EFFECTIVENESS OF CLIENT INVOLVEMENT IN CONSTRUCTION PROJECTS. A CONTRACTOR PERSPECTIVE

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PREFACE

The research contained in this dissertation was completed by the candidate while based in the Discipline of Property Development, School of Engineering of the College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Howard Campus, South Africa. The research was financially supported by the University of KwaZulu-Natal.

The contents of this work have not been submitted in any form to another university and, except where the work of others is acknowledged in the text, the results reported are due to investigations by the candidate. As the candidate's Supervisor I agree to the submission of this dissertation.

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Signed: Prof Theo C. Haupt

Date: December 16, 2016

DECLARATION 1: PLAGIARISM

I, Progress Shingai Chigangacha, declare that:

(i) the research reported in this dissertation, except where otherwise indicated or acknowledged, is my original work;

(ii) this dissertation has not been submitted in full or in part for any degree or examination to any other university;

(iii) this dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons;

(iv) this dissertation does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:

a) their words have been re-written but the general information attributed to them has been referenced;

b) where their exact words have been used, their writing has been placed inside quotation marks, and referenced;

(v) where I have used material for which publications followed, I have indicated in detail my role in the work;

(vi) this dissertation is primarily a collection of material, prepared by myself, published as journal articles or presented as a poster and oral presentations at conferences. In some cases, additional material has been included;

(vii) this dissertation does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the dissertation and in the References sections.

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ABSTRACT

The construction sector in South Africa is a significant contributor to employment opportunities and economic growth. In the year 2013 alone, R262 billion was spent within the industry. Despite the huge spending, a report by the Construction Industry Development Board indicated that some clients remained dissatisfied with the project outcomes. This was demonstrated after a survey conducted in 2011 found that clients were generally neutral or dissatisfied with the quality of construction on around 20% of all projects, and around 12% of the projects that were surveyed had levels of defects which are regarded as inappropriate. Clients have been argued to be the most important construction industry participants as they initiate and fund the construction process from inception to completion. Therefore, business in the construction industry is about fulfilling client satisfaction. Client satisfaction has been linked to the level of client involvement and control in construction projects. Inadequate level of client involvement, especially during many of the most critical project activities has led to problems experienced on construction projects, some of which hinder project success. These problems include but are not limited to construction disputes, uncertainties in plans and specifications, and delays in giving the contractor vital information or instructions. While effective client involvement in their construction projects is important to achieve a successful project, contractors perceive their involvement as being too low resulting in unsatisfactory project delivery. Therefore, this research aimed to examine the role and effectiveness of client involvement on construction projects from the perspective of contractors. The study investigated the nature of the client, and their involvement in construction projects, at the same time ascertaining how this involvement could impact on the project outcomes, and assessing to what extent a client should be involved in the construction process. The study also assessed whether early client involvement and trust and co-operation between the client and contractor facilitated project success. Based on analysis of data gathered via questionnaire surveys from 101 contractors, 18 consultants and 19 clients, it was found that the significant and dominant usage of the traditional procurement method by both public and private sector clients in South Africa can be confirmed. It was also found that although alternative procurement methods were not widely adopted in South Africa, the private sector was more open and flexible in utilising them, with the next most used methods being the design and build and negotiation. Contractors placed great importance on project stakeholder relations which could be attributed to the shortcomings of the traditional method, which include but are not limited to adversarial relations and high occurrence of misunderstandings and conflicts. Issues of trust, honesty and cooperation in the context of clients underpinned project

stakeholder relations and were regarded as vital for project success. In terms of client involvement, this study found that contractors regarded private sector clients to be more frequently involved in their projects than public sector clients. Furthermore, although optimum client involvement across all the project phases is crucial for project success, contractors regarded the pre-construction phase to be a priority phase for client involvement, followed by the post construction phase. The study recommends that public sector clients should be more flexible to adopt the most suitable procurement method instead of relying on the traditional procurement method which might not necessarily be the most appropriate. Alternative procurement arrangements may allow for greater and earlier client involvement in their construction projects.

Key words: Clients, client involvement, construction project, procurement, trust.

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CHAPTER 1

INTRODUCTION

1.1 Background

The existence of the construction industry is attributed to clients (Boyd & Chinyio, 2006; Masterman, 2002). The construction sector in South Africa is a significant contributor to employment opportunities and economic growth (Construction Industry Development Board) (CIDB, 2015). In 2013 alone, R262 billion was spent within the industry (Ibid). Clients are arguably the most important construction industry participants, given that they initiate the construction process (Lopes et al., 2011). This fact is confirmed by Gwaya et al. (2014) and Cox et al. (2006) who stated that, inter alia, clients are the originators of projects. Kamara et al. (2002) concur with this fact by stating that clients are central to the construction process and can be best considered as the driving force of the construction industry. Research suggests that clients have the capacity to exert pressure within the construction industry (Blayse & Manley, 2004). This enables them to influence and change the attitudes, behaviours and procedures of other parties that must be addressed, so as to achieve sustainability of the built environment (Ryd, 2014).

Business is about fulfilling client satisfaction (Pries, et al. 2004) cited in (Boyd and Chinyio, 2006) and their interests and perspectives have arguably become more important (Alvesson et al., 2009). However, one major concern within the global construction industry is the general increase in client dissatisfaction with South Africa being no exception (CIDB, 2011a). It is imperative that client values on construction projects are understood so as to fulfil their expectations and limit frustration among project participants (Thyssen et al., 2010). With that in mind, clients play a crucial role which cannot be undermined, as their behaviour is of great importance to the success or failure of construction projects (Boyd & Chinyio, 2006; Ryd, 2014). Thomson (2011) is of the view that clients do not necessarily measure project success by the project meeting the anticipated time, cost and performance goals, but whether it satisfies emergent requirements not initially understood when the project brief was being developed.

A client, sometimes referred to as ‘owner’ or ‘employer’ is a person for whom a project is carried out, in the course of furtherance of trade, business or undertaking, or who undertakes a project directly in the course of furtherance of such trade, business or undertaking (Health & Safety Authority, 2009). The definition of client has been simplified in The Government Gazette (Notice 391 of 2010) to mean, “Any person for whom construction work is performed”. Alternatively, Kamara et al. (2002) defined a

client as a person or firm responsible for commissioning and paying for the construction project. The construction client has also been defined as the party or parties, which interface with the construction industry in the procurement process (Australian Procurement and Construction Council Inc) (APCC, 2002).

Clients generally do not conduct their business in a uniform manner but are diverse, having differing approaches and inclinations towards project execution and the construction industry at large (Boyd and Chinyio, 2006; CIDB, 2011a; Alvesson et al., 2009). Clients have different roles and responsibilities, and project complexity is increased by the fact that the involvement of individuals may change during the project (Blyth and Worthington, 2010). The role of the client has generally evolved from one of a passive fund provider to an increasingly active participant (Alharthi et al., 2014), although their roles and responsibilities have been neglected in much of the literature (Alvesson et al., 2009; Gwaya et al., 2009). The level of influence or responsibility clients have on a project varies over the course of the project life cycle (Alharthi et al., 2014), with the greatest influence reportedly being during the early stages of the project (Sivunen, 2015; Thomson, 2010) where the scope is defined in the form of a brief (Project Management Institute) (PMI, 2013).

CIDB (2011a), Boyd & Chinyio (2006) and Thyssen et al. (2010) broadly identified a two-way categorization of clients in terms of which sector they operated in namely either in the public or private sector. On the other hand, PMI (2013) and APCC (2002) suggested that a client can either be an individual or group. Differentiation is also often made based on clients' experience and knowledge of the construction process, which is highly attributed as to whether they are short term or long term clients (Thyssen et al., 2010). Some clients have vast experience of the building process such as property developers who can influence the construction process, while the majority of clients are on the extreme opposite are novices to the construction process (Kamara et al., 2002). Reportedly, the majority of clients are on a once-off basis, and the lack of understanding of the construction process poses as a threat to successful project delivery (Cox et al., 2006).

Boyd and Chinyio (2006) are of the view that the clients' understanding of the construction process is varied. Clients according to Rowlinson (1999) quoted in Boyd and Chinyio (2006) can be categorized into three groups, namely uninformed or naïve clients, partially informed clients and well-informed or sophisticated clients. With uninformed or naïve clients being those that procure construction projects either on a once off or infrequent basis; partially informed clients being those that have procured projects on a few occasions usually spaced apart; and finally, well informed or sophisticated clients being those that procure projects on a regular basis or are players within the construction industry (Ibid).

These differences in client experience can be viewed as an important variable in the building process that can critically influence project performance (Cox et al., 2006). Generally, there is a direct link between the level of client involvement and the client's experience (Nutt, 2006). In addition, Kamara et al., (2002) indicated that the level of client experience and involvement can greatly influence the construction process, as complexities may arise when dealing with inexperienced clients. The opposite is also true, as experienced clients tend to derive more satisfaction and value through their ability to clearly define their needs and influence the construction process (Ibid). Despite there being differing opinions on the classification of clients, the common underlying factor is that their roles and involvement in construction projects are instrumental and cannot be overlooked. In a study conducted by Ambrose and Tucker (1999) it was found that one of the most important client needs is their involvement on construction projects.

Client interference has been viewed as a hindrance to project success (Odeh and Batteinah, 2010). Ahmed and Kangari (1995) quoted in (Kamara et al., 2002) pointed out that, when clients are appropriately involved in their respective construction projects, they are likely to be satisfied with the end product as their expectations are usually met or exceeded. This is because the success of a project in terms of construction time performance is linked with the extent of client involvement and client control in construction projects (Ibid).

Every construction project is made up of a project team comprising clients, contractors and consultants working together towards achieving successful project delivery (Gwaya et al., 2014). Common practice is that the client and contractor enter into a contract, although more often than not, construction contracts commonly involve a number of other persons not party to the contract itself (Harbans, 2005). Kamara et al. (2002) concur that it has become common practice for clients appoint a team of consultants with experience and expertise of the construction process to manage their projects on their behalf so as to achieve value for money. In addition to that, the client requires professional services to guide against contractor opportunism which is rife within the construction industry (Cox et al., 2006), and to ensure that promises and contractual requirements are being met (Pesamaa et al., 2008).

According to APCC (2002) all risks lie with the clients at the project initiation phase. Therefore, for a construction project to be a success, clients want to appoint a team from the onset, which they can rely on to reduce uncertainties and exposure to risk during the course of the design and building process (Smith and Love, 2001). Although clients delegate their duties to the appointed professional team members, it is still the clients' responsibility to, inter alia, manage and maintain the contracted relationships to ensure successful outcomes (APCC, 2002). It remains the role of the client to bring various parties together throughout the project cycle (Alharthi et al., 2014).

Contractors are on the supply side of the construction industry, tasked with physically constructing a project in accordance with the design requirements and in line with the terms of the contract in effect with the client (Towey, 2012; Sauter, 2011). It is imperative that they understand their relationships not only with the client, but with other parties involved on the project as well, so as to efficiently execute their contractual obligations (Sauter, 2011). The stage at which contractors get involved in a construction project is determined by the procurement method followed (Walker and Llyod-Walker, 2012), which is vital as it determines the responsibilities, level of involvement and cooperation between clients and contractors during the construction process (Pesamaa et al., 2008).

The type of procurement method followed influences project success or failure (Mathonsi and Twala, 2009). This is partly due to the fact that procurement sets out the level of cooperation between clients and contractors (Pesamaa et al., 2008). The effective implementation of the procurement method followed, coupled with competencies as well as practical experience of those involved in the process ensures that the risks are minimised, costs are managed and project outcomes are optimised (Pesamaa et al., 2008; APCC, 2002).

The construction industry has been greatly criticized for its over-reliance on the 'competitive tendering', also referred to as the 'traditional' tendering procedure (Latham, 1994). Walker and Llyod-Walker (2012) indicated that the 'traditional' perspective is when the contractor is generally involved on construction projects at the beginning of the construction phase, when the design has been developed. According to Mosey (2009), the single stage procurement and contractual model in which the contractor and subcontractors are appointed only for the construction phase is the dominant approach to contractor involvement on construction projects. It has been argued however, that the increase in demand for infrastructure has created significant challenges on the traditional tendering procedure, leading to an adoption of the early contractor involvement procedure (Whitehead, 2009). Furthermore, in recent times there has been an increase in the shift from the traditional procurement arrangements to alternative procurement methods (Thwala & Mathosi, 2013).

The sufficient engagement of all relevant stakeholders, contractors included, in the early briefing phase of the project contributes to a clearly defined project brief that enhances client values to be fulfilled (Ballard, 2006). Introducing the contractor early on in the project, referred to as 'early contractor involvement' (ECI) is beneficial as it enhances project performance since the contractor has the potential of offering his expertise and the much needed valuable advice from the onset (Walker and Lloyd-Walker, 2012). This is generally a delivery model which aims to improve good relationships among project stakeholders and it facilitates successful outcomes by engaging contractors during the early design and development project stages (Austroads, 2014). It is also suggested that clients stand to benefit from adopting the ECI procurement arrangement as a clearer

definition of expected project team behaviours is laid out from the onset (Ibid). Furthermore, following the ECI route enhances the possibility for better working relationships among the parties, thereby increasing the chances of successful project delivery (Rahman and Alhassan, 2012).

It is essential that the client-contractor interactions on building projects are good and co-operative for there to be fair and open collaboration between both parties so as to foster the optimal use of their competencies (Sebastian, 2011). Graham (2006) highlighted that the relationship between the client and contractor must be positive and trusting, considering the type of interaction both parties will have. Trust between the parties facilitates good working relations, thereby minimizing the possibility of adversarial inter-organizational relations, which are a major problem within the construction industry (Kadefors, 2001; Pinto et al., 2009). Close co-operation between the client and contractor is advantageous as the occurrence of misunderstandings and conflicts is greatly minimized (Kadefors, 2001). It is important to note that third parties, such as consultants, can also have an impact on the client-contractor relationship (Sauter, 2011).

There is great need for the construction process to be more client-oriented by focusing more on client requirements (Latham, 1994). The client should take an active role in performing his duties such as, for example appropriate involvement on projects, as this is a key, among other factors, to project success (Kometa et al., 1995) quoted in (Kamara et al., 2002).

1.2 Problem Statement

The problem statement may be stated as:

While effective client involvement in their construction projects is important to achieve a successful project, contractors perceive their involvement as being too low resulting in unsatisfactory project delivery.

1.3 Hypotheses

The hypotheses of the study are:

- The level of client involvement in their projects is low**;**
- Appropriate client involvement facilitates successful project delivery;
- Early client involvement increases the chances of successful project delivery; and
- Trust and co-operation between the client and contractor facilitate successful project delivery.

