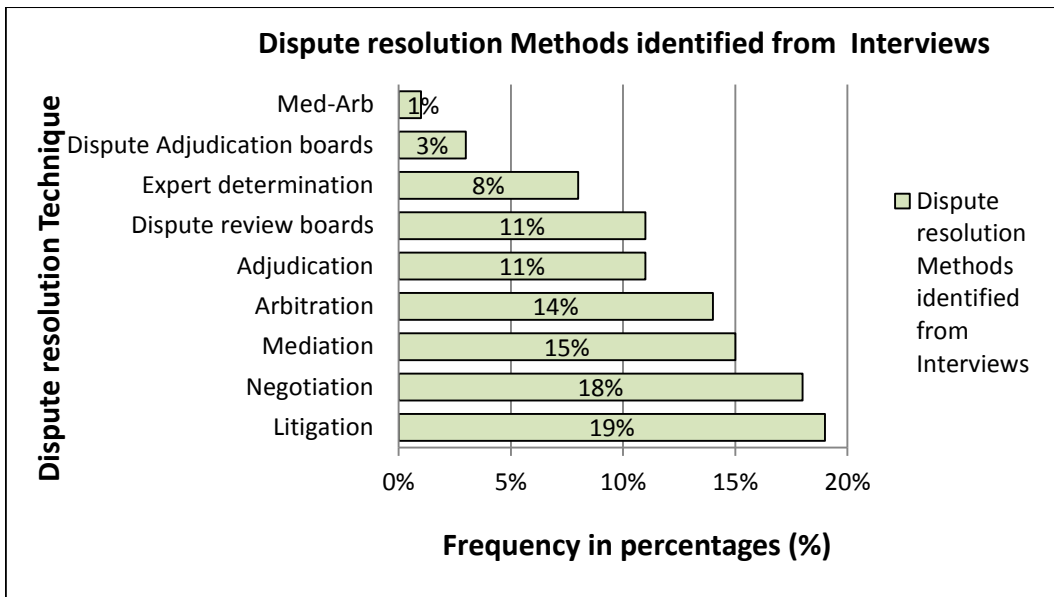


Figure 4.11: Disputes Resolution Methods from Interviews

Figure 4.11 consists of nine bars of different sizes, each representing the dispute-resolution methods and the number of times each method appeared in the interviews. While the sizes and percentages correspond to the number of occurrences, the dispute-resolution methods were extracted from the transliterated interviews; and the number of times each method appeared was recorded, in order to produce the frequencies of the occurrences.

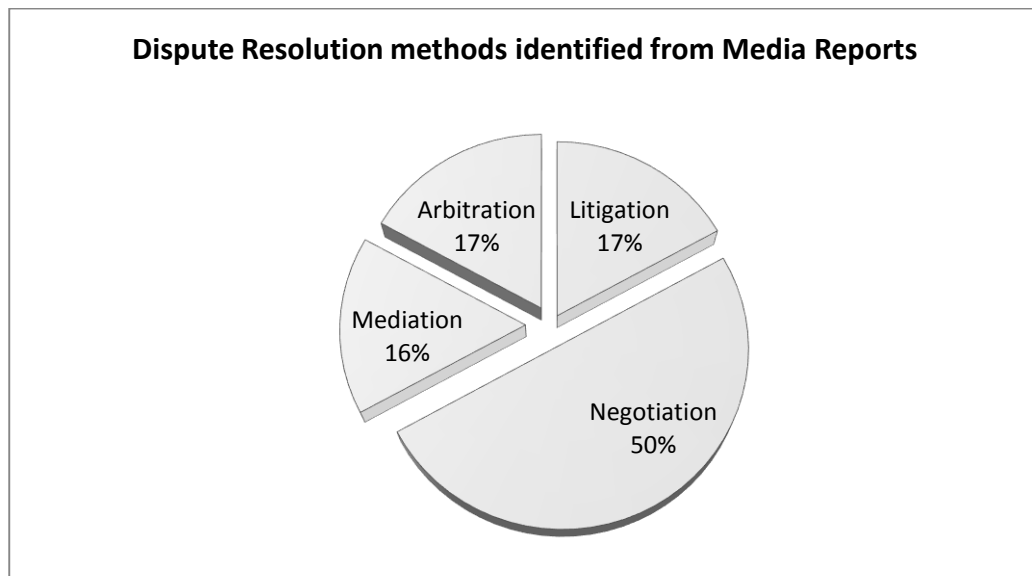


Figure 4.12: Dispute Resolution from the Media Reports

Similar to Figure 4.11, Figure 4.12 depicts the dispute-resolution methods identified from the media reports; and the sizes of the pie segments indicate the frequency of

occurrence of the methods. As for the media reports, a similar procedure to that in the interviews was used, which involved extracting the techniques mentioned in the media reports, quantifying the number of occurrences, and computing the results to percentages. At the same time, the composition of the contracts used was expressed as percentages to aid an understanding of the types and number of contracts used, as depicted in Figure 4.13.

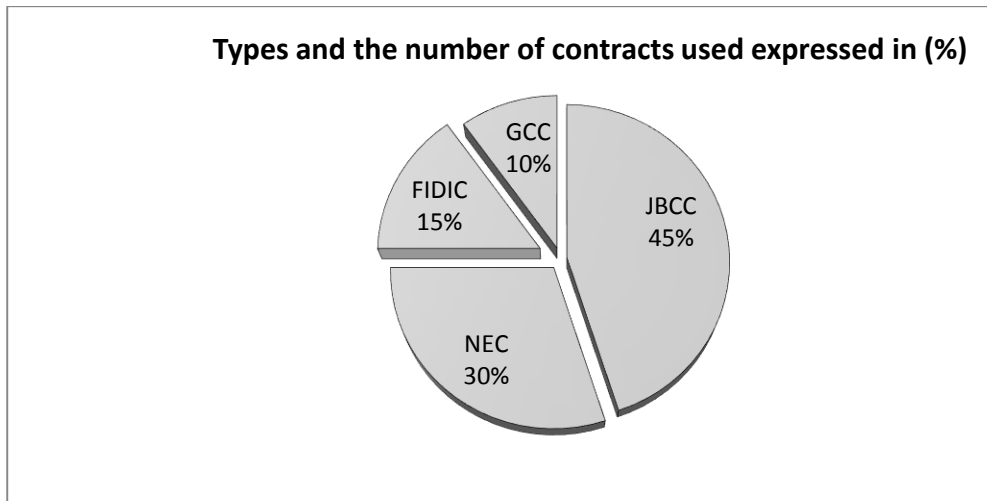


Figure 4.13: Types of Contracts used

Figure 4.13 specifies the composition of the sample of contracts used to derive Figure 4.14. Thus, the contracts were obtained through purposive sampling, as explained in Chapter Three; and the figure shows the number of times each type of contract appeared in the sample of 20 contracts used expressed as a percentage. As a result, the figure aids in elaborating the results on the methods identified from the contracts shown in Figure 4.14.

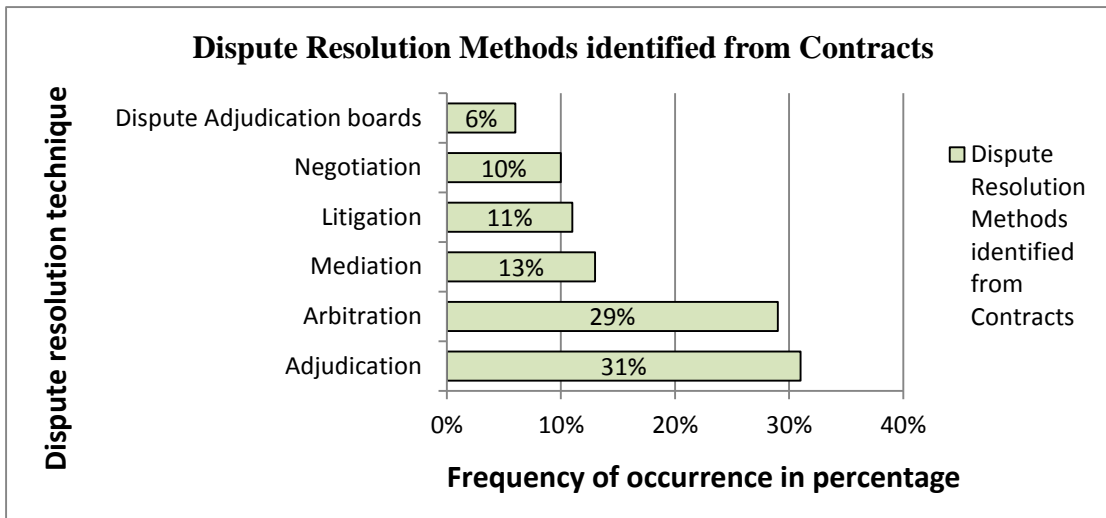


Figure 4.14: Dispute-Resolution Methods from Contracts

Similar to Figure 4.12, Figure 4.14 shows the six types of dispute-resolution methods identified from the sample of contracts, as well the frequency of appearances (expressed as percentages) of each method. Therefore, the sizes of the bars represent the percentages of popularity of each method. Accordingly, the dispute-resolution techniques mentioned in the contract documents were extracted and computed in an Excel spreadsheet, which helped to quantify and to compute the frequencies of the occurrence of each method. Likewise, the figure depicts the methods identified in descending order of commonality; while the following Figure 4.15 shows the comparison of the methods obtained from the interviews, the media reports and the contracts.

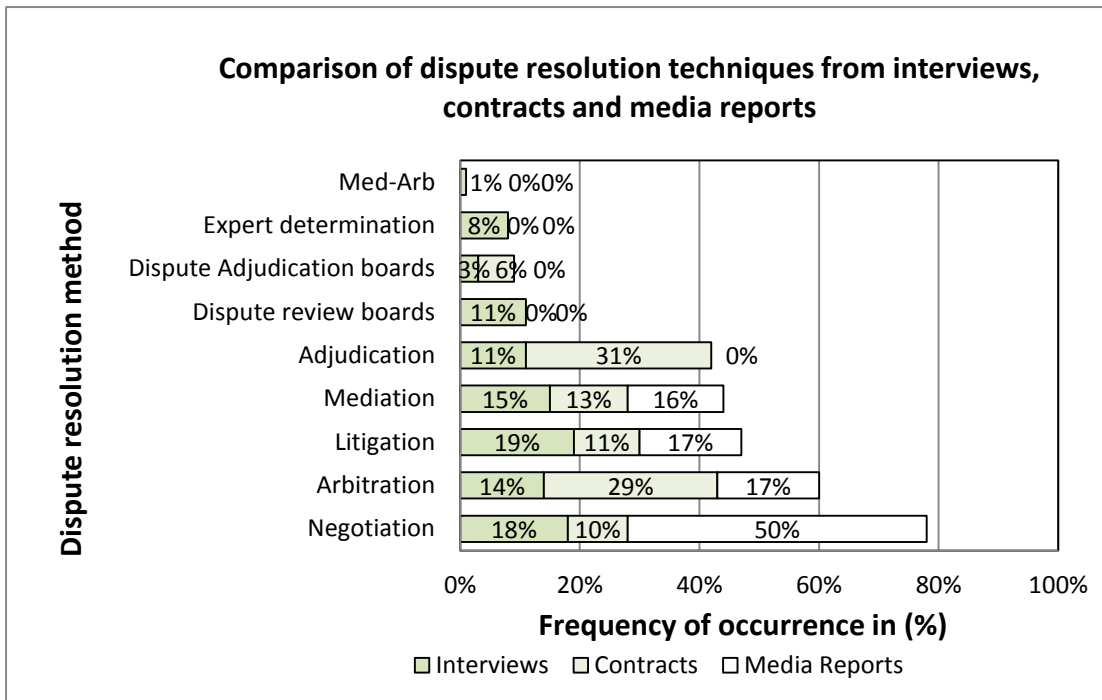


Figure 4.15: Comparison of Dispute-Resolution Methods from Interviews, Contracts and Media Reports

The figure compares the frequencies of each dispute-resolution technique obtained from the interviews, the contracts and the media reports; while the bars and the percentages represent the frequencies of occurrence of the dispute-resolution techniques. As already explained under each interview, media reports and contracts, the techniques were identified and extracted from the data sources, recoded in an Excel spreadsheet to enable quantification and computation of the percentages. As a result, the figure compares the results from each data source, leading to a simplified interpretation of Figure 4.16 concerning the overall dispute-resolution methods from all sources (interviews, contracts and media reports).