1.4 Objectives

The primary objective of the study is to examine the role and level of client involvement in construction projects from the perspective of contractors. This objective will be achieved by examining the following secondary objectives, namely:

1. To identify the roles and responsibilities of clients in their construction projects throughout the entire project lifecycle;
2. To determine the level of client involvement in their projects and whether their involvement facilitates successful project delivery;
3. To assess to what extent a client should be involved in the various construction phases to improve project delivery;
4. To assess whether early client involvement facilitates project success; and
5. To determine the impact of trust and co-operation between the client and contractor on successful project delivery.

1.5 Methodology

The methodology to be followed in the study includes the following, namely:

- An extensive literature review which includes previous relevant studies will be conducted to identify gaps and to establish a theoretical framework for the area under study.

- The research methodology will be mostly quantitative in nature, and conducted through the use of semi-structured questionnaires to obtain opinions and expectations relevant to the research that would assist in the formulation of a conclusion and/or recommendation. Semi-structured questionnaires were the questionnaires of choice because they are easy to complete and their ease in administration and analysis.The samples will be selected through convenience sampling, preference being on those in close proximity to the researcher so as to minimize any travelling costs. Some of the respondents will be referrals suggested by other participants arising from a snowballing approach.

- Data analysis and interpretation - Descriptive statistical analysis, inter alia, will describe and summarise information about the characteristics of the sample. Inferential statistical analysis will be used to generalize the findings to the population. The findings will be presented in table format and inferences will be drawn based on the findings. Conclusions and recommendations on how clients are to be effectively involved in the construction process will be determined from the findings.

1.6 Assumptions

The study is subject to the following assumptions, namely

- Contractors forming the sample have relevant experience of working with clients; and,
- Contractors' responses will be accurate, comprehensive and reflect the true standing of client involvement on projects.

1.7 Limitations

The limitations of the study are:

- Only contractors within the Kwazulu-Natal Province of South Africa were considered.
- Only contractors registered with the Master Builders Association – Kwazulu-Natal will be considered.

1.8 Ethical Considerations

- In an effort to conform to internationally accepted ethical standards, no names of research participants were recorded in this thesis, thus assuring anonymity.
- The aim of the research was explained to all participants and all their responses were kept confidential.
- No compensation whatsoever, e.g. money, gifts etc. was given to participants.
- Partaking in this research was at freewill and the participants had the option to withdraw from the study at any time and with no consequences (though this was not encouraged).

1.9 Structure of the study

Chapter 1: Introduction - This chapter introduced the construction clients and their involvement on construction projects. The problem that prompted this research study and the fundamental elements of this research in the form of objectives were clearly outlined in this chapter.

Chapter 2: Literature Review -This chapter is a critical and analytical literature review of the context of this thesis. Detailed findings pertaining to the area of study were obtained from reviewing textbooks, journals, conference proceedings, previous research dissertations and case studies from various sources that addressed the topic under study.

Chapter 3: Research Methodology - Outlines and describes the research methods to be employed by the researcher in order to facilitate data gathering and collection from the field. Knowledge of research methodologies will be employed to select a strategy that would be feasible given a set of some limitations such as time and money.

Chapter 4: Data Collection and Analysis - Basically comprises of the presentation and analysis of data that will be obtained from the field.

Chapter 5: Conclusion and Recommendation - This chapter concludes the research confirming whether the researcher achieved the objectives of this research. It is hoped that the research findings will provide information which will facilitate the curbing of the problem.

1.10 Chapter Summary

This chapter was an introduction to the topic under study and it outlined the main aim of the research, the objectives and hypotheses of the study. In the next chapter an extensive literature review on client involvement in construction projects will be conducted.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

It is almost inevitable for a construction project not to be faced with at least one complex situation which could lead to undesired project outcomes, thereby leaving clients dissatisfied with its overall performance (Sweis et al., 2007). As a result, construction companies strive to keep their customers satisfied as this satisfaction is the key to securing customer loyalty and retention (Karna, 2004). Client satisfaction is the extent to which perceived quality matches re-purchase expectation (Ibid).

Alshanbari (2010) indicated that although construction projects are unique, they are all made up of many people with diverse interests. Bennett (2003) concurs with that finding as he emphasised on the uniqueness of construction projects and further noted that the construction process entails very complex processes that hardly ever go according to the planned programme. Yet despite this fact, clients wish for a riskless, low cost, good quality project that is completed within the desired timeframe (Lindblom and Isakson, 2012; Babatunde et al., 2010; Jha, 2011). Watermeyer (2011) concurs with that point of view as he alluded that clients are under pressure to deliver projects on budget and within shorter time frames. Sadly, the construction industry seems to be under-achieving, with little or no profits, and little being done to remedy the current situation (MacDonald, 2013). This could be attributed to the lack of clients' understanding of the project constraints which may affect the main contractor's performance on a project (Aiyetan, 2013).

2.2. Clients defined

A client is a person or organisation who takes the initiative to have a project designed and constructed, and in turn pays for the construction (Van Rijn, 2005; Bennett, 2003). Aiyetan (2010) defined a client as the project initiator who is responsible for the production of the project. A client is an organisation or individual who commissions the services necessary to execute and complete a project in order to satisfy its needs and thereafter enters into a contract with other parties (Masterman 2002:6). Contrary to common understanding of a client being a sole individual as a result of historical factors (Tzortzopoulos et al., 2008), in construction, clients are often large organisations that are accountable to a board of trustees (Gould & Joyce, 2014). Generally, clients tend to be complex and multi-faceted in nature, and they involve various individuals and/or groups whose objectives differ and often conflict (Boyd and Chinyio, 2006).

The construction client base is diverse and each client has unique aspirations and motivations (Tzortzopoulos et al., 2008). Clients are motivated by different factors to have a project constructed for them such as, for example, an individual might be seeking to build their home, or a municipality responding to demand, or an investor seeking to make money (Ibid). Whatever the motivation, a construction project is a direct response to a client need. One fact that cannot be over looked is that clients, through their knowledge and skills can greatly influence the success of construction projects (Blayse and Manley, 2004). Given that clients can potentially affect the success of the project, and the importance of briefing to the attainment of client satisfaction, it must be noted that problem areas are often associated with the nature of the client. There are problems relating to the experience level of the client as well as to the client organisation (South African Council for the Quantity Surveying Profession) (SACQSP, 2016b). These problems include but are not limited to the lack of understanding of the construction process by clients which poses as a threat to successful project delivery (Cox et al., 2006) and client interference which is a hindrance to project success (Odeh and Batteinah, 2010).

2.3. Client Categories

Clarification and categorisation of the client type and interests is essential so that construction professionals are aware of the appropriate course of actions to take during each project phase (Tzortzopoulos et al., 2008, Alsolaiman, 2014). Figure 2-1 shows the categorisation of construction clients as according to (SACQSP, 2016b).

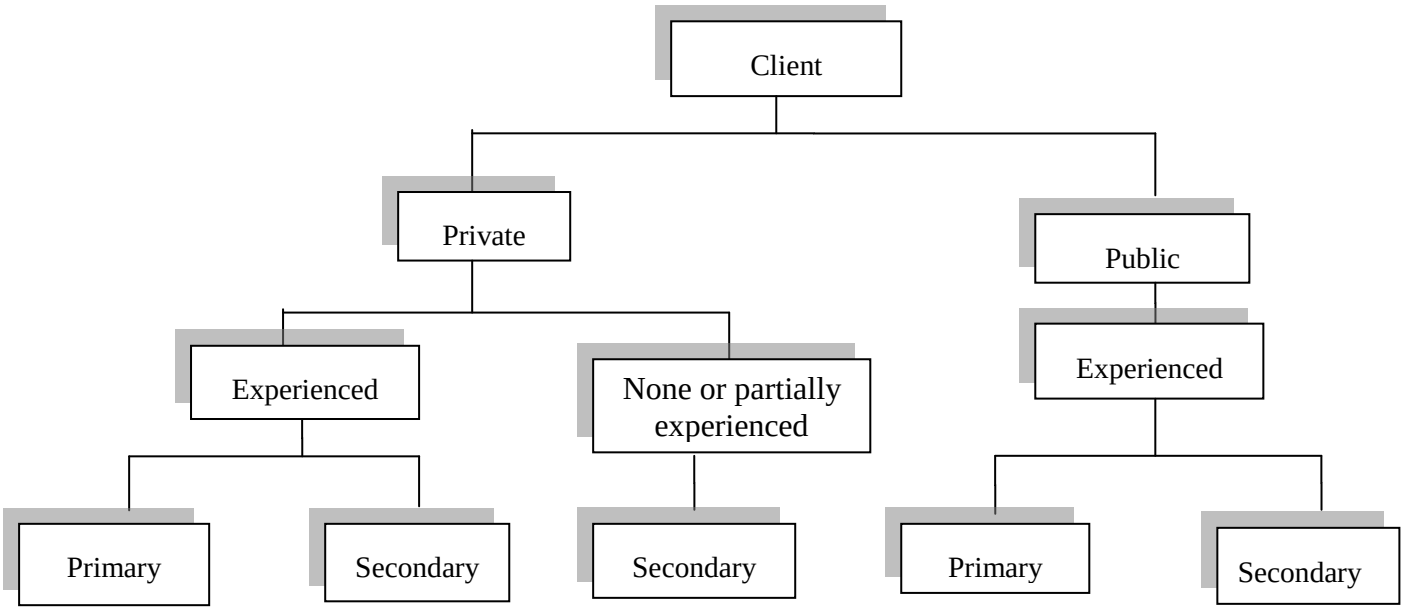

Figure 2-1: Client categories

Clients can be categorised according to:

i. Public or Private sector clients

- *Public sector clients*

  Construction is undertaken using public money either from local or state sources (Gould & Joyce, 2014). Boyd and Chinyio (2006) divided this sector into national and local. Since this sector represents the public, the construction process follows specific procedures (Gould & Joyce, 2014) and rigorous administrative and financial controls in an effort to eliminate the occurrence of fraud and corruption, and all procedures are subject to annual audits (SACQSP, 2016b). In South Africa, these procedures are enforced through ensuring that all public entities adhere to the principles set out in the Construction Industry Development Board's Standard for Uniformity in Construction Procurement for compiling price determination documents (Ibid).

  As is the case in most parts of the world the public sector is the major client of the construction industry (Construction Charter, 2006; Boyd & Chinyio, 2006). It plays a substantial role in providing funding for basic infrastructure which enhances economic activities, such as creation of jobs, and it provides affordable housing (Mbanjwa, 2003). On the down side, the public sector has been heavily criticized for its inadequacy in project delivery, leading to time and cost overruns (CIDB, 2011a).

- *Private sector clients*

  Private clients can be further subdivided into private home owners and private commercial (Aiyetan, 2010). On the other hand, Boyd & Chinyio (2006) subdivided this sector into industrial clients and services clients.

  It is imperative that private clients understand the design, procurement and construction processes, as this can contribute to client satisfaction (Aiyetan, 2010). A study conducted by CIDB (2011a) found that client satisfaction is a key determinant of client loyalty and repeat business in the private sector. Table 2-1 is a comparison between the private and public sectors.

Table 2-1: Public sector vs. Private sector

	Public sector	**Private sector**
Procurement	Projects normally contracted through traditional method (Ling et al., 2013; Mbanjwa, 2003)	Normally use of relationship contracting (Karna, 2004; Ling et al., 2013) and design & build (Oshungade and Kruger, 2015)
Award criteria	Lowest tender normally awarded (Ling et al., 2013)	Considers wider selection criteria (Walker et al., 2003)
Political aspect	Much more important and has great influence (Koch and Buser, 2006)	Minimal or insignificant influence (Koch and Buser, 2006)
Source of funding	Taxpayers money (Masterman, 2002) Government grants (SACQSP, 2016b), public money (either from local or state sources (Gould & Joyce, 2014)	Privately funded, either internal (own) or external (financial institutions) (Masterman, 2002)
Client needs	Cost and accountability rated high (Ambrose and Tucker, 1999)	Time and client involvement rated high (Ambrose and Tucker, 1999)

ii. Primary or secondary

- *Primary clients*

  These derive their primary income from constructing buildings, for example, property developers (SACQSP, 2016b)

- *Secondary clients*

  These are the users of the buildings that house their businesses such as, for example, manufacturing companies (Ibid).

iii. Level of knowledge or experience

- *Experienced clients*

  This type of client has a detailed knowledge and understanding of the construction process with the ability to prepare a comprehensive and clear project brief (Masterman, 2002). They possess the capability to assist and influence the consultant team on construction and project matters (SACQSP, 2016b). Experienced clients have the desire to be involved throughout the project cycle, and because of their experience the hardly ever hinder other project stakeholders from efficiently and effectively performing their roles (Masterman, 2002).

- *Partially informed clients*

  Very little is said about this type of client in the literature. Boyd and Chinyio (2006) described partially informed clients as those who have procured a few projects or have very little knowledge of the construction processes, and therefore hire professionals in the process of facility procurement.

- *Inexperienced clients*

  These generally lack the knowledge, understanding and expertise of the processes and procedures of the construction industry (Masterman, 2002); therefore, they tend to rely on advice from their professional consultants (SACQSP, 2016b). They are also easily influenced by external parties other than their advisors (Masterman, 2002). Infrequent or inexperienced clients tend not to fully understand the importance of their roles and this lack of understanding poses as a risk to successful project delivery (Ibid).

iv. Frequency of commissioning for construction work

Great importance has been placed on the frequency with which a client commissions for construction projects rather than in which sector they operate (UK Parliament, 2007).

- *Once-off clients*

  By their nature, these have very little or no experience and knowledge of the construction industry, and as a result, they are less likely to understand how the industry operates and the importance of their role in ensuring project success and therefore rely on advice from professional consultants (SACQSP, 2016b). Generally, once-off clients procure construction projects on a once off basis Boyd & Chinyio (2006). They are assumed to constitute the largest proportion of all construction industry clients (Boyd & Chinyio, 2006; Cox et al., 2006), yet they contribute to only a small percentage of the value of all construction work (UK Parliament, 2007).

  Gholipour (2006) argues that most literature associates clients with being only once-off clients and this assumption inaccurately reflects the reality of many construction clients. Client ignorance towards the construction process poses greater risks for the delivery of their projects (Cox et al., 2006).

- *Regular/frequent clients*

  This type of client procures construction projects on a regular basis (Boyd & Chinyio, 2006). Gholipour (2006) and UK Parliament (2007) found that the majority of construction clients

usually have large ongoing construction portfolios rather than once-off construction projects. On the other hand, Cox et al. (2006) argue that frequent clients constitute a small proportion of all the industry clients, yet they contribute to a large percentage of the value of all construction work. Frequent clients are more likely to have invested in their capacity to fulfil their role, thus delivering benefits both for themselves and their contractors (UK Parliament, 2007)

Regular clients expect continuous improvement from both their consultant team and the contractor so as to attain cost and time reductions (CIDB, 2011). This improvement is achieved through the establishment of longer-term relationships with the construction team through 'framework agreements', where for example, "contractors (initially selected by competition) are on a 'framework' for a set time, during which they are assigned a number of construction projects in succession.