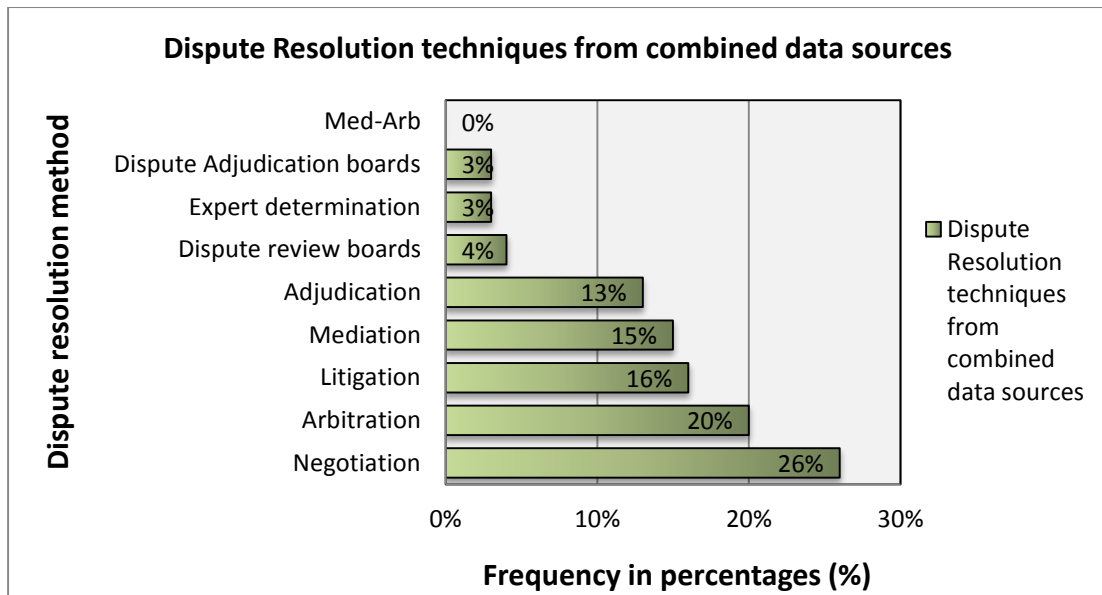


Figure 4.16: Overall dispute-resolution methods from all sources (interviews, contracts and media reports)

Likewise, the overall results from all the sources combined, were prepared by combining the results from the three data sources, which were expressed as percentages of the overall results. The computation involved computing the average of the results from each data source. Thus, the figure depicts the techniques used in the industry, in order of commonality; while the succeeding section deals with the analysis of the results.

4.6.2 Analysis of the results on dispute-resolution methods employed in the South African construction industry

Figure 4.11 indicates nine common dispute-resolution methods used in the South African construction industry, as confirmed by the professionals, who participated in the interviews. Litigation, negotiation, mediation and arbitration were the most prevalent methods; while dispute-review boards and adjudication were moderately employed. On the other hand, expert determination, dispute-adjudication boards (DAB) and med-arb, were the least-used methods. While, litigation and negotiations dominated the list in interviews, med-arb was the least-used method. The figure demonstrates that litigation and negotiation were more popular at 19% and 18%, respectively; while, mediation, arbitration, dispute-review boards and adjudication were 15%, 14%, and 11%, correspondingly. In addition, expert determination, dispute-adjudication boards and Med-arb comprised 8%, 3% and 1%, respectively.

From the perspective of Figure 4.12, which pertains to the techniques obtained from the media, and reports, only four dispute-resolution methods were identified, which included: negotiation, arbitration, mediation and litigation. Negotiations had the highest frequency at 50%, followed by litigation and arbitration at 17% each, as well as mediation, which trailed at 16%. Thus, media reports had the least number of resolution methods compared to other data sources.

Likewise, Figure 4.14, shows six dispute-resolution methods, which were identified from a sample of 20 contracts comprising the JBCC (45%), NEC (30%), FIDIC (15%) and the GCC (10%), as revealed in Figure 4.14. Therefore, adjudication and arbitration were the most dominant methods stated in the contracts, followed by mediation and litigation. Similarly, negotiation and dispute-adjudication boards were the least-indicated methods at 10% and 6%, respectively. Consequently, adjudication was the most popular method at a 31% level of commonality; while dispute-adjudication boards were rarely mentioned, as shown by the 6% frequency of occurrence.

The interviews yielded nine dispute-resolution techniques; while the contracts and media reports had six and four methods, respectively, as shown in Figure 4.15. Hence, expert determination, dispute-review boards and med-arb were only found in interviews; while adjudication and dispute-adjudication boards were only found in interviews and contracts. Although the sample of contracts that were evaluated did not include provisions for dispute-review boards, expert determination and med-arb methods, they showed a greater usage of adjudication (31%) and arbitration (29%), followed by mediation (13%), litigation (11%), negotiations (10%) and dispute-adjudication boards (6%) in a descending order. Likewise, the media reports produced negotiations, litigation, arbitration and mediation, in a descending order of frequencies. Thus, negotiations had the highest overall frequency at 26%, followed by arbitration (20%), litigation (16%), mediation (15%), adjudication (13%), DRBs (4%), expert determination and DAB both at 3%.

Med-arb, on the other hand, yielded a percentage less than 1%, indicating that this method is rarely used in the construction industry, as shown in the combined results

Figure 4.16. This section precedes the section of the summary of the chapter dealing with the main issues that emanated from the presentation and analysis of the results.

4.7 Results of the responsiveness of the industry about the dispute resolution methods

The section like the previous sections, comprises the presentation and analysis of the results sections, and Figure 4.17 was used to present the results; as it supported the analysis of the results pertaining to the responsiveness of the industry about the dispute resolution methods.

4.7.1 Presentation of findings pertaining to of the responsiveness of the industry about the dispute resolution methods

Table 4.6 The responsiveness of the industry about the dispute resolution methods

Profession	Average years of experience	Sample Size %	Arbitration %	Adjudication %	Expert witness %	Mediation %	Combined skills %
Quantity Surveyor	23	40	17	9	17	17	0
Engineer	25	20	11	11	11	11	11
Lawyers/attorneys	17	10	11	11	11	11	11
Construction managers	11	20	0	0	0	0	0
Architects	18	10	0	0	0	0	0

Similarly, the overall results from all the sources combined, were prepared by combining the results from the three data sources, which were expressed as percentages of the overall results. The computation involved computing the average of the results from each data source. Thus, the figure depicts the techniques used in the industry, in order of commonality; while the succeeding section deals with the analysis of the results.