2.4. Client roles and their involvement on construction projects

It has been suggested that success in construction projects is attributed to the knowledge and skills of the client (UK Parliament, 2007). Clients play a pivotal role in construction projects which determines the project outcomes, and these roles often differ depending on the project stage and on the procurement systems followed (Alharthi et al., 2014). Courtney (2008) indicated that client's perception of their role affects their decisions making capabilities in the early project phases. Furthermore, clients needed to understand the entire desired quality requirements so as to attain customer satisfaction (Ramabodu, 2014). The client, as project owner has to ensure that the project is undertaken in a manner such that all risks are minimised (CDM, 2015). It is crucial that construction clients understand their roles to ensure prompt delivery of projects (Aiyetan et al., 2013). A study conducted by Bubshaite & Al-Musaid (1992) found that when clients were frequently and closely involved in managing a project they were usually most satisfied with the outcomes.

Alharthi et al. (2014) divided client roles into primary roles and secondary roles. They opined that all clients ought to perform the primary roles at some stage within the project cycle and they identified nine of these roles. On the other hand, Jawahar-Nesan & Price (1997) found 12 important client directions / roles for improving the project outcomes. Table 2-2 is a tabulation of these roles.

Table 2-2: Client roles in construction projects

Alharthi et al. (2014)	(Jawahar-Nesan & Price, 1997)
Development of the procurement strategy	Preparing and organising
Procurement initiation	Developing project definition
Preparation of the project brief	Procurement
Selection of the procurement method	Organising a joint management team
Development Business case	Design management
Risk management	Safety management
Tendering and award	Measuring and reviewing performance
Performance management	Communications
Change control	Motivation
	Coordination
	Documentation
	Project evaluation

All client actions and decisions at various stages of the project will impact either positively or negatively on the project (Ibid). Aiyetan (2010) and Alsolaiman (2014) concur with the view point that the actions of clients have a huge influence on a contract as they impact on project outcome. It is of great importance that clients perform their roles effectively and efficiently at the right time, at the same time utilizing the correct methods in order to have their optimum involvement across all the construction project phases (Alsolaiman, 2014). To achieve successful project outcomes, client involvement should increase as project complexity increases (Ibid)

The client's ability to make decisions affects the construction process (Chan et al., 2004), and the extent of authoritative decision making determines the project outcome (Aiyetan, 2010). Likewise, clients that are either indecisive or require input from a third party regarding decision making may inhibit the prompt delivery of projects (Ibid). Client roles and the extent of their involvement changes depending on the project phase (Alharthi et al., 2014). The lack of adequate client involvement in their projects has been linked to numerous problems encountered during the project cycle such as cost and time overruns, and disputes (Alsolaiman, 2014; Assaf & Al-Hejji, 2006).

2.5. Effectiveness of client involvement

Effective and appropriate involvement by clients in their project influences good outcomes, and the degree of their involvement is influenced by, inter alia, taking the right decisions at appropriate project phases (Alsolaiman, 2014). Al-Kharashi & Skitmore (2009) suggested a link between ineffective involvement of project participants (clients included) and poor project outcomes. Effective client involvement in their project requires flexible guidance throughout the project life cycle (Alsolaiman, 2014). Furthermore, to increase the effectiveness of client involvement in their projects, emphasis should be placed on team contributions to the construction process, such as for example, exchange of ideas (Ibid).

Since clients have a high level of impact to influence project outcomes, it is therefore imperative to focus on their involvement in projects as this will help to increase the overall project quality (ASCE, 2012). Alsolaiman (2014) indicated that in order for clients to be effectively and efficiently involved in their projects, they should have adequate knowledge and skills of the construction process. Since construction projects are faced with numerous complex situations affecting project success (Sweiss et al., 2007), effective client involvement has been recognized as one of the solutions to improving construction sector performance (Boyd & Chinyio, 2006).

Baccarini (1999) defined effectiveness as the degree of achievement of project objectives. In most of literature, effectiveness has been referred to as project success (Baccarini, 1999; Kylindri et al., 2012). Takim and Adnan (2008) argued that effectiveness encompasses the measures of achieving of project objectives, user satisfaction and the use of the project". Generally speaking, effectiveness is concerned with doing the right thing (Ibid). With those definitions in mind, effectiveness of client involvement in their projects therefore measures the degree to which their involvement influences successful project outcomes. Effectiveness of client involvement refers to measuring the success of a project as a result of client involvement.

2.6. Construction project phases

The construction process is a sequence of inter-related and coordinated activities that occur at distinct phases of a construction project Sunjka and Jacob (2013) and Oladinrin et al. (2013), and some of these processes tend to overlap (NOAA, 2010). It is crucial that the client and the consultant team have a firm understanding and overview of the construction process from inception to completion so as to achieve the desired project outcomes (Aiyetan, 2010). Ideally, every construction project requires prompt exchange of appropriate, adequate and accurate information throughout its course (Ibid). This exchange will help in minimizing and management of risk which is inherent to all project phases and it should be handled by the project participants (Goral, 2007).

Considering the uniqueness of projects and organization types, there is no single standard nomenclature to describe the various project phases (Jha, 2011), as shown in Table 2-3.

Table 2-3: Project phase characterisation in different model

Three phase model (Jha, 2011; CDM, 2015; Alharthi et al. 2014; NOAA, 2010; Chan et al., 2002)	**Four phase model(**PMI, 2008)	**Six phase model (**Bennett, 2003)	**Three stage model (**Bonnal et al., 2002)
Pre-construction	Project initiation	Pre-project phase	Planning
Construction	Project organizing, definition and planning	Planning & design phase	Execution
Post construction	Project execution	Contractor selection	Operation
	Project close out	Contractor mobilization	
		Construction	
		Project termination	

Admittedly, there is usually an overlap between phases (Bennett, 2003 & Jha, 2011) and each phase requires to be implemented effectively as it affects or is an input to all other successive project phases (Goral, 2007). For the purposes of this research, the generic and most common approach to describe the project phases, that is, under three broad categories namely pre-construction, construction and post-construction phases will be followed.

2.6.1. Pre-construction phase

This is a very crucial and significant phase in the construction project life cycle (Boton et al., 2011). It has been described as the period before commencement of construction work (CDM, 2015; Alharthi et al. 2014). It is during this phase that the consultant team is appointed and the client provides all the information to help with the design (CDM, 2015). This phase includes but is not limited to, design phase construction planning, building information modelling construction planning, budgeting, detailed design, the tendering phase (Alshanbari, 2010). Site preparation is one of the key activities that occur during the pre-construction phase and it involves taking all necessary measures to ensure that the construction phase is efficiently undertaken (Boton et al., 2011).

The pre-construction phase basically paves the way for the latter stages and if implemented correctly, necessitates for the minimization of risks, waste and overheads at the same time maximizing productivity and efficiency during the construction phase (Ibid). It is during this phase that all risks and potential problems should be forecast as these are more likely to affect the entire project (Boton et al., 2011). Important to note is the fact that the main contractor's role during this phase is dependent on the type of procurement arrangement in place (Alshanbari, 2010).

The major activities that occur during this phase and require effective and adequate client involvement are:

2.6.1.1. Preparation of project brief

Every construction project is born from ideas that are defined by the owner (Gould & Joyce, 2014). Although client roles continue to evolve over time, one of the key client requirements of producing a client brief has not changed much (CDM, 2015; PMI, 2013). A client brief explains the project requirements before, during and upon project completion and a good brief must be very concise and unambiguous and should communicate project aims and aspirations (Ibid). It should contain, inter alia, the aesthetic and technical criteria for the project (N.E.D.O., 1975). The project brief may also include but is not limited to scope, objectives, outcomes, quality expectations, deliverables, constrains, time frame, and project special features (Alharthi et al., 2014). The adequacy and clarity of the brief is of utmost importance (SACQSP, 2016b), as this clarity minimizes the possibility of revision drawings, reworks by the design team (Aiyetan, 2010), poor documentation and in the worst case abortive work which ultimately leads to additional costs and time (SACQSP, 2016b). The project brief establishes and sets out the importance and weight given to each of the three project objectives, that is, cost, time and quality (Ibid).

A client brief influences the choice of the procurement method to be used, by comparing the characteristics of these methods with the requirements of the brief, therefore leading to the selection of the most suitable method (Masterman, 2002). The extent and accuracy of the briefing of the design team regarding the project is directly linked to the level of representation of the client's needs in the design (CDM, 2015). If the brief is inappropriately defined all other successive phases, such as the design will be affected (Aiyetan, 2010). There is consensus within the industry about the importance of briefing to the attainment of client satisfaction and that clients have the potential to affect project success (Masterman, 2002). Effective communication is a very important aspect of this stage as it partly determines the level of client satisfaction with the finished product (Ibid). Hence, it is critical that the needs and expectations of clients are known and met.

2.6.1.2. Selection of consultant/professional team

Projects are increasingly becoming complex and this complexity has pushed clients to engage a team of consultants to manage projects on their behalf (Gould and Joyce, 2014). Some of the clients' key pre-construction roles include forming the project team as early as possible and assigning responsibilities (Kamara et al., 2002). Additionally, the majority of clients do not have the knowledge and expertise of the construction process and in an effort to bridge the knowledge gap in these disciplines, the client has turned to consultants to render their services (Aiyetan, 2010). This action

therefore leaves the consultants accountable. For example, the principal agent is appointed by the client giving the agent full authority and obligation to act on the client's behalf, leaving the principal agent accountable (SACQSP, 2016b). The level of accountability depends on the terms of the contract between the client and agent (Ibid).

The interaction between client and the professional team during the early project phases is illustrated in Figure 2-2:

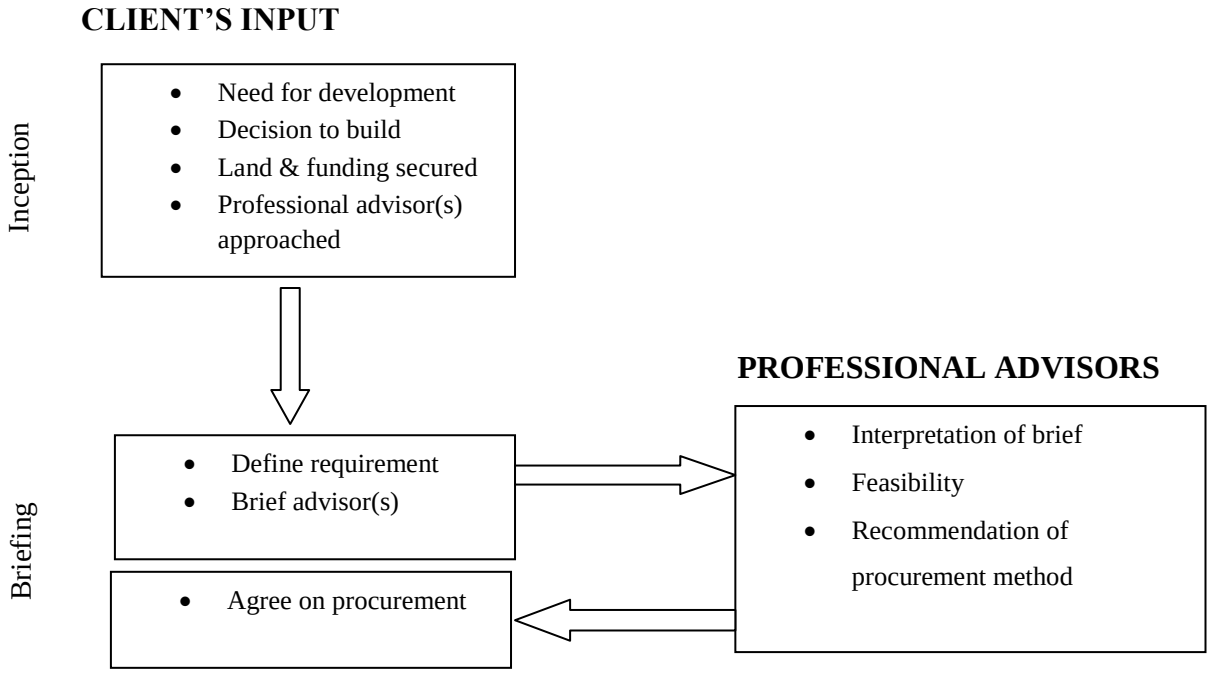

Figure 2-2: Interaction of project team (sequence of activities)
Source: Kwakye (1997:31), cited in SACQSP, (2016b:15)

2.6.1.3. Construction planning

Construction planning involves the identification of work tasks and their interactions (Kreitler, 2011). Pre-construction project planning is very important as it can greatly influence the project's performance and profitability (Alshanbari, 2010; Menches et al., 2005). It has also been considered to be a critical factor that contributes to project success (Andersson & Rosenberg 2012; Kreitler, 2011) as it aims at ensuring that the project stays on schedule, within budget and it also minimizes the possibility of variations (Kreitler, 2011). The length of the planning process has been linked to project size and complexity, and it was found that it can take up to a number of years, especially in large public projects (Andersen et al., 2006). This process entails but is not limited to the preparation of feasibility reports and investigation of site constraints (Ibid).

An important aspect of construction planning is to ascertain if the financial resources available will be sufficient to undertake the project as most if not all projects are designed to a budget (Andersen et al., 2006). In most cases, especially with government agencies, the budget is set from the onset, before the design is produced (Ibid) The client's most important responsibility is to fund the project, from inception to completion; otherwise there would be no project if there are no available finances (Gould & Joyce, 2014). The source of funding to a large extent defines the client category (Ibid). Regardless of how best planning has been undertaken, the construction industry has accepted the fact that risk and uncertainty are inherent to the construction process (Latham, 1994).

2.6.1.4. Design phase

The design phase is crucial to every construction project as it facilitates for efficiency in the construction of the proposed building (Fabricio et al., 1999). It is the stage at which the client's vision or brief is developed into drawings and specifications for the proposed project. The architect and/or engineers are responsible for the design. During the design process, the client is expected to be proactive at the same time contributing ideas. This proaction may lead to limited design errors and variations (Aiyetan, 2010, Andersen et al., 2006). However, since the majority of clients are once off, it is plausible that the designer is often left to work alone based on a brief that is likely to be inconclusive therefore making room for design errors (Aiyetan, 2010). Clients have a great potential to contribute to design (Chan et al., 2004).

The performance of the design team influences project outcomes because any decision made at the inception of the project will affect project success (Aiyetan, 2010). Designers are vital participants of the construction industry whose services are rendered from project inception to its completion (Ibid). Poor design could lead to redesign and rework in the process costing the client more. To ensure ultimate client satisfaction, it is vital for the client to understand the proposed design. This understanding leaves the designer with the onus to explicitly present the design to such an extent that the client can fully visualize the project (Andersen et al., 2006). This has led to the design process being split into phases, namely;

- **Schematic design phase / Preliminary design phase**

  During this phase, a client and designer will formally document the project requirements, following which; a clearly defined concept is developed and presented in a form that the client can understand. The client will review and give feedback upon completion of this phase (Ibid)

- **Design development phase**

  In this phase, all client comments from the preceding phase are incorporated and detailed designs are therefore developed (Goral, 2007). Specifications are also an output of this phase. Likewise, upon phase completion, the client will review and comment on all the work done (Ibid).

- **Construction drawing phase**

  The goal of this phase is to design drawings upon which the contractor can accurately construct the project. Upon completion of this phase, it is common for the client to retain the designer to manage the construction phase of the project. There is need for high client involvement in this phase as every aspect of the construction process is included in the construction drawings, and adequate client involvement could minimize the extent of redesigns.

2.6.1.5. Construction procurement

The need for a construction project subsequently brings about the procurement process. It is this need that influences the client's choice to adopt a particular procurement arrangement (Fagbenle & Makinde, 2010). The adoption of the most appropriate procurement method greatly contributes to the overall client's satisfaction and project success (Ambrose and Tucker, 1999); Muriro and Wood, 2010; Mathonsi and Thwala, 2012). Basically, the three primary objectives that procurement is based on are cost, time and quality (SACQSP, 2016b; Davis et al., 2009; Muriro and Wood, 2010; Charvat, 2000). Ideally, clients must retain authority to exercise maximum control of the procurement process and should be actively involved in contractor selection so as to ensure their satisfaction with the contractor to be ultimately selected (Charvat, 2000). The procurement strategy adopted has a direct influence on the way in which the contractor makes a profit (MacDonald, 2013).

Proper selection of a construction contractor is a critical factor which has significant influence on project success (Huang, 2011). Previous research found that there are a variety of contractor selection models (Holt, 2010) and the client has every right to choose the type they want to use and they can implement it in the manner they see fit (Mills, 2011). However, the choice of a particular method is influenced by a number of factors, which include but not limited to; the need to comply with numerous regulations, the level of client experience of implementing construction projects and the level of accountability through engagement of consultants (SACQSP, 2016b). In an effort to minimize friction between project stakeholders, it has been suggested that clients should have the liberty to choose whom they want to do business with (Mills, 2011).

In recent years, many industry participants have raised their concern and dissatisfaction regarding the adversarial construction environment, which has led to the inefficient delivery of projects (Ling et al.,

2013a). These concerns are mostly attributed to the procurement system used (Ibid), as these spell out the roles, responsibilities and liabilities of each party, at the same time setting out their level of cooperation (Pesamaa et al., 2008; SACQSP 2016b). The price determination method, which is the process through which the services of the contractor is selected, is also spelled out by the procurement strategy (SACQSP, 2016b).

Procurement can be described as the process of placement of the contract (Aiyetan, 2010). It has also been defined as a method for clients to provide and fund constructed facilities (Shrestha et al. 2012). According to CIDB (2004:1), "*Procurement may be regarded as the process that creates, manages and fulfils contracts relating to the:*

- *Provision of supplies, services or engineering and construction works;*
- *Disposal of property;*
- *Hiring of anything; and*
- *Acquisition or granting of any rights and concessions.*"

One of the key features of the construction industry is the continuing proliferation and diversity of construction procurement arrangements that can be used, the ever increasing project complexity and the client's need for speedy commencement and completion ((Ambrose and Tucker, 1999; Naoum and Egbu, 2015; Watermeyer, 2011; Rashid et al., 2006). Considering the diversity of these procurement arrangements, knowledge of and great understanding of these arrangements is crucial as selecting the most appropriate procurement arrangement is one of the critical success factors in the construction industry (Alharthi et al., 2014). The difference in procurement systems is as a result of, for example, the diversity in responsibilities allocation, activity sequencing, processes and procedures, and organizational approach in project delivery (Rashid et al., 2006)

In recent years, the construction procurement environment has become increasingly very competitive (Kwawu and Laryea, 2013), and as a result this has fostered construction companies to strive for and maintain a competitive edge (Lindholm, 2012). Erikson (2015) is of the opinion that all procurement arrangements are complex as they involve many actors and various interdependent activities. This assertion is supported by MacDonald (2013) who found that conflict within the construction industry is inherent to the procurement process. To counteract this disruptive environment, Eshun (2013) therefore gives importance to increased levels of cooperation among different project actors.

Procurement forms an integral part of the construction process and it occurs at any point across the project cycle (CIDB, 2007b; Mathonsi and Mathwala, 2012). It is aimed at assisting the client in obtaining competent construction services (Charvat, 2000). In an effort to improve procurement performance, which arguably contributes largely to project success, several changes in the client and

the procurement systems have been effected (Alharthi et al., 2014). Improper implementation or the use of an inappropriate procurement arrangement can lead to undesired outcomes (a perfect example being the construction of the 2010 World Cup Stadia where the final contract prices were significantly higher than the pre-tender estimates) (Watermeyer, 2011).

2.6.1.5.1. Procurement Methods in South Africa

As per Grobler and Pretorius (2002), the three types of procurement methods which are widely used in South Africa are; traditional method, design and build, and construction management. Mbanjwa (2003) added management contracting to the list. A study conducted by Grobler and Pretorious (2002) indicated that public sector clients predominantly utilised the traditional method while private sector clients were more prone to utilising the design and build method. Oshungade and Kruger (2015) found that the traditional method was the most widely used method, followed by the design and build and construction management respectively. The most common methods according to the findings of a study conducted by Mbanjwa (2003) were the traditional method, construction management, management contracting and design and build in that order.

The high usage of the traditional method has been attributed to the resistance and reluctance to change by the clients, as they tended to select the procurement methods they were familiar with, instead of the most appropriate methods (Laedre et al., 2006). Additionally, Oshungade and Kruger (2015) cited less awareness by clients of the other procurement methods. On the other hand, Manqoba (2014) indicated that the traditional method was highly utilised due to the fact that it is fair, equitable, transparent and competitive

i. Traditional Method (also termed Fixed Price Contracts)

The Traditional Procurement System (TPS) is also known as the 'Design Bid Build' method (Mathonsi and Thwala, 2012). It has been the first if not only choice for the majority of construction industry clients (Moore, 2015, Bennett, 2003; Mathonsi and Thwala, 2012). In a study conducted by Muriro and Wood (2010), they found that the traditional method was the most common method. Watermeyer (2011) found that this type of procurement arrangement is prevalent in most countries in Sub-Saharan Africa. However, in recent times, there has been an increase in client dissatisfaction with the traditional approach and that has propelled them to actively seek alternative methods of procurement (Turina et al., 2007). Charvat (2000) is in support of this assertion as he indicated that there has been a significant shift from the traditional method to alternative delivery methods such as construction management and design-build. This shift has been attributed mostly to the general lack of consideration given to the vital integration between project phases (Turina et al., 2007). Put in other terms, separation of

responsibilities and work teams has been suggested to contribute to the lack of performance in construction projects (Alshawi, 2009).

The client is under contractual obligation to two parties, namely the design consultant and the contractor (Bennett, 2003). Under this form of arrangement, the design responsibility is separated from the construction responsibility (Alharthi et al., 2014), where the design responsibility and any errors or risks emanating from omissions lie with the client and the construction responsibility lies with the contractor (APUC, 2012). The TPS has been described as a sequential method, where the owner appoints consultants who operate in the client's best interest, to adequately prepare design plans and other necessary documentation (Watermeyer, 2011; Austroads, 2014; Bennett, 2003). Upon full completion of the design and construction drawings; if the client is satisfied with the design, tenders to undertake construction work are then called for (Schierholz, 2012). The separation between the contractor and the client under the Traditional Method reduces the client's influence and involvement on the project, leaving the client dependent on the consultant (Assaf & Al-Hejji, 2006). According to Oshungade and Kruger (2015), because the client is the project leader there is the need for effective and adequate client involvement.

Figure 2-3 is an illustration of the traditional procurement activity sequencing

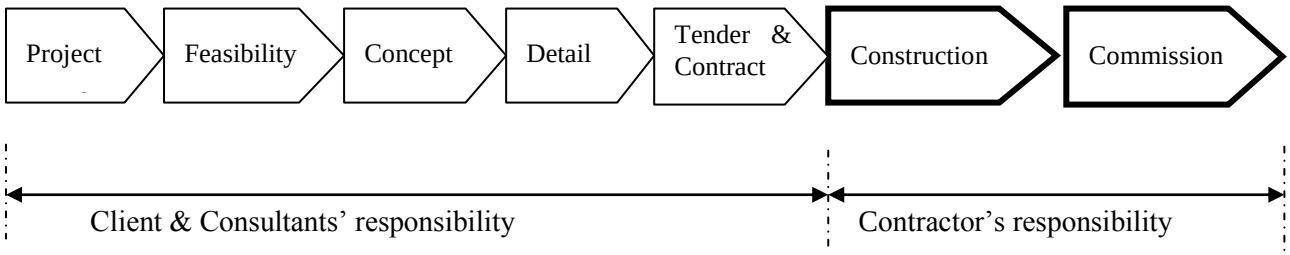

Figure 2-3: Sequence of activities under traditional procurement method

(Adapted from Rashid et al., 2006)

Figure 2.4 is an illustration of the relationships of parties for traditional method of procurement.

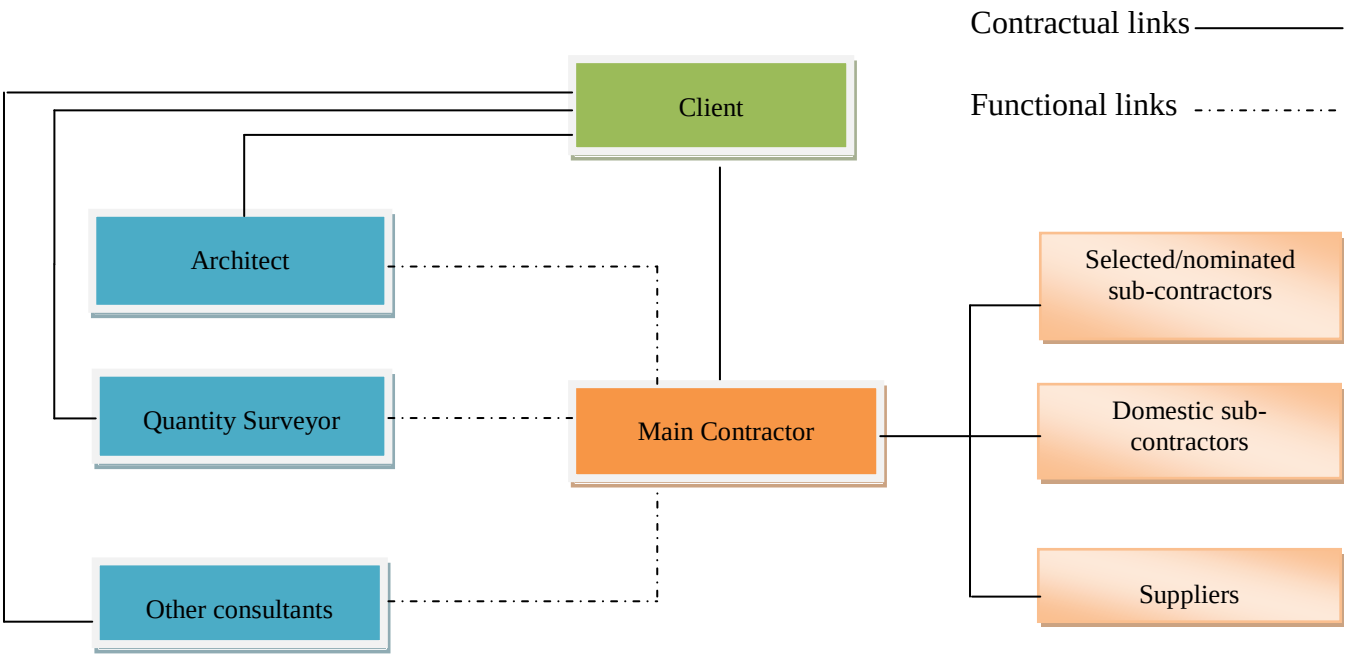

Figure 2-4: Traditional Method
(Ashworth and Hogg, 2002)

ii. Cost Plus / Cost Reimbursement

Under this of arrangement, the client undertakes to pay the contractor the actual costs incurred in the execution of the work with an allowance, normally expressed as a percentage of the actual costs to cover the contractor's overheads and profit (Broome & Perry, 2002; SACQSP, 2016b; CIDB, 2005). High client involvement and influence is essential as the client assumes most of the risks (Ibid). Cost-plus contracts provide little incentive for the contractor to control or minimize costs (O'toole & Jergeas, 2010). Therefore it is advised that the cost plus contract should be limited to emergency work and short duration projects (Bubshaite, 2003; SACQSP, 2016b)

There are three variants to this method, and these are;

- Cost plus percentage – Under this arrangement, the contractor is paid for all the actual costs incurred plus a pre-determined percentage (SACQSP, 2016b; Chinweude, 2015).
- Cost plus fixed fee - The contractor is paid a fixed fee which is agreed before the project commences (SACQSP, 2016b).

- Cost plus fixed fee plus incentive – Under this method, a target fee consisting of a fixed amount and a variable amount before project commencement. The variable amount is dependent upon achieving certain goals (Ibid)

iii. Design and Build

Schierholz (2012) & Bennett (2003) noted that under Design and Build (DB), the owner retains the services of a design-builder under a single contract. The contractor is appointed much earlier in the process and his price is based on the information provided by the client (Lahdenpera, 2001). Basically, an architect or engineer and a contractor form a partnership to undertake both the design and construction of a project (Rashid et al., 2006). The team then negotiates with the client or submits a proposal for both the design and construction; with the risk of both the design and construction lying with the team (APUC, 2012; Bennett, 2003; Masterman, 2002).