The Table 4.6 combined the results for Figures 4.1- 4 to facilitate the analysis of the results pertaining to the acquaintance of the industry with the available dispute

resolution mechanisms. The results were obtained from the professionals that participated in the interviews as they were asked about their experiences and skills in dispute resolution mechanisms. Table 4.6 shows the professionals' average years of experience, sample size as well as the numbers expressed in percentages of those with experience in dispute. The section precedes the analysis section.

4.7.2 Analysis of results on responsiveness of the industry about the dispute resolution methods sources of disputes

Engineers had the highest number of years of experience (25years) on average in the construction industry followed by quantity surveyors, architects, lawyers and construction managers with 23, 18, 17 and 11 years respectively. The quantity surveyors constituted 40% of the professionals, while engineers and construction managers were 20% each and the remaining 20% was equally shared by lawyers and architects with 10% each.

The number of quantity surveyors with dispute resolution skills varied per dispute resolution technique, thus, 17% had skills in arbitration, mediation and expert-witnessing, while 9% had adjudication skills. The engineers and lawyers constituted 30% of the professionals with 20% and 10% respectively and 11% for each discipline possessed all the dispute resolution skills assessed. The construction managers and architects which also constituted 30% of the professionals had no skills in dispute resolution.

In a nutshell, 39% professionals had skills in arbitration, mediation and expert witnessing, while 31% had adjudication skills and only 22% had all the dispute resolution skills assessed, and only engineers and lawyers had all the dispute resolution skills. None was found with all the dispute resolution skills from the quantity surveyors although most professionals were from this discipline.

4.8 Summary of the results

In summary, the conceptual framework was used to produce Figure 4.11, Figure 4.12 and Figure 4.14 pertaining to the interviews, the cases and the media reports, as well as

the results from interviews and cases, which were familiar; while the media reports differed slightly. The contractual, management, payment and human issues emerged as the most-prevalent sources of disputes for interviews. Among the least, were the management, quality, external and communication issues; and the latter were the least-prevalent sources; while the contractual issues were the highest.

The results obtained from the cases and the contractual issues, comprised the most-prevalent source, followed by payment and human issues; while the quality, management and external problems emerged as the least-prevalent sources. The communication issues were not mentioned in all the cases that were analysed. The results from the media reports varied from the ones obtained from the interviews and cases; since the management issues were the most-prevalent source, followed by the contractual and external issues. On the other hand, the payment and communication issues were the least-prevalent issues, with the human issues being seldom mentioned; while the design issues were not revealed in the media reports.

The results from the three figures, independently, were similar, despite the noteworthy variances found. The management issues and payment and design issues showed some significant variances; whereas quality and human issues were moderate in all situations. Similarly, the communication issues had the lowest appearances in all situations; while contractual issues enjoyed the highest frequency in all circumstances, notwithstanding the management issues' dominance in media reports.

Conclusively, from the context of the first objective, the contractual issues are the most dominant source in the South African construction industry, followed by management and payment issues; while the human, quality and external issues have a moderate influence in the construction industry. Conversely, the design and communication issues were the least-common sources.

The overall results indicated that negotiations were the most popular methods used, followed by arbitration, litigation, mediation, adjudication, DRBS, expert determination and DAB. However, the results from the contracts showed that adjudication and arbitration were the most-popular methods adopted in contracts. On the other hand, DRBS and expert determination were not provided for amongst the

contracts that were sampled; while mediation, litigation and negotiations were among the most-used methods in contracts.

Concerning the second objective, the negotiations (26%) were found to be the most-prevalent method used for resolving disputes in the construction industry, followed by arbitration (20%); while litigation, mediation and adjudication revealed a moderate usage. Congruently, DRBs, expert determination and DAB were the least-common methods; while med-arb was rarely used in the construction industry.

With reference to the third objective, most professionals had arbitration, mediation and expert witnessing proficiencies at 39% each, followed by adjudication with 31%. Only the quantity surveyors, engineers and lawyers possessed these proficiencies. The number of engineers and lawyers with these techniques was constant across all the resolution techniques at 11% each. Only 9% from the quantity surveyors had adjudication skills and none in the same profession had the combined skills. Construction managers and architects had no dispute resolution skills. Conclusively, the succeeding chapter discusses the implications of the study findings in the context of the literature in Chapter 2.

CHAPTER 5

5 Discussion of results

This chapter discusses the implications of the study findings in the context of the literature findings discussed earlier in the study. It substantiates the findings of the study in the context of the work discussed earlier in Chapter 2 (literature review). Precisely, this comprises three sections, namely:

- A comparison between the study's findings and the findings of the literature review;
- A discussion of the results of the first objective concerning the identification of the sources of disputes;
- A discussion of the results pertaining to dispute-resolution methods used in the South African Construction Industry.
- A discussion of the results pertaining to acquaintance of the industry about the dispute resolution methods

5.1 Presentation of the comparison between the study's findings and the literature review

In order to elucidate the relationship between the study's findings and the literature review, the same procedure of identifying and classifying the factors or issues pertaining to dispute initiation (using the coding framework developed in Chapter 2) was used. Figure 5.1 and Figure 5.2 represent the literature findings, as well as the comparison of the combined findings of the study with the findings of the literature review.