Figure 2-5 is an illustration of the design and build procurement activity sequencing;

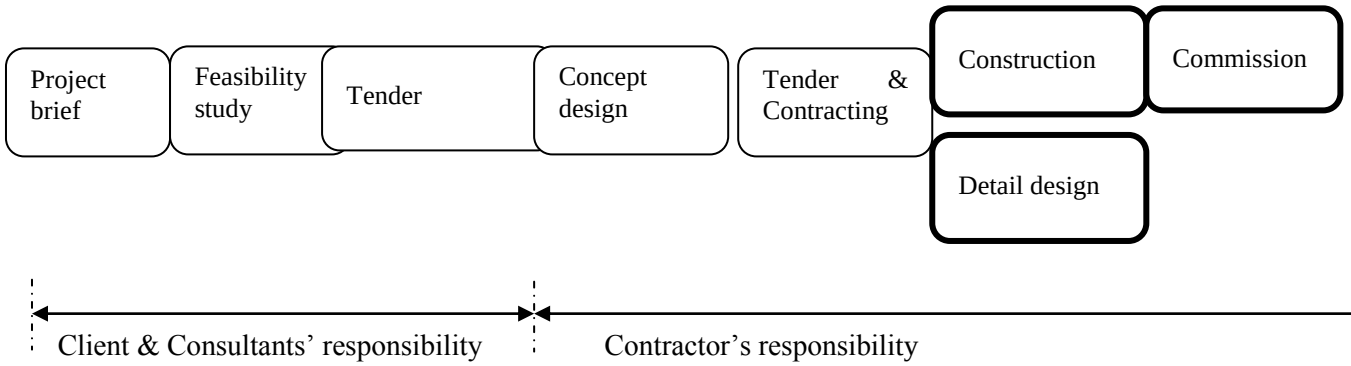

Figure 2-5: Sequence of activities under design and build
(Adapted from Rashid et al., 2006)

According to Alharthi et al. (2014) the tenderers mainly depend on the information they are furnished with in the tender document to estimate the project cost and to develop the project design. It is imperative that the information that the tenderers are provided with is sufficient so that they achieve clarity and that client requirements are met (APCU, 2011). Design and build is adopted mostly in cases where the client wants to expedite project execution, especially during the pre-construction phase (Alharthi et al., 2014) and in situations where the client wants to ensure a single-point of responsibility for both the design and construction of the project (Turina et al., 2007).

It has been found that involving the contractor early on in the project is beneficial as it allows for better coordination with the designer and the contractor may also provide needed advice to assist with the design development (Watermeyer, 2011; Rashid et al., 2006). As found in previous research, this form of arrangement necessitates for time and cost savings when compared to the traditional procurement method (Muriro and Wood, 2010; Eshun, 2013).

Figure 2-6 is an illustration of the relationships under Design and Build method

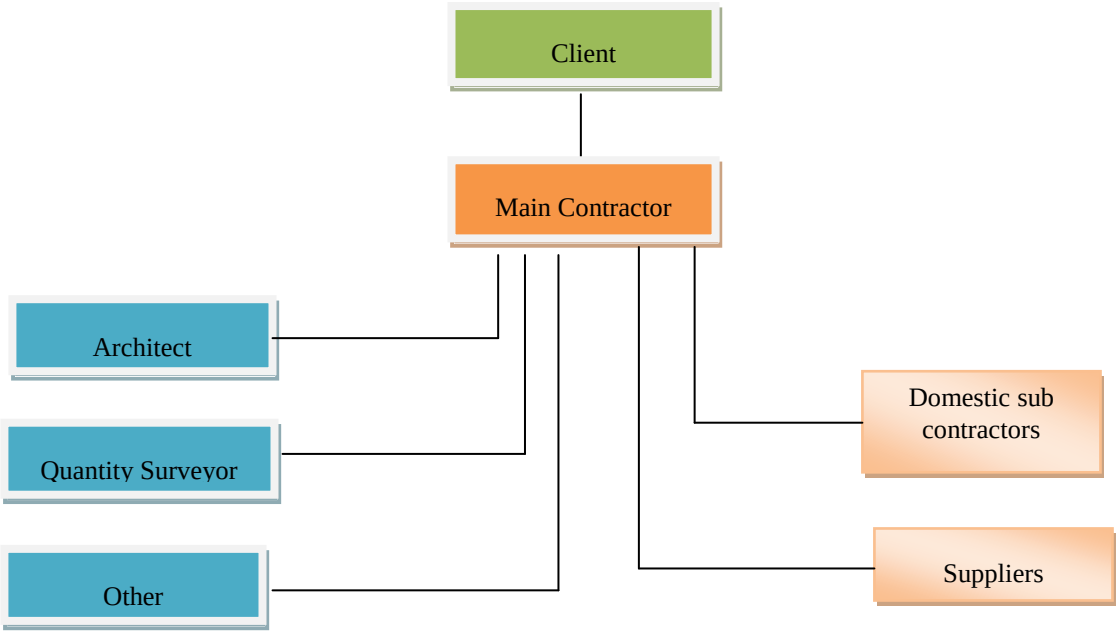

Figure 2-6: Design and build method
(Adapted from Ashworth and Hogg, 2002)

iv. Management contracting

Under management contracting, the client appoints an independent professional team and a management contractor (Davis et al., 2009). Trade sub-contractors are then mutually evaluated and selected by the client, consultants and the management contractor (Alharthi et al., 2014).The management contractor has direct contractual relationships with all the trade or works sub-contractors and is solely responsible for all the construction work (Ibid). It is important to note that the management contractor acts as a consultant and does not undertake the actual construction work, but instead appoints trade sub-contractors that are not related to the management contactor, thus avoiding conflict of interest between the client and the managing contractor (Alharthi et al., 2014; SACQSP, 2016b). The management contractor provides their expertise and supplies common service facilities that are normally under the preliminaries section, for example, site offices, storage, security, power and water (SACQSP, 2016b).

Figure 2-7 is an illustration of management contracting procurement activity sequencing

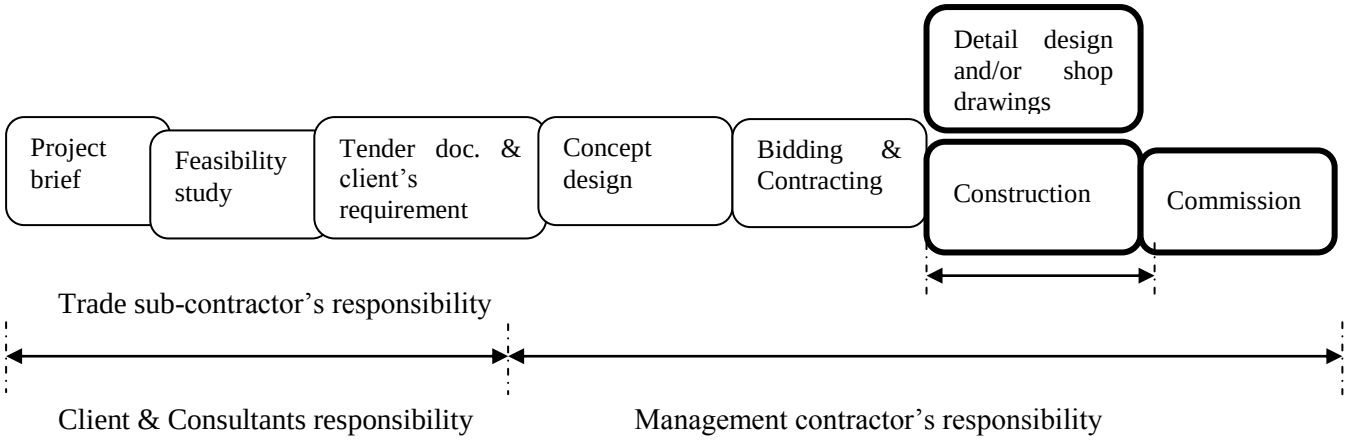

Figure 2-7: Sequence of activities under management contracting method

(Adapted from Rashid et al., 2006)

It is ideal for projects where time and control of quality are of the essence (APUC, 2012). Furthermore, it is recommended that the management contractor be introduced very early in the project so that they provide advice under client directives (Alharthi et al., 2014). The advice can cover items ranging from project design to the procurement of goods and materials (Davis et al., 2009). To benefit from the use of management contracting it is recommended that there must be trust and good teamwork on the part of the client, the design consultants and contractor (Ibid).

Figure 2-8 is an illustration of Management contracting

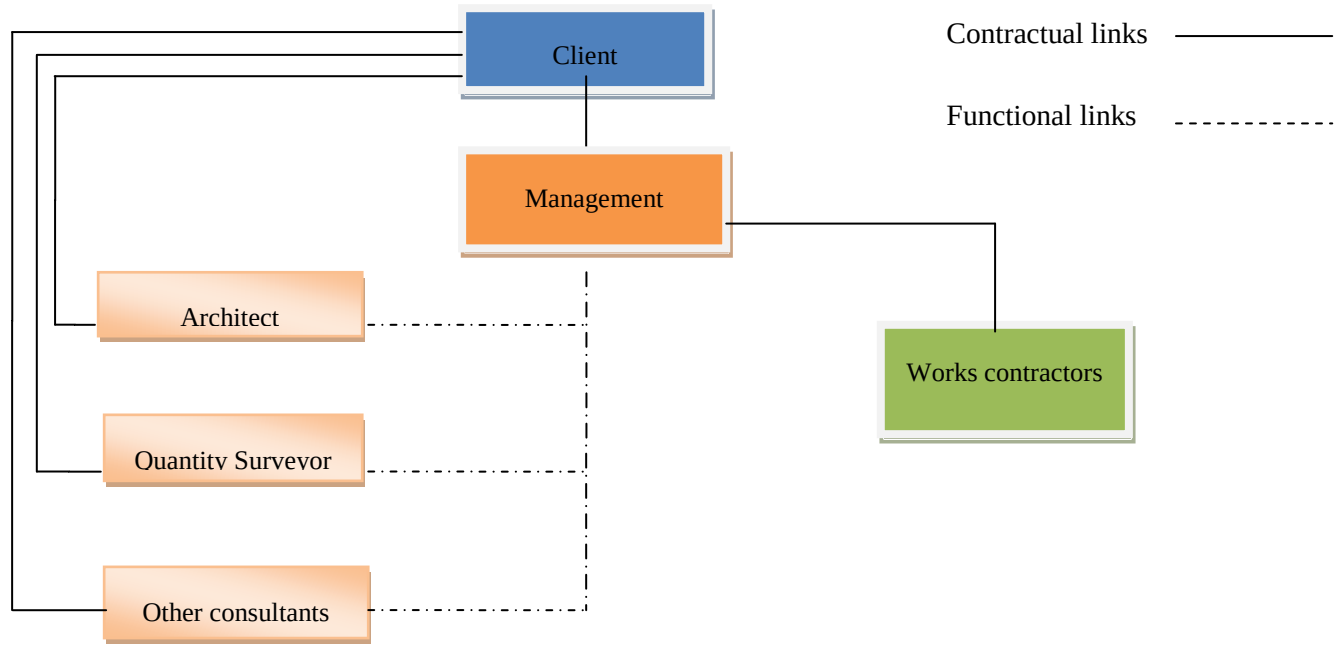

Figure 2-8: Management Contracting Method
(Adapted from Ashworth and Hogg, 2002)

v. *Construction Management*

Under this method, the client has the opportunity to partake fully in the construction process (Oshungade & Kruger, 2015).This form of arrangement is very similar to management contracting, the difference being that the client and works sub-contractors have a direct contract between them and the construction manager acts as a consultant in managerial position (Davis et al., 2009; SACQSP, 2016b). APUC (2012) also highlighted that all the contracts for the work packages are between the client and the trade contractors; leaving the client with the sole responsibility of managing all the separate contracts. A management contractor, at a fee, is appointed to professionally manage and coordinate the design and construction, so as to facilitate collaboration to improve the project's constructability (APUC, 2015; Davis et al., 2009).

Figure 2-9 is an illustration of Construction management procurement arrangement.

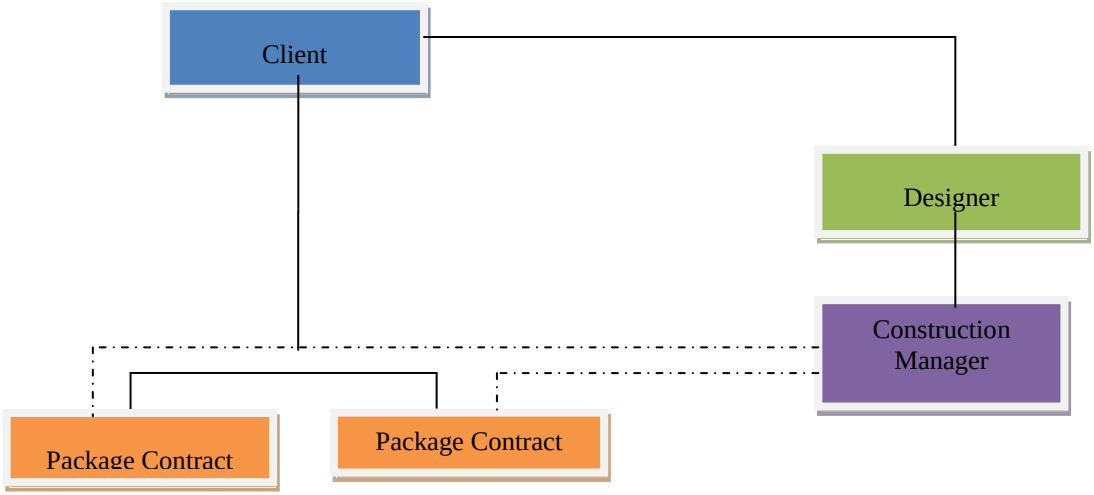

Figure 2-9: Construction Management Method
(Adapted from Hackett et al., 2017 cited in SACQSP, 2016b)

As a result of problems and barriers created between contracting parties through the contracting relationships, there has been a shift to relational contracting to improve the working environment so as to enhance project efficiency (SACQSP, 2016b)

vi. *Turnkey*

Rashid et al (2006) indicated that under turnkey, the design and construction are integrated. A contractor is commissioned to undertake the responsibilities for everything from project inception right through to hand over, including all tasks such as for example preparing project brief, getting approvals, preparing designs, project financing, commissioning and handing over facilities that are ready for use (Ibid). Since the client is dealing with a single party for both the design and the execution of the project, managing the project is simplified (Dagenais, 2003, Hosie, 2007). When using the turnkey method, the level of the client's control and involvement in their project is diminished (Dagenais, 2003). It is therefore preferable that the client maintains some control especially during the critical project phases (Dagenais, 2003). In an effort to enhance project success, it is imperative that clients clearly and accurately define their needs, and also to make prompt payments to contractors.

2.6.1.5.2. Tendering

This is a crucial phase in the procurement strategy that involves obtaining a price for the contract and how a contractor is actually appointed (Kang et al., 2015). Tendering entails clients providing contractors with a set of tender documents for the contractors to price and submit bid proposals, upon which if appointed, the contract may be let and executed (Laryea, 2011). The client then selects the most suitable contractor from either publicly or privately (Ibid; Hackett et al., 2007). Contractor selection is one of the major challenges facing owners and consultants of the construction industry (Huang, 2011).

Tendering requires extensive information and documents exchange, although it has been found that in some instances documents are not always clear and precise (Laryea, 2011). Poor quality tender documents lead to inefficiencies such as, inaccurate estimates and contract disputes (Ibid). Clients can choose from a range of tendering strategies and the selection of a suitable contractor is a crucial determinant of project performance (Hackett et al., 2007). According to Chinyio (2011) tendering may come in two forms, either through negotiation or competition, with the competitive type being the predominant one.