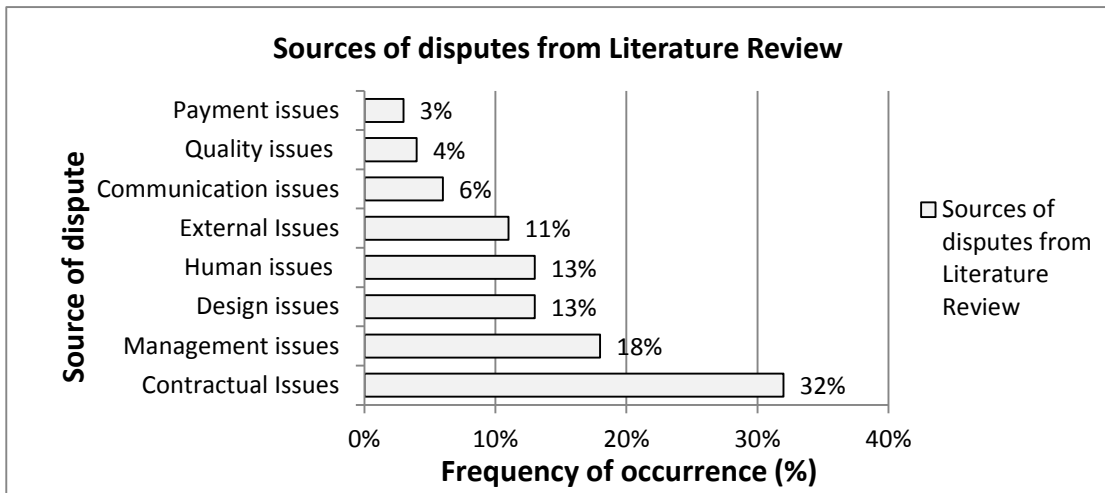


Figure 5.1: Sources of disputes from the Literature Review

Figure 5.1 shows the sources of disputes as revealed in the literature where the identification of the sources of disputes was based on the coding framework that was developed in each contextual category. These issues were recorded on an Excel spreadsheet, to enable quantification and computation of the frequencies expressed in percentages. In addition, the study and the findings of the literature review were compared, in order to evaluate the extent to which the findings of the study matched those of the literature findings. Figure 5.2 presents this comparison.

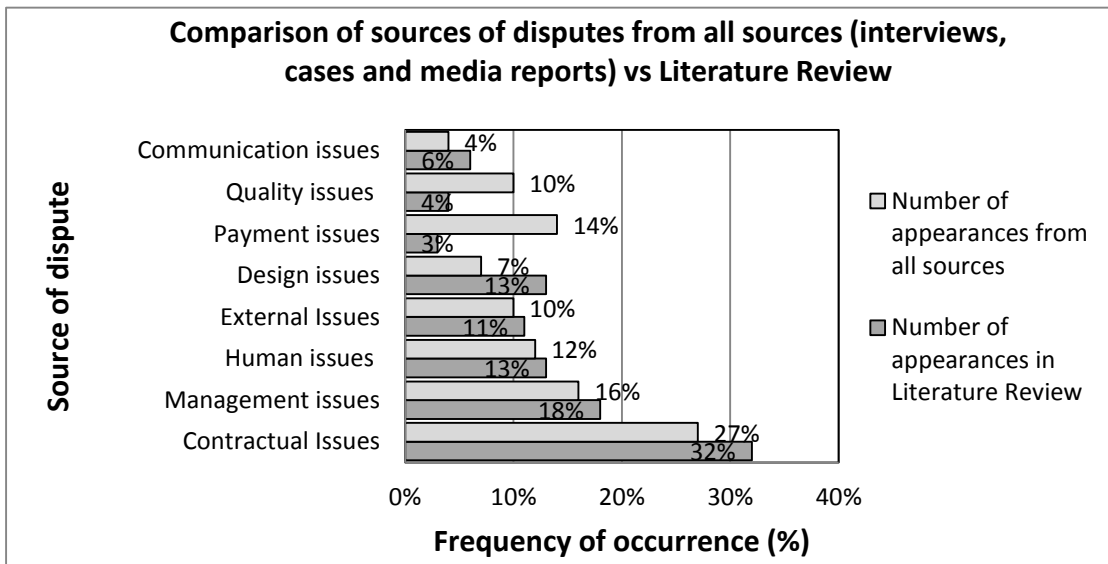


Figure 5.2: Comparison of sources of disputes from all sources (interviews, cases and media reports) vs the Literature Review

Figure 5.2 presents a comparison of the combined factors from interviews, cases and media reports with those obtained from the literature. The frequencies of occurrence of the sources were expressed as percentages. The combined factors obtained from the field and the literature findings were obtained by similar methods, which involved grouping into the contextual categories and computing the frequencies of occurrence, according to the coding frames. The succeeding section pertains to the discussion of the results.

5.2 Discussion of the results with regards to the identification of the sources of disputes

Convincingly, the codes appeared 347 times overall, according to the conceptual framework discussed in the earlier chapters. The contractual, management, payment, human, external, design, quality and communication issues (descending order) emerged from the study in line with the issues found in the literature (Fenn et al., 1997; Watts and Scrivener, 1993; Harmon, 2003b; Yiu and Cheung, 2007; Jaffar et al., 2011; Cheung and Pang, 2014), confirming their significance in initiating disputes in the South African construction industry. Accordingly, the study validates the universality theory; as the same issues were evident at both local and global levels, thereby demonstrating that dispute occurrence is a universal phenomenon (Cain and Kulcsar, 1981).

The Figure 5.2 pertains to the comparison between the combined factors and the literature findings. The contractual issues were the most prevalent issues that emerged from all the data sources considered, except for the media reports, which revealed management issues as the most common sources. The comparison between literature findings (32%) and the field work (27%), demonstrate that contractual problems were the most common source of disputes in the South African and global contexts. Moreover, from the individual data sources' perspective, the findings from the cases showed the highest frequency of 41%; while the media reports and interviews had 22% and 20%, respectively, thereby further confirming the prevalence of contractual issues in encouraging disputes (Love et al., 2011; Cheung and Pang, 2013; Cheung and Pang, 2014).

Typically, the findings indicate the lack of contractual knowledge in the South African context (Povey et al., 2005; Maritz and Hattingh, 2015). Deducing from the response of Interviewee 1 in line 41 to 43 (in Appendix A), any loopholes in the contract could be vulnerable to opportunistic behaviour – especially in uncertain economic times; since the parties could take advantage of the contractual issues.

“Opportunistic behaviour exists as well; and contractors tend to claim for the work they have not done – taking advantage of the government. That is why the government is tightening the qualification procedures regarding the tenders adjudication and award.” (Interviewee 1, Lines 36 to 38 in Appendix A).

It is judicious to surmise that the lack of contractual knowledge was core to the contractual issues; as issues, such as misinterpretation and unfamiliarity with contract terms emanate from the lack of contractual proficiency, which can lead to the wrong choice of contracts used in construction contracts.

There were substantial inconsistencies concerning the order of sources from interviews, cases and media reports that helped explain the varied arrangements of the sources of disputes. Although, the absence of communication issues in cases could not be linked to the findings in the literature, it is sensible to deduce that communication matters lack objectivity; and presumably there is little or no evidence on communication issues that can be justified in courts. Such exclusions from court cases indicate that communication issues were subjective inferences that lack the basis of objective judgements; because the intricacies emanate from the impact of human involvement in dealing with the entire dispute procedure.

It could be expected that when parties from different backgrounds converge, tensions and misunderstandings, linked to human and communication issues, would be most likely to occur, in accordance with the theory of conflicts (Cain and Kulcsar, 1981; Cheung and Pang, 2013; Cheung and Yiu, 2006; Fenn, 2007; Wall and Fellows, 2010; Richbell, 2008; Cooperative Research Centre for Construction Innovation, 2009). Nonetheless, the comparison between the combined data sources and the literature findings (Figure 5.2) differ in the order of commonality regarding payment,

communication, external, quality and design issues; while other issues had slight variances, such as human issues.

Although communication issues were the least considered, they have been misapprehended, as being among the most common drivers of distorted relationships among the parties to a contract (Fenn et al., 1997; Love et al., 2008; Love et al. 2010). Just as the absence of communication issues in cases, the absence of design issues in media reports would be presumed as the lack of interest, because of the approaches or the intentions of the authors of the media reports used in the study. The study and literature findings show similar results on communication issues; since they were the third least-common sources from the literature findings.

In addition, the payment issues had the most significant variance; as the study found that they were the third most-common sources of disputes at 14% frequency of occurrence, contrary to the least rating from the literature at 3%. Using cases as the bases for arguments due to their presumed objectivity (and the study's stance), the payment issues recorded the second-highest frequency of occurrence; thereby demonstrating a significant number of payment issues reaching courts, thence, the concept of defining disputes in terms of the highest common factor, claims, is substantiated (Cheung and Yiu 2006). It should be noted that claims constitute a substantial portion in payment issues, despite the lower frequencies from interviews (7%) and media reports (18%).

Human issues, on the other hand, showed the list variances in both scenarios. Similarly, the sizeable frequency for human-related issues (12%) confirms the impact of human issues in dispute initiation at both local and international levels (Love et al., 2009; Love et al., 2011; Cheung and Pang, 2014). As noted earlier, regarding communication issues, people play a vital role in all the stages of disputes; because most issues involve human beings to some extent; and their behaviours may determine dispute occurrence (Pinnell, 1999; Yiu and Cheung, 2007; Cheung and Pang, 2013). If all parties were to agree on working towards avoiding disputes; they could reduce the occurrence of disputes.

Slightly correlated to payment issues, the quality issues agree with the findings in the literature (Fenn et al., 1997; Cheung and Yiu 2006; Love et al., 2008; Love et al. 2010); since they are capable of initiating disputes – because poor quality may lead to non-payments or termination of the contract. Similarly, the quality issues were the moderate sources, as opposed to the literature findings, which classified them as the least significant. Equally, management, design and external issues had the same frequency of 6% from case perspectives; while the other data sources yielded higher frequencies of 30% and 16 % for media reports and interviews, respectively. The findings are analogous to those of the previous studies; and the interrelatedness of issues can be confirmed; since management issues directly link to the design and external issues (Love et al., 2011).

Although most issues emerged from the interviews as being opposed to other methods of data collection, they were some of the issues that were not raised in documents – thereby indicating that a single method of data collection would be inadequate in disclosing all the significant sources of the disputes. However, other significant issues, such as the environmental, health and safety issues were not found in the literature. They were revealed in interviews, as the additional external issues capable of instigating disputes.

The results obtained from the literature for contractual, management and human issues were higher, when compared to those obtained from all other sources. On the contrary, design, external, communication, quality and payment issues from the literature were lower, compared to those obtained from all the other sources. The overall order of commonality was the same. The following section deals with the discussions of the second objective.

5.3 Discussion of results pertaining to the frequently used dispute-resolution methods in the South African Construction Industry

While the usage of dispute-resolution methods is not well-known in the South African context, due to the lack of studies on the subject (Povey et al., 2005; Maritz and Hattingh, 2015), the study shows that negotiations were the most frequently used technique, followed by arbitration, litigation, mediation, adjudication, DRBS, expert

determination, DAB and med-arb. They were diverse perspectives that would contribute to the arrangement and the varied sources of data, which attest to the assortments.

In the first instance, particularly from the type of contracts used and the contractual provisions used, the JBCC was the most-dominant standard contract used, followed by GCC, NEC and FIDIC. As provisions in the contracts indicate in the usage of resolution techniques, one would have expected to obtain results that were more inclined to the popular contract conditions; but the contracts are often adjusted for State purposes (State clauses) (JBCC, 2014a). Nevertheless, using the sample of contracts as the basis for the discussion helps to simplify the issues.

It was found in recent studies (Cheung and Suen, 2002) that some parties prefer final binding methods over voluntary settlements; and the study confirms the move towards binding mechanisms; as adjudication and arbitration were the dominating mechanisms for resolving disputes. Eggleston (2015) expressed concern over the use of only binding mechanisms in the NEC standard conditions of contracts, contending that it controverts the spirit of collaboration, for which contracts stand. In addition, the FIDIC portrays the same idea, by opting for often-binding DAB over non-binding DRBS, as the first option followed by arbitration; since negotiations and mediations are included as options.

Similarly, from the perspective of a lack of knowledge, as suggested by Povey (2005), and Maritz and Hattingh (2015), it may be common practice for parties to use the common methods, as opposed to the most suitable methods; since the adoption of methods may be driven and limited to what is known by parties (Bingham, 2004). Also, the variance between the popularity of adjudication in contractual provisions and interviews, further demonstrates the lack of both dispute-resolution procedures and contractual knowledge. It can be argued that professionals are sometimes reluctant to read and acquaint themselves with the contractual provisions – especially the ones that pertain to disputes. The same can be said about mediation; although, according to the study, mediation tends to be popular amongst professionals, contrary to the results from contracts. The voluntary and non-binding nature of mediation, may be the reason for its

popularity; since it is easier for parties to talk about voluntary settlements, as opposed to binding decisions.

The rise in adjudication, noted in contracts and interviews, attests to the growth of statutory adjudication procedures, both locally and internationally (i.e. UK, Australia, New Zealand, Singapore, Hong Kong, and South Africa) (Gaitskell, 2007). The widespread adoption of statutory adjudication contributes to the growth trend in adjudication (Stipanowich, 2010). This was also confirmed by the study.