A) Open tendering – Under this method, either the client or consultant acting on behalf of the client advertise the proposed project to the public (Mathonsi and Mathwala, 2012). Open tendering allows anyone to tender (Chinyio, 2011) and it is widely used in the public sector (SACQSP, 2015)

B) Selective tendering - The client pre-selects a list of contractors that are known to have the capability to carry out satisfactory work (Mathonsi and Mathwala, 2012; SACQSP, 2015; Chinyio, 2011). Shortlisted contractors are selected either through invitation or pre-qualification through a set of criteria (SACQSP, 2015; Chinyio, 2011). Contractor prequalification is an essential component of Selective Tendering (Griffith et al., 2003). According to Finch (2011) the two most commonly used variants of selective tendering single-stage and two-stage selective tendering

- *Single Stage Tendering* - The most common type of tendering strategy is the single-stage competitive tender for obtaining a price for the whole of the construction works. Invitation to tender documents are issued to a number of competing contractors who are all given the chance to bid for the project based on identical tender documentation (Chinyio, 2011).

- *Two Stage Tendering* – As the name suggests, the tendering process is split into two stages (Murdoch and Hughes, 2008). The first stage involves the selection of a contractor and to

obtain a price for possible negotiations to follow (Chinyio, 2011; Murdoch and Hughes, 2008). The contractor is selected on the basis of their, inter alia, construction programmes, method statements and the price of preliminaries (Chinyio, 2011). In the second stage, negotiation between the client and the preferred contractor are undertaken and the pre-contract processes are completed (Murdoch and Hughes, 2008). The contractor then provides his experience and expertise in an advisory manner during the design phase (Ibid).

C) ***Negotiated tendering*** – A negotiated tender is effectively a single-stage tender with a single contractor who returns with an initial price. The client invites only one contractor of choice to submit a tender (Mathonsi and Mathwala, 2012; Chinyio, 2011). Thereafter negotiations between the two parties ensue. The contractor is normally selected based on their reputation (Ibid)).

2.6.1.5.3. Prequalification

Huang (2011) defined prequalification as a pre-tendering procedure in which the most appropriate contractors are chosen from among those showing interest to participate in the tendering. On the other hand, it has been described as a process whereby tenders are sought from a pool of competitive and capable contractors through a set of criteria (Mills, 2011). Many studies have been undertaken in an effort to unearth the ideal range of prequalification criteria set by clients and it has been concluded that these generally differ depending on project and client requirements (Ibid).

Prequalification of contractors has been suggested to enhance project success, at the same time improving the quality of construction projects by ensuring that only contractors that are capable of carrying out the project are selected (Huang, 2011). It also helps in ensuring that appropriate standards are met (Charvat, 2000). Contrary to previous research which considered only the clients understanding of the process as a contributing factor to project success, Akintoye and Main (2007) have highlighted the importance of both the contractor and client possessing a sound understanding of the prequalification process.

Mills (2011) postulated that prequalification of contractors is a common process within the construction industry especially within the public sector. On the other hand, Charvat (2000) argues that prequalification is mostly adopted for a project that does not include public funding.

2.6.1.6. Forms of Contract

Since the majority of construction clients do not have either the expertise or capacity to undertake building projects on their own, they tend to engage external service providers to deliver their projects (Richards et al., 2005). The increase in the number of service providers requires contracts to ensure full and adequate performance by the service providers (Ibid).

The choice of the form of contract is very important as the roles and responsibilities of a client are dependent on the form of contract adopted (CIDB, 2005). The form of contract enhances the parties to share the project risks (Richards et al., 2005). Roots (2001) indicated that forms of contract leave clients with minimal control over the way the process is organised. According to (SACQSP, 2016b), there are a variety of factors to be taken into account before selecting the form of contract and these include but are not limited to: the complexity of the design, risk management, the ability or desirability of clients to handle different administrative procedures.

Although there are a number of standard forms of contract in current use in South Africa, the CIDB recommends four series of types of contracts, namely the Joint Building Contracts Committee (JBCC) Series 2000, General Conditions of Contract for Construction Work (GCC) 2010, FIDIC (French acronym for International Federation of Consulting Engineers) 1999, New Engineering Contract (NEC) 3 family of standard contracts (CIDB, 2005; SACQSP, 2016b). Selecting the most appropriate form of contract improves overall project delivery (CIDB, 2005).

2.6.1.7. Construction Health and Safety (H&S)

The construction industry has placed great emphasis on H&S during the construction phase (Lopes et al., 2011). Contrary to what was the norm in previous years where the responsibility for H&S vested solely in the contractor, in recent years this responsibility has been redistributed to include all stakeholders and participants in the construction process (Ibid). Government Gazette (2010) highlighted and emphasised on the client being primarily and explicitly responsible for H&S on their construction projects. This emphasis makes sense as clients are the project owners and they employ others to perform all construction-related activities on their behalf, and therefore this increase in client responsibilities in H&S is logical (Lopes et al., 2011).

On the other hand, the main contractor is required to produce a health and safety plan which is kept on site during the entire construction phase (CDM, 2015). It is during this stage that construction workers are exposed to the occupational H&S hazards and risks. Consequently there are high safety measures that are emphasized within the industry (Lopes et al., 2011). Another factor which is of great importance to the minimisation of H&S hazards to the workforce is the proper use of construction plant and equipment in accordance with statutory obligations and manufacturers' recommendations (Ibid). Despite all the significant efforts to improve H&S within the industry, there has been little overall improvement on construction projects.

2.6.2. Construction phase

This stage begins subsequently after the planning and design of the proposed project has been completed and once a building contractor has been appointed (CDM, 2015). It entails the actual

execution of the works from start to finish (Ibid). During this period, the contractor's main responsibility is project planning, execution and management of the construction phase of a project and this entails liaising with other stakeholders throughout the project cycle (APUC, 2012; CDM, 2015). Put in simpler terms, the contractor is responsible for transforming the vision and dream of the designers that are on a sheet of paper into reality through physical construction (Gould & Joyce, 2014; Fagbenle & Makinde, 2010). However, in recent times, the main contractor's role has evolved from that of a boss to manager due to the industry turning to new procurement processes of subcontracting specialty trades as a result of the general increase in the complexity of projects (Gould & Joyce, 2014).

During the construction phase of the project, client involvement on projects generally declines as much of the responsibilities are transferred to consultants and the contractor (APUC, 2012). However, a study conducted by (Bubshaite and Al-musaid, 1992 cited in Alsolaiman, 2014), found that it is during this stage that the client is mostly involved in the project. The study went on to highlight the importance of defining all tasks during the construction project phases as clearer defined tasks contributed to the optimum level of client involvement. One of the crucial tasks of the construction phase is good communication between project team members (Phua, 2005).

The major activities that occur during this phase and require effective and adequate client involvement are:

2.6.2.1. Attending to site meetings

The client will be responsible for regularly attending to site meetings, which include but are not limited to site handover, management, progress and technical meetings. Adequate client involvement in attending site meetings will enable clients to promptly resolve any claims, monitor the work schedule and contractor productivity, and to enforce the quality and safety control of the project thereby minimising the occurrence of disputes and enhancing project success (Alsolaiman, 2014). Additionally, clients will tend to make prompt and necessary decisions while on site and this facilitates successful project delivery (Ibid).

2.6.2.2. Making payments to contractors

One of the client's major roles in a construction project is making payments of the value of all work executed. In a study conducted by Aiyetan (2010), clients tend to delay such payments and the lack of prompt payment to contractors has negative consequences on the project, such as time and cost overruns. CIDB (2007) indicated that payment procedures by clients to contractors have improved quite significantly, albeit, in some instances payments were delayed longer than 90 days. Late payments to contractors by clients may impede project success as such late payments may cripple the contractor's cash-flow

2.6.2.3. Conducting quality checks

Quality is one of the parameters against which project success is measured Alharthi et al. (2014), and therefore the importance placed on this activity. There have been great concerns within the construction industry about the quality of completed projects (CIDBb, 2007). According to CIDB (2011) clients were dissatisfied with the quality of construction on around 20% of completed projects and 12% of completed projects surveyed had levels of defects which were regarded as inappropriate.

2.6.2.4. Giving input into design changes and/or variations

Design changes or variation orders are frequent in the construction phase and both the client and contractor may propose such modifications which may require adjustments to the project budget (NOAA, 2010). To avoid time and cost overruns, and for decisions to be made quicker about design changes and variations, Aiyetan (2010) & Anderson et al. (2006) highlighted the need for clients be proactive and involved in the implementation of such changes. Aiyetan et al. (2013) argue that the clients' ability to contribute variation order ideas during construction can impact either positively or negatively on the construction project.

2.6.3. Post-construction phase

The post-construction phase is a very important stage of the construction project cycle and facility operation success. A well-organised, efficient and effective transfer of information from the contractor to the client is crucial (Alsolaiman, 2014). This is the practical completion of all the construction including handover and the client issues certification acknowledging completion of the works (CDM, 2015). At this stage, the building work should be substantially complete. However some building work may still need completion or resolution, as well as the collection of outstanding documentation such as producer statements, warranties, certificates and so on (Ibid). It is during the post construction stage, that a client should ensure that all commissioning certificates, operating instructions and maintenance instructions are obtained (Australian Government, 2012).

The handover of a project to the client by the contractor is an important project stage which is critical to the success of the facility's operation (Hassan et al., 2010). The handover can have an effect on, inter alia, health and safety, standards of operation, maintenance and operational cost efficiencies to the client. The major activities that occur during this phase and require effective and adequate client involvement are;

2.6.3.1. Handover

Project handover to the client at is a very important stage of the project procurement process and facility operation success (Hassan et al. 2010). Alsolaiman (2014) indicated that project handover

includes tasks such as; reviewing all contract documentation after completion of the project, monitoring the process of testing and commissioning of the project & establishing the criteria for accepting the completed project. Kamara (2005) indicated that, at project handover both the client and contractor are to ensure that the facility is performing as expected and is serving the purpose for which it was built. Reviewing of post project targets and milestones is a handover task in which the client must partake in (Harris et al., 2006).

2.6.3.2. Operation and maintenance

This is an activity which occurs subsequent to the completion of construction and it has been regarded as the longest phase of the project lifecycle (Alvarez-Romero, 2014). To ensure successful management and operation of the project, the contractor must furnish the client with timely and accurate information to support the decision-making (Ibid). According to Goedart & Meadati (2008) most of this information is generated during the early project stages, and it should contain documentation such as as-built drawings; operation manuals and maintenance of the facility and warranties & guarantees of the systems installed in the facility

2.6.4. Discussion

It is evident that despite the different client categories and the unique nature of each and every construction project, client involvement and satisfaction are of paramount importance to project success. The role of the client is dependent on the procurement strategy and form of contract used, which inter alia, spell out the roles and responsibilities of the parties to a construction contract. Furthermore, it was found that one of the most important client roles is the preparation of the project brief which occurs in the pre-construction phase.

Literature suggests that effective involvement by clients in their projects influences good outcomes as there is a link between ineffective involvement of project participants (clients included) and poor project outcomes. Furthermore, to enhance the effectiveness of client involvement in their projects, emphasis should be placed on team contributions to the construction process.

2.6.5. Chapter Summary

This chapter outlined extensive literature review in relation to client involvement in their construction projects. The next chapter discusses the research methodology to be used in this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This chapter gives an overview of the research methods and methodology used for the purposes of this research. Research methods are the various techniques, methods and procedures used in research (Kothari, 2004; Rajasekar et al., 2006) and research methodology is the systematic way of solving the research problem (Ibid). Research methodology can also be described as the ways of obtaining, organising and analysing data (Polit and Hungler, 2004). Basically, the methodology aims to lay out the sequence of the research. This research is descriptive in nature, it aims at unearthing the contractors' views of client involvement in construction projects and it employed the use of both quantitative and qualitative research approaches.

3.2. Research Design

A research design is the structure within which the research is conducted (Bhattacharyya, 2006). It has also been described as the process that specifies all the assumptions of the research and the methods of data collection and analysis (Creswell, 2009). It provides answers to the question: What type of study should be undertaken to provide satisfactory answers to the research problem? (Prozesky and Mouton, 2001). A research design attempts to portray an accurate profile and characteristics of people, situations or groups and it enables one to have a clear picture of the phenomena under study (Polit & Hungler, 2004). According to Creswell (2009: 3) the selection of a research design can also be based "on the nature of the research problem or issue being addressed, the researchers' personal experiences, and the audiences for the study".

A descriptive survey was employed because of its capacity to include data collection techniques such as questionnaires (Merriam and Simpson, 1995). The descriptive approach was adopted for collecting data on client involvement on construction projects,

3.3. Research Approaches

3.3.1. Qualitative Research

Qualitative research is naturalistic; it attempts to study the everyday life of different groups of people and communities in their natural setting (Burns & Grove 2003). Qualitative research is a methodical and subjective approach which facilitates and makes it possible for the researcher to gain in-depth knowledge and status of the research participants' reality (Holloway, 2005). The qualities or attributes expected to be possessed by researchers using qualitative research methods include but are not limited to; being a good listener, non-judgmental, friendly, honest and flexible (Kothari, 2004).

Qualitative research aims at answering the 'how' and 'why' of a given phenomenon thereby providing the necessary in-depth understanding of the process (Symon & Cassel, 1998)

Table 3-1: **Advantages and Disadvantages of Qualitative Research**

Advantages	**Disadvantages**
Useful for studying a limited number of cases in depth (Griffin, 2004)	Findings cannot be generalized to wider populations or other settings (Atieno, 2009)
Provides individual case information (Creswell, 2009)	Data analysis is often time consuming (Atieno, 2009; Creswell, 2009)
Data are usually collected in naturalistic settings in qualitative research (Atieno, 2009; Creswell, 2009)	It generally takes more time to collect the data when compared to quantitative research (Creswell, 2009
Allows the researcher some degree of flexibility when conducting research (Griffin, 2004)	It is more difficult to test hypotheses and theories with large a large population (Griffin, 2004)
	The results are more easily influenced by the researcher's personal biases (Griffin, 2004)

- **Interviews**

  "*The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses*" (Kothari, 2004:97). Interviews are optimal for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored. Generally, an interviewer asks respondents questions so as to obtain answers relevant to the research question. This method can be conducted either through personal interviews or telephone interviews.

  a) Personal Interviews - The interviewer asks questions generally in a face-to-face contact to the other person or persons

  b) Telephone Interviews – The interviewer collects information by contacting respondents on telephone itself

Interviews can be structured or unstructured. Structured interviews consist of a set of predetermined questions that are asked in a prescribed order, and the interview follows a rigid procedure. On the other hand, unstructured interviews are more flexible, and do not follow a system of pre-determined questions and standardised techniques of recording information (Kothari, 2004).

- **Observation**

  Information is acquired by observing the process at work (Bhattacharyya, 2006). The observation method is used when collecting data on naturally occurring behaviours in their usual contexts. This method basically entails acquiring information by way of the researcher's own observation, without interviewing the respondents. The information obtained relates to what is currently happening and is not affected by either the past behaviour or future intentions or attitudes of respondents (Creswell; 2009).