Contrary to the findings of Povey et al. (2005), which advocated that mediation was the most popular ADR method used in the South African construction industry, the study established that mediation was only the second-most used ADR method in SA. The results from all the sources of data individually and combined demonstrate that mediation occupies the third position, as far as popularity is concerned. From the perspective of the contract provisions, mediation trails adjudication and arbitration; although it is more popular than litigation and negotiations. However, its future tends to be ensured, thereby confirming the growth trend suggested by Povey (2005). Its dominance might be limited by the rise and reinforcement of adjudication procedures; as studies have shown that adjudication has an 80% success rate, when compared to the 60% success rate for mediation (Gaitskell, 2007; Stipanowich, 2010).

Equally, arbitration was the second most-popular method – both from contracts and overall data sources. It trails adjudication in contracts and negotiations from an overall popularity perspective. The results validate the findings of Gaitskell (2007), which suggested that arbitration assumes the global supremacy position over the other ADR methods and litigation; as it remains the most popular alternative for litigation, and the final stage for adjudication and mediation, depending on the contractual arrangement. International perspectives seem to match the local conditions; as all the standard contracts encompass arbitration provisions; and it remains the superior final and binding ADR technique (Stipanowich, 2010) in SA. The only exceptions were the State contracts that prescribed voluntary settlement within parties, followed by final and binding litigation procedures (JBCC, 2014a).

Other ADR techniques, such as DRBS, expert determination and med-arb were rarely used in the SA construction industry; and the sample of contracts did not contain such provisions; but interviews confirmed their use. The findings are consistent with those of previous studies (Treacy, 1995; Harmon, 2003a; Harmon, 2003b), who showed that the methods were less popular internationally. However, where they have been used, they have shown a success rate of 90% - especially in complex projects, such as tunnels.

SA provisions for DBs were found in FIDIC standard conditions clause 20 of the 1999 edition, which were rarely used as confirmed by the study, because they tend to be used in contracts that involve international parties. It was noted that DRBS and DABs were similar – the only difference being the decisions and powers invested in each technique, as DAR is similar to adjudication; while DRBs function as advisors, who can only impose judgements, under special written agreement between parties (Treacy, 1995; Harmon, 2003b; Stipanowich, 2010).

Despite the critics on litigation in several studies; as evidenced by the establishment of ADR methods, its use continues internationally (Fenn et al., 1997; Chan et al., 2006; Gebken II and Gibson, 2006; Cooperative Research Centre for Construction Innovation, 2007), and also in the SA industry, as confirmed by the results. The litigation provisions in the JBCC, GCC and NEC contracts, as noted in Chapter 2, and the findings of the study attest to its sustained usage. All the data sources confirmed the use of litigation, in which interviews produced the highest frequency, followed by contracts and media reports. This is in accordance with the suggestion of Cheung and Suen (2002) that arbitration and litigation were preferred, because of their final and binding outcome.

Finally, the match between the combined results from interviews, cases and media reports with those obtained from the literature yielded major similarities. The contractual issues dominated the sources in both scenarios, followed by management, design, human and external issues, while communication, quality and payment issues were the least-common sources. While the results obtained from the literature for contractual, management and human issues are higher than those obtained from the combined sources, the opposite was true for the design, external, communication,

quality and payment issues; although the overall order of commonality remains the same.

5.4 Discussion of results professionals' acquaintances regarding the dispute-resolution methods construction industry

Although the percentage of professional that possess the arbitration, mediation and expert witnessing proficiencies were the highest at 39% for each technique, they are still very low compared to magnitude and complexity of construction contracts. In addition the absence of quantity surveyors with the combined dispute resolution techniques indicates the lack of knowledge (Maritz and Hattingh, 2015; Povey et al., 2005), interest from the professionals in acquiring optional skills (Nkado, 2000) that are key in the construction industry.

The highest number of professionals with arbitration, mediation and expert witnessing proficiencies confirm to the findings by Povey et al., (2005) who alleged that mediation was the most frequently used dispute resolution technique in South African construction industry. This is based on the fact that Povey et al., (2005) did not confirm whether the study was based on the private or public sector or both. As argued in the previous chapters, the usage of dispute resolution techniques cannot be the same per sector because the public sector contracts used the state clauses that prescribed litigation as the only dispute resolution method prior to the recent developments on adjudication (Maritz and Hattingh, 2015).

The study showed that, only 31% of the professionals possessed the adjudication proficiencies as compared to almost 40% for arbitration and mediation and it validates Maiketso and Maritz (2012)'s conclusion that that adjudication has gained momentum in SA, but has not been fully utilized due to lack of knowledge who also ascertained the industry is more familiar with mediation, arbitration and litigation. The argument that adjudication is not fully utilized due to lack of knowledge (Maiketso and Maritz, 2012) is conformed in the study by the reduced number of quantity surveyors with the adjudication skills as well as the absence of the skill in the construction management and architecture professionals interviewed. While, Nkado (2000) revealed that arbitration and other dispute resolution procedures are optional competences for

quantity surveyors, it would be argued from a general perspective that quantity surveyors as they are expected to have a sound contractual background and the basics of construction law, should be the dominant profession with dispute resolution competences.

The lack of knowledge and interest by professionals would be attributed by the complex issues that initiate dispute as well as the introduction of lawyers in the industry who tend to complicate matters for the construction professionals that are not prepared to engage in legal battles with experts in law. The results indicate that the dispute resolution proficiencies are very low in the South African construction industry and this confirms the widespread disputes, lack of knowledge (Maritz and Hattingh, 2015) and studies on disputes (Povey et al., 2005) in the South African context. The succeeding chapter pertains to the conclusion and recommendations of the study.

CHAPTER 6

6 Conclusion and recommendations

While the basis of the study was to answer the question: “What are the sources of disputes in South African construction contracts; and how do the parties resolve disputes?”; the question was split into two major sub-questions, which were: “What underlying issues contribute to disputes in construction contracts?”, “What techniques are frequently used to resolve disputes in construction contracts” and: “How familiar are the industry professionals to dispute resolution techniques”. A set of objectives was set to address the questions, which included to; identify the sources of disputes in SA construction contracts, ascertain the dispute-resolution methods which are frequently employed by the industry and assess the responsiveness of the industry about the dispute resolution methods. The section addresses the conclusions in relation to each objective, limitations, steps taken to minimise the impact of limitations on the validity, as well as the recommendations.

6.1 Conclusion regarding Objective 1

The sources of disputes are not always obvious; instead, they vary due to the diverse nature of projects. There is no single source of disputes; but various issues can initiate disputes collectively. The study succeeded in establishing the sources of disputes through the use of mixed methods design comprising qualitative conceptual-content analysis as well as quantitative analysis employed sequentially (Creswell, 2014), which led to the development of eight conceptual categories, namely: contractual; management; human; external; payment; quality; design and communication issues. The conceptual categories were developed from the literature; and they were tested for correctness and relevance via consultation with the professionals (Bell, 2014; Creswell, 2014). Furthermore, the comparison between the literature review and the study findings helped to validate the claims from previous studies (Bell, 2014). While individual sources could be prone to bias; the study used a combination of data sources, in order to minimise the possibility of bias.

6.2 Conclusion regarding Objective 2

In the same manner, the objective: to ascertain the dispute-resolution methods which are frequently employed by parties, was achieved parallel to the previous studies. SA, like other nations conducting construction activities, experiences disputes, and has adopted the similar dispute-resolution mechanism used globally. Although the applications may vary in several ways – due to a number of factors, such as the legal systems and economic situations, the choices and behavioural attributes (Yiu and Cheung, 2007; Cheung and Pang, 2013) of the parties tend to have similar implications globally. Arbitration and litigation are still preferred, as the final binding mechanisms; while adjudication has shown a growth trend, due to the legal frameworks developed to encourage this method (Maritz and Hattingh, 2015). It is unfortunate that such initiatives may be at the expense of other voluntary methods, such as mediation and negotiation.

SA tends to be moving towards statutory adjudication, which can be subdued by arbitration or litigation; whilst the voluntary methods, such as mediation, negotiation, DRBS, are either omitted or provided as options in contract provisions, as may be observed in the JBCC and NEC standard contracts.

6.3 Conclusion regarding Objective 3

In dealing with this objective the study considered, interview data as the interview questions contained questions pertaining to the professionals' skills or proficiencies in dispute resolution techniques. The data was analysed qualitatively and quantitatively sequentially, as the qualitative data was used for quantitative analysis. The third objective regarding the assessment of industry professionals' acquaintances on dispute resolution methods was achieved and it was established that they are few professionals that possess the dispute resolution skills in confirmation with Maritz and Hattingh (2015) and Povey et al. (2005), who identified the lack of knowledge in adjudication and mediation procedures respectively. The section that follows provided the limitation of the study.

6.4 Limitations

Although the findings conform to the interconnection of the sources, the manner in which the sources interconnect was beyond the scope of the study – bearing in mind the diversity and complexity of contracts. Inherently, the relationships between the sources are recommended for further studies.

The study did not deal with the in-depth manner in which the dispute-resolution methods are practised in SA; as that would require separate studies for each method, as seen from the previous studies on mediation and adjudication.

The study was concentrated in Gauteng province. As a result, the findings may not be a precise representation of the entire situation in the SA construction sector.

The study acknowledges that, the failure to participate by the 40% of the participants that were identified initially might have excluded other valuable information; but it has ensured that credible information was gathered from the 60%; while the 40% would not make a huge difference; since the study used several sources of data.

6.5 Recommendations and contribution to industry

The study generates a practical understanding of the underlying issues on dispute resolution, with the anticipation for development and improvement of commercial relationships in contracts. It helps bring clarity regarding what the sources of disputes are in the South African construction industry; since knowledge of the sources of disputes would help practitioners to implement active measures that would hinder dispute occurrence. It bridges the gap on the widespread occurrence of disputes, unclear causes or sources of disputes, and the lack of research in the area, which hindered practitioners from taking active measures to curtail disputes.

Moreover, the research unveiled the sources and the available resolution methods for practitioners to take proactive action, in order to reduce or deter dispute occurrences.

The study revealed that contractual issues were the main source of disputes. This alerts the industry to improve the project participants' contractual knowledge, and to enable them to curtail the risk of disputes through improved ways of setting up and managing contracts from the start to the completion of projects.

Furthermore, project participants would discover the need to acquire dispute-resolution skills to enable them to resolve the potential dispute sources before they ignite into disputes. In addition, the knowledge of the various resolution mechanisms would enable them to opt for the best mechanisms suited to curtail specific dispute issues, without negatively affecting the projects' timeframes, costs and contractual relationships. By so doing, the South African construction industry and its national bodies, like the cidb, would be able to improve the culture of disputes in construction contracts.

Industry practitioners should invest in developing the required skills sets, which include drafting and managing contracts, as well as dealing with issues capable of initiating disputes at early stages. They should work towards preserving the contractual relationships that would enable them to work towards project completion, as opposed to pointing fingers at each other, or playing time-consuming blame games.

6.6 Recommendations and contribution to research

The study sets the scene regarding the sources of disputes from a South African perspective, which were linked to the world scenarios. It recognises that the South African construction industry is still in its developmental stages compared to its global counterparts; and more research is needed on issues of disputes and resolution mechanisms.

Arbitration procedures in SA are not explicit; because, they occur in the private domain. Consequently, more studies are needed for a better understanding of the arbitration practices from the SA perspective; that would help streamline the procedures to acceptable global standards. The detailed applications of the methods were not part of the objectives. Therefore, they are recommended for further studies in line with mediation (Povey et al., 2005) and adjudication (Maritz and Hattingh, 2015) studies.

Furthermore, the issues leading to the low levels of dispute resolution skills in the industry should be investigated in order to come up with initiatives that would encourage professionals to acquire the skills.

6.7 Final Statement

The study identified the sources of disputes in the SA construction contracts and ascertained the dispute resolution methods frequently employed by parties. South Africa, like other countries, experiences similar problems as its counterparts; and as a result, it has adopted similar mechanism to deal with these matters. The prominent sources of disputes revealed in the study include: contractual, management, human, external, payment, quality, design and communication issues; while negotiation, arbitration, litigation, mediation, adjudication, DRBS, expert determination, DAB and med-arb were the methods largely used to resolve disputes in SA. The number of professionals that possess the dispute resolution skills is very low and only a few engineers and lawyers have a combination of all the techniques.

7 References

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