- **Focus groups**

  These are effective in eliciting data on the cultural norms of a group and in generating broad overviews of issues of concern to the cultural groups or subgroups represented (Creswell, 2009).

3.3.2. Quantitative Research

Quantitative research is concerned with the measurement of quantity or amount and it is used when dealing with phenomena that can be expressed numerically (Kothari, 2004). Quantitative research answers the 'where', 'what', 'who' and 'when' questions (Silverman, 2000). It is empirical in nature and is also sometimes referred to as scientific research (Atieno, 2009) A major limitation of quantitative research is that it focuses on numbers only and the results can be misleading as all other factors are ignored.

- **Questionnaires**

  This is a data collection technique conducted through asking questions to those who are thought to have the desired information (Bhattacharyya, 2006). In general, a questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms. To enhance the chances of a successful survey, it is imperative for questionnaires to be carefully constructed so that relevant information is collected. Advantage of this inflexibility is that it allows for meaningful comparison of responses across participants and study sites.

However, it requires a thorough understanding of the important questions to ask, the best way to ask them, and the range of possible responses (Creswell, 2009).

The questionnaire was used for data collection in this research as it makes the quantification of information possible and data analysis is generally made easier. The questionnaire was structured in manner therefore making it less time consuming to collect the data and also simplified the statistical process. The advantages of using questionnaires include but are not limited to; they relatively time and cost effective, a wide geographical area is covered, facilitation in the collection of relatively more data on a condensed basis, findings can be processed relatively easy and anonymity is maintained (Popper, 2004). The major disadvantages of using questionnaires is the relatively low response rate associated with their use, the limited control under which questionnaires are completed, for example, an inappropriate person could fill in the questionnaire and that there is no way to tell how truthful a respondent is being (Ibid).

3.4. Sources of Data

3.4.1. Primary Data

Primary data is the type of data which is original in nature as it is collected for the first time (Kothari, 2004 and Creswell, 2009). Examples of primary data collection methods include observations, surveys, experiments and interviews (Driscoll, 2011).

3.4.2. Secondary Data

Secondary data is the data that has already been previously collected by someone else and having gone through the statistical process (Kothari, 2004). It can either be published or unpublished data. Examples of secondary data include but are not limited to journals, magazines, diaries, newspaper articles, reports prepared by academic scholars and existing databases. It is important that before the use of secondary data, the researcher ensures the reliability and adequacy of such data.

The use of secondary data through literature reviews was of paramount importance to this research as it identified issues relating to the role and effectiveness of client involvement in construction projects. The literature review process aimed at examining and recording all issues as discussed by different authors in various sources such as for example; books, journals, government articles and other scholarly works

3.5. Sampling

A population is the collection of units about which the researcher wants to study (Molenberghs, 2007), that is, all the units under consideration in any field of inquiry (Creswell, 2009). It is a group of individuals or items from which samples are taken for measurement (Ibid). A sample is a finite part of a statistical population whose properties are studied to gain information about the whole (Mugo, 2002). Sampling is the process of selecting an individual from a large population, and the outcome drawn from the sample is generalised to the whole population (Bhattacharyya, 2006). A good sample should be a true representative of the population as this will help in generalising the results to the whole population (Creswell, 2009).

While there are a variety of sampling procedures; this study employed convenience sampling. The researcher intentionally chose the samples, focusing mostly on the respondents that were well known to the researcher in order to maximise the response rate and to collect as much data as possible. Respondents were also selected based on their location, preference being on those in close proximity to the researcher so as to minimise any travelling costs. Some of the respondents were referrals suggested by other participants. As such these samples may be considered to be purposive convenience samples

3.5.1. Types of sampling techniques

a. Probability sampling

Probability sampling is where each sample has an equal and known chance of being selected or has a non-zero chance of being selected in the sample (Wretman, 2010). Some common methods for selection under probability sampling are;

Random Sampling

According to (Creswell, 2009), random sampling is a method that ensures a known probability of each elementary unit of being chosen, e.g. winning a lottery. The different types of random sampling are;

- *Simply random sampling* – It is a method that allows that each member of a population has an equal chance of being selected (Molenberghs, 2007).
- *Systematic random sampling* – This method entails selecting one unit on a random basis and choosing additional elementary units at evenly spaced intervals until the desired number of

units is obtained. Typically a systematic sample would select every nth person from the list of potential respondents (Molenberghs, 2007).

- *Stratified sampling* - This method involves independently selecting a separate simple random sample from each population stratum which may be based on proportion (Ibid).

b. Non-probability sampling

Non-probability sampling is a technique in which the units of the sample are selected on the basis of personal judgment or convenience, with the probability of any unit of the population being chosen unknown (Wretman, 2010). The different types of random sampling are;

- *Convenience Sampling* - This is when elementary units are conveniently chosen from a population for observation (Creswell, 2009). Due to the study limitations such as time and cost, the study utilised this sampling technique in an effort to obtain a large number of completed questionnaires quickly and economically.

- *Judgment Sampling* - Here the researcher uses their discretion is based on the characteristics of the population to select a sample (Creswell, 2009).

3.5.2. Sample frame

A sample frame is a set of units that has non-zero probability of being selected (Molenberghs, 2007) and it is drawn from the population. A sample frame is the list of elements in the target population from which a sample of study may be drawn (Sekaran, 2003). Ross (2005) defined a sample frame as a collection of data that lists all units of the population such as, for example, a telephone directory)

According to Ross (2005:4), a sample is described as being representative if "*a certain percentage frequency distributions of element characteristics within the sample are similar to corresponding distributions within the whole population".* The characteristics that are selected for comparisons are known as 'marker variables' (Ross, 2005). A sample is considered to be a representative of the population only on the basis of marker variables outcome (Ibid).

3.5.3. Sample Size

The sample size is the selected number of people to be chosen to represent the population (Molenberghs, 2007). The sample should be large enough to answer the research questions (Zikmund et al., 2010). A large sample size helps in minimizing 'sampling error' which is the discrepancy that

may result from drawing conclusions on the basis of a small sample. For the purpose of this study, a sample size of 133 contractors, 25 clients and 25 consultants was used. Since the research was focused on the contractor's perspective, a sample size of 133 contractors was used given the historic difficulty to get them involved in research projects in an effort to gather insight into their perspective of client involvement in the projects that they undertook. Smaller sample sizes of 25 each for both the consultants and clients were used so as to provide some form of validation of the findings and to compare them with the views of contractors.

3.5.4. Sample selection bias

Sample selection bias is the improper selection of a study sample for analysis leading to some of the study conclusions being inaccurate as a result of the sample not being truly representative of the population intended to be analysed.

Table 3-2 is an illustration of the sampling designs and sampling procedures used.

Table 3-2: Sampling design and procedures

Sampling Design / Procedure	**Contractors**	**Clients**	**Consultants**
Target Population	Contractors registered with the Master Builders Association KZN	Clients that are based within Durban and surrounds	All consultant firms based in Durban that are registered with their respective professional bodies
Sampling Method	Convenience sampling technique	Convenience sampling technique	Convenience sampling technique
Sample Size	133 Building contractors	12 Private Sector Clients 13Public Sector Clients	25 consultants comprising architects, quantity surveyors, project managers and engineers
Conduct Fieldwork	Questionnaire distribution (Data collection)	Questionnaire distribution (Data collection)	Questionnaire distribution (Data collection)

3.6. Validity and Reliability

According to Kothari (2004), in research, 'validity' refers to the extent to which an instrument measures what the researcher intends to measure whereas 'reliability' is concerned with the accuracy and precision of a measurement procedure, that is ability to measure consistently. Validity and reliability are two essential characteristics of a good measurement tool (Groth-Marnat, 2003).

Questionnaire content validity was scrutinised through developing the questionnaire from the literature review and conducting a pilot study by distributing the questionnaire to sample respondents and asking

them to check for clarity and content, so as to test any weaknesses, ambiguities, potential response rate and comprehensibility of the questionnaire in order to improve its quality. Zikmund (2010) defined pilot testing as the administration of a questionnaire to a small group of respondents, in the instance allowing researchers to detect ambiguity or bias in the questions. Based on the feedback, revisions were made to the questionnaire.

There are different methods that can be used to measure reliability of a scale which include; generalisability theory, item-response theory, Cronbach's alpha (Tavakol and Dennick, 2011) and corrected item-total correlations (Iacobucci & Duhachek, 2003). The Cronbach's alpha is most widely used metric to measure the reliability of an instrument by measuring the internal consistency of a scale (Tavakol and Dennick, 2011). The Cronbach's alpha coefficient ranges in number from 0 to 1 and may be used to describe the reliability of factors and the higher the score, the more reliable the generated scale is. Kline (2013) found that the Cronbach's alpha co-efficient value of 0.70 is regarded as the minimum for an adequate test and any value < 0.70 indicates poor reliability.

3.7. Instrument Administration

Three sets of questionnaires were developed, for clients, consultants and for the contractors. The questionnaires were semi-structured in manner and contained definite and pre-determined questions which were closed. Semi-structured questionnaires were the questionnaires of choice because they are easy to complete and their ease in administration and analysis. As suggested by Marshall (2004) the questionnaire was designed in such a way that the questions were simple, short and to the point. This is because the length of the questionnaire is considered to be a factor that affects the response rate; a long questionnaire may inhibit participants from responding (De Vaus, 2002).

Furthermore, all the questionnaires issued to each set of respondents were identical, with exactly the same wording and questions sequence. When compiling the questionnaire, great attention was placed on the sequence of the questions, with the easiest strategically placed at the beginning, as the first few questions are likely to influence the attitude of the respondent (Kothari, 2004).

The first section of the questionnaire (question 1 – 3) was used to collect some demographic information about the participants which included characteristics such as the years of experience, the percentage of work normally undertaken by the respondent (whether private or public sector projects) and the procurement method frequently used. The second section (question 4 – 6) delved on the extent of client involvement in projects in relation to the procurement method used and the project cycle. The last section (question 7 -9) used the same technique as in Section two and also included the client roles.

The questionnaire was either emailed (self completion questionnaires) or hand delivered to respondents, who were expected to read and understand the questions and rate their responses. The respondents were guided on how to answer, that is, to tick the appropriate response and they were further requested to return the questionnaires after completing them. The questionnaire survey was conducted between April and July 2016 and all the research participants were given two weeks to respond to the questionnaires. To improve the response rate, follow-up telephone calls were conducted and a reminder e-mail was sent to the participants. Emailing the questionnaires to the respondents had an advantage of minimising costs as it eliminated the travelling expenses.

The downside of using questionnaires is that the researcher had no control as to whether the most appropriate representative from each firm responded to the questionnaire.

3.8. Response rate

The response rate is the percentage of people who respond to a research survey. The higher the response rate, the more the survey results are representative of the target population (Punch, 2003). The response rate has been linked to the validity of analysed data from surveys, for example a research study can be considered unacceptable as valid research due to low response rates (Carley-Baxter, 2009).

3.9. Confidentiality

The respondents' anonymity was guaranteed by excluding any details in the questionnaire that could link the respondents to their answers.

3.10. Chapter Summary

This chapter outlined the research methodology used in this research. The research methods, tools and procedures which were used to gather information were defined. The next chapter focuses on the presentation and analysis of the research findings.

CHAPTER 4

DATA ANALYSIS & DISCUSSION OF FINDINGS

4.1. Introduction

This chapter presents the analysis of collected data. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistical analysis was used to describe and summarise information about the characteristics of the sample. Following this, inferential statistical analysis was used to generalize the findings to the population. The findings are presented in table format and inferences were drawn based on the findings.

4.2. Statistical Analysis

4.2.1. Descriptive statistical analysis

Descriptive statistics presents numerical facts, or data, in either table or graph form. It involves the calculation of central measures of tendency such as the mean, median and mode and measures of dispersion such as the standard deviation. Descriptive statistics are a good way of getting an instant picture of the distribution of sample data (Field, 2009).

4.2.2. Inferential statistical analysis

Inferential statistics involves making inferences or judgments about a population on the basis of a sample (Zikmund et al., 2010). It is the mathematics of how generalization from sample to population can be made. While descriptive statistics remains local to the sample, inferential statistics focuses on making statements about the population and/or statistically inferring a particular likelihood after observing an initial sample (Weiss, 1999). Inferential statistics includes methods like point estimation and hypothesis testing (Ibid).

4.3. Response rate

Data was collected over a three month period from April to July 2016. Table 4-1 shows the distribution of the instruments to the various samples.

Table 4-1: Number of returned questionnaires

	Sample	No. of responses	% of response rate
Contractor	133	101	76%
Consultants	25	19	76%
Clients	25	18	72%
TOTAL	183	138	75.4%

The samples were selected through convenience sampling. The researcher intentionally chose the samples, focusing mostly on the respondents that were well known to the researcher in order to maximise the response rate and to collect as much data as possible. Respondents were also selected based on their location, preference being on those in close proximity to the researcher so as to minimise any travelling costs. Some of the respondents were referrals suggested by other participants. As such these samples may be considered to be purposive convenience samples. Semi-structured questionnaires were either emailed or hand delivered to respondents. To improve the response rate, follow-up telephone calls were conducted and reminder e-mails were sent to the participants.

4.4. Contractor Survey

4.4.1. Contractor profile

The contractors had worked in the construction industry for between 2 and 50 years with the median years of experience being 10 years. The respondents with more than 5 years experience were likely to have a better understanding of clients and therefore their responses might possibly be a more accurate indication of client involvement. As indicated in Table 4-2 more than 80% of the respondents had more than 5 years experience. The results indicate that the sample comprised mostly of experienced contractors who would have engaged with many clients during that time. They could be regarded as knowledgeable of client involvement in the construction projects they had worked on.

Table 4-2: Contractor experience

Years range	Freq	%
Less than 5 yrs	17	18%
6-10yrs	45	47%
11-15yrs	16	17%
16-20yrs	7	7%
More than 20yrs	10	11%

4.4.2.Procurement methods in current use

Table 4-3 presents the procurement methods by which contractors obtained their projects.

Table 4-3: Usage of different procurement methods

Procurement method	Public		Private	
	N	%	N	%
Traditional procurement system (Architect-led)	84	83%	61	60%
Negotiated	26	26%	40	40%
Design-build	9	9%	12	12%
Cost-plus	5	5%	16	16%
Construction management	2	2%	2	2%
Management contract	2	2%	2	2%
Turnkey	2	2%	1	1%

- **Public Sector**

  The findings in Table 4-3 suggest that 83% of the contractors had obtained their work via the traditional procurement method. Negotiated procurement method was the second most popular method with 26%. However, the respondents rarely used the other methods, with less than 10% of them reporting obtaining work using them. Watermeyer (2011), Mathonsi & Thwala (2009), Oshungade & Kruger (2015), Watermeyer (2011) and Mbanjwa (2003) concur with this finding that the traditional method is the mostly widely used procurement method.

- **Private sector**

  Table 4-3 suggests that the traditional procurement system was the predominant method, with 60% of the contractors having obtained their projects through it. The next most common method was the negotiated method 40% followed by cost plus at 16%. The other methods, namely construction management, management contracting and turnkey were not popular on private sector projects. The findings also indicate that the private sector was more flexible and open to utilizing a wider variety of procurement methods as Karna (2004) and Ling et al. (2013) suggested.

4.4.3. Level of client involvement

4.4.3.1. Procurement methods

Contractors were asked to indicate the frequency of client involvement when using different procurement methods. A 5-point Likert scale was used where 1=never, 2=seldom, 3=sometimes, 4=often and 5=always. The mean frequency levels of client involvement are tabulated in table 4-4

Table 4-4: Mean client involvement according to Contractors

Procurement method	Public	Private
Traditional procurement system (Architect-led)	3.42	4.12
Design-build	3.42	3.67
Negotiated	3.33	4.08
Construction management	3.36	3.10
Management contract	3.17	3.18
Turnkey	3.17	3.50
Cost-plus	2.87	3.80

- **Public sector**

  Evidently, contractors perceived public sector clients to sometimes be involved in most of the procurement methods. They reported client involvement to be most when using the traditional procurement system and design and build methods (mean=3.42 for both methods respectively). Client involvement was lowest in the cost-plus method (mean = 2.87). Although the findings in Table 4-4 indicate clients to be mostly involved when using the traditional procurement method, their involvement was not adequately high (mean<4.00) aligning with the findings of Assaf & Al-Hejji (2006) who found that clients' influence and involvement was reduced when using this method as the client depended on consultants. Due to the high exposure to risk when using the cost plus method, SACQSP (2016a) indicated that client involvement when using the cost plus method needed to be high which it clearly was not.

- **Private sector**

  It appears from Table 4-4 that the private sector client was generally more involved in their projects than the public sector. The contractors indicated that private sector clients were seen to be mostly involved when the traditional procurement system (mean=4.12) was used, followed by the negotiated method (mean 4.08). The other methods had neutral client involvement with lowest client involvement indicated to be when the management contracting method (mean 3.18) was used.

According to Oshungade and Kruger (2015), when utilizing the traditional procurement method, the client as project leader needs to be effectively and adequately involved in their project. When utilizing the design and build method, the client has limited control over design and the choice of specialist sub-contractors, as the contractor will be responsible for those, however this does not deter or lessen the need for client involvement as it is vital for project success (Ng & Yusof, 2006). Frequent client involvement was considered important for cost plus, construction management and management contracting methods because of the clients' high exposure to risk as there was no cost and programme

certainty (Davis et al., 2009; SACQSP (2016a). Interestingly, despite which procurement method is used, various authors concur frequent client involvement is essential for project success.

It is evident that, when compared to public sector clients, contractors perceived private sector clients to be more frequently involved in their projects when utilising the various procurement methods and this could be as a result of public clients heavily relying on consultants to manage their projects on their behalf whereas private sector clients were more hands-on. Furthermore, the slightly higher involvement by private clients could be attributed to their aggressive adaptation of alternative procurement methods (Jaafar and Nuruddin, 2012) as the level of overall client involvement in their projects has been linked to their experience level (Kamara et al. 2002 & Nutt, 2006).

4.4.3.2. Project phases

In this study, the group interval coefficient value was calculated as ***(5 - 1) / 5 = 0.80*** and the following intervals were taken as reference values in evaluating of the responses obtained through the implementation of the 5-point scale.

Table 4-5: Data Interpretation Range

Range	**5-point Likert Scale**		
	Frequency scale	Importance scale	Agreement scale
4.21 – 5.00	Always	Most important	Strongly agree
3.41 – 4.20	Often	Important	Agree
2.61 – 3.40	Sometimes	Neutral	Neutral
1.81 – 2.60	Seldom	Somewhat important	Disagree
1.00-1.80	Never	Least important	Strongly disagree

(Kan, 2009)

The range interpretations as shown in Table 4-5 are used throughout where 5-point frequency scales were used.

Contractors were requested to indicate the level of client involvement across each phase of a construction project using the 5-point scale where 1=never, 2=seldom, 3=sometimes, 4=often and 5=always. The analysis was conducted per project phase and each phase was broken down into several key individual tasks.

Reliability Test of the construction project phases

The Cronbach's alpha test was used to determine the consistency and reliability of the 5-point Likert scale pertaining to client involvement on the three project phases as shown in Table 4-6. The reliability test was done for each phase and the reliability coefficients are shown. Evidently, the

Cronbach's Alpha coefficient was consistently greater than 0.70 across the scales for all three project phases indicative of at least a "good" level of reliability and therefore the data was acceptable for further analysis.

Table 4-6: Summary of reliability test of construction project phases

Project phase	Public Sector		Private Sector	
	Cronbach's Alpha	Reliability	Cronbach's Alpha	Reliability
Pre-construction	0.894	Very good	0.889	Very good
Construction	0.874	Very good	0.839	Very good
Post-construction	0.894	Very good	0.798	Good

4.4.3.2.1. Pre-construction phase

Contractors were presented with 23 pre-construction phase tasks that related to client involvement. Their responses ranked by their mean scores are shown in Table 4-7.

Table 4-7: Level of client involvement in the pre-construction phase according to contractors

Pre-construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Contractor appointment	3.94	1.03	1	4.27	0.87	5
Negotiation of tender prices	3.76	0.96	2	4.11	0.92	9
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)	3.76	0.96	3	4.07	0.91	10
Estimation and approval of the project cost	3.76	1.02	4	4.23	0.84	7
Tender adjudication including clarification meetings	3.74	0.75	5	4.05	0.91	11
Developing project brief	3.74	0.97	6	4.34	0.96	3
Selection of consultant/professional team	3.74	1.05	7	4.34	0.86	2
Tendering (calling of tenders)	3.62	0.89	8	4.05	1.03	13
Estimation and agreement of the project duration	3.62	0.95	9	4.32	0.83	4
Preparation and application of environmental requirements	3.60	1.07	10	3.82	1.19	21
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.	3.59	0.89	11	4.02	1.07	12
Documentation for both principal and sub-contract procurement	3.45	1.00	12	4.23	0.94	8
Studying the impact of the project on health and safety	3.43	1.09	13	4.00	1.19	17
Studying the impact of the project on the environment	3.43	1.19	14	3.98	1.23	18
Construction planning	3.42	1.06	15	4.00	1.12	16
Provide the consultants with all the necessary information required for the project	3.38	1.02	16	4.23	0.77	6
Description of the roles and responsibilities of the contractor and consultants	3.29	1.06	17	3.75	1.12	23
Design development	3.29	1.12	18	3.93	1.04	20
Preparation and application of health and safety requirements	3.26	1.07	19	3.84	1.07	22
Review of drawings and specifications	3.24	1.23	20	4.34	0.75	1
Preparation of construction drawings	3.18	1.14	21	3.89	1.17	21
Preparation of schematic/preliminary designs	3.06	1.13	22	3.98	1.04	19
Monitor and guarantee design quality	3.00	1.08	23	4.02	1.07	14

- **Public sector**

  From Table 4-7 it is evident that the respondents perceived public sector clients to be sometimes involved in most of the pre-construction phase tasks (mean<3.4>2.61). They indicated that clients were mostly involved in the appointment of contractors (mean=3.94). Least client involvement was reported to be in monitoring and guaranteeing design quality (mean=3.00) and preparation of schematic/preliminary designs (mean=3.06). Appointment of the appropriate contractor is a very important factor influencing project success and the findings are consistent with what Charvat (2010) suggested, namely that clients should be actively involved in contractor selection so as to ensure their satisfaction with the contractor to be ultimately appointed. However, low client involvement during the design phase is a cause of concern as Fabricio et al. (1999) indicated that the design phase is crucial to every construction project and the client must be proactively involved during this task so as to limit design errors and variations (Aiyetan, 2010; Anderson et al., 2006). Furthermore, Chan et al. (2004) found that clients had great potential to contribute to design and therefore had to be actively involved.

- **Private sector**

  Table 4-7 suggests that contractors perceived private sector clients to be always involved in the selection of the professional team, reviewing drawings and specifications and developing of project brief (mean=4.34 for all tasks respectively). Whereas, the activities where client involvement was perceived to be the least (sometimes to often) were describing the roles and responsibilities of the project team (mean=3.75). ASCE (2012) indicated that some of the clients' key pre-construction roles in which the client must be actively and mostly involved in include forming the project team and assigning responsibilities. With that in mind, the fact that the findings suggest low client involvement in describing the roles of the project team could be contributing to the poor project performance.

Evidently, when compared to private sector clients, contractors perceived public sector clients to be more frequently involved in contractor appointments. The greater involvement by public sector clients in contractor appointments could be as a result of project objectives no longer being determined in terms of only the primary objectives of time, cost and quality, but secondary objectives as well (Mbanjwa, 2003). This therefore implies that contractor appointments are based on a number of factors which include, inter alia, employment creation for the upliftment of the socio-economic status of previously disadvantaged individuals (Mbanjwa, 2003, CIDB, 2004). As such, this calls for more involvement by public clients to ensure that additional objectives are adhered to (CIDB, 2004). Furthermore, frequent public client involvement in the appointment of contractors could probably be due to the need to comply with numerous regulations as public clients are subject to stringent

guidelines and procedures. The public client tended to be more involved in conducting tender adjudication to ensure that the most suitable contractor is appointed, taking into account all objectives considered important to the public sector.

On the other hand, when compared to public clients, contractors perceived private sector clients to be more frequently involved in reviewing drawings and specifications. This could be so as to ensure that the completed facilities satisfied emergent project requirements and served the purpose which they designed while also minimizing the possibility of revision drawings, which could have a negative impact on the cost and time factors of the project which could ultimately affect the profit margins. Furthermore, the private sector was viewed as being frequently involved in the selection of the consultant/professional team to possibly ensure that the appropriate consultants with the expertise and capabilities are appointed to act on behalf of the client. When compared with public sector clients, private clients were more involved in the preparation of the project brief, indicative that private clients were more aware of the importance and the benefits of a clearly defined brief.

4.4.3.2.2. Construction phase

Contractors were presented with 14 construction phase tasks that relate to client involvement in the construction phase. Their responses ranked by their mean scores are shown in Table 4-8

Table 4-8: Level of client involvement in the construction phase according to contractors

Construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Making payments to contractors for work done	3.62	1.30	1	4.49	0.74	1
Attending site handover meetings	3.59	0.89	2	4.34	0.81	2
Attending progress meetings	3.46	0.91	3	4.11	0.90	6
Management and inspection of the site	3.36	0.91	4	4.08	0.79	8
Monitoring health and safety principles during project implementation.	3.34	1.04	5	4.12	0.93	5
Monitoring environmental management principles during project implementation.	3.27	1.13	6	3.85	1.01	13
Interpretation and clarification of ambiguities in the contract documents and drawings.	3.26	1.16	7	3.83	1.11	14
Dispute resolution	3.25	1.14	8	4.00	0.88	11
Selection of materials	3.22	1.20	9	4.01	0.98	10
Conducting quality checks	3.21	1.12	10	4.18	0.86	4
Giving input into the project program	3.20	1.00	11	3.99	0.98	12
Making decisions quicker about design changes or variations	3.13	1.06	12	4.18	0.80	3
Attending technical meetings	3.11	1.14	13	4.04	1.17	9
Sub-contractor appointments	2.96	1.11	14	4.09	0.98	7

- **Public sector**

  It appears from Table 4-8 that contractors perceived public sector clients tending to be sometimes involved in most of the tasks of the construction phase (mean<3.4>2.61). Although clients were mostly involved in making payments to contractors (mean=3.62), their involvement was not adequate and this somewhat low level of involvement especially in payment related matters could impede project success as late payments to the contractor could cripple the cash-flow of contractors. CIDB (2007a) highlighted that payment procedures by clients to contractors have improved quite significantly, albeit, in some instances payments were delayed longer than 90 days. The activity where public client involvement was perceived to be the least (seldom to sometimes) was in the appointment of sub-contractors (mean=2.96). This finding is understandable as clients only get involved with appointing sub-contractors if they are either nominated or direct sub-contractors. In all other instances contractors make these appointments.

- **Private sector**

  From Table 4-8 it is evident that private sector clients were often involved in most of the construction phase tasks (mean<4.20>3.41). Making payments to contractors (mean=4.49) and attending to site handover meetings (mean=4.34) had the most client involvement. Whereas, interpreting and clarifying on contract ambiguities (mean = 3.83) and monitoring environmental management principles during project implementation (mean=3.85) had the least client involvement. CIDB (2007a) concurs with this finding as they found that client payments to contractors have improved significantly. Low client involvement in clarifying contract ambiguities is a cause of concern as it could negatively impact project outcomes such as construction delays.

When compared to private sector clients, contractors perceived public sector clients to be more involved in attending progress meetings and management and inspection of the site. The generally high level of public client involvement in these activities could be an indication that public clients needed to be aware of the project status to enable them to promptly make decisions or recommendations as and when necessary. The public sector was also more involved in monitoring environmental management principles during project implementation possibly because of the need for the public sector to adhere strictly and rigidly to the various regulatory frameworks for public projects. On the other hand, when compared to public clients, private clients were more involved in conducting quality checks. This could be an indication that the private sector was more concerned about the quality and aesthetics of their projects and tended to be more reluctant to compromise on these aspects. Additionally, the generally high levels of client involvement in conducting quality checks could be as a result of the private sector being reportedly far less satisfied with the quality of work

delivered than the public sector client (CIDB, 2011). Private clients were also more involved in prompt decision-making pertaining to design changes or variations. This could be because they were cognizant about the importance of taking such actions to avoid or minimize negative project consequences such as delays and cost overruns, in the process enhancing the possibility of maximizing profits.

4.4.3.2.3. Post-construction phase

Contractors were presented with 10 post-construction phase tasks that relate to client involvement. Their responses ranked by their mean scores are shown in Table 4-9

Table 4-9: Level of client involvement in the post construction phase according to contractors

Post-construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.	3.67	1.00	1	4.32	0.65	1
Release of retentions where applicable	3.58	1.12	2	4.11	0.89	7
Release of guarantees and securities	3.53	0.98	3	4.30	0.77	2
Final account settlement	3.45	1.15	4	4.20	0.87	5
Establishment of criteria for acceptance of completed project	3.41	0.92	5	4.14	0.83	6
Record the warranties and certificates information	3.38	1.16	6	3.95	1.08	10
Issuing of certification acknowledging completion of the works	3.35	0.95	7	4.24	0.85	3
Input into project review and close out report	3.32	1.10	8	4.10	1.08	7
Contribute to compiling snagging or defects list	3.23	0.97	9	4.09	0.93	8
Input into development of maintenance plan	3.21	0.99	10	4.03	0.97	9

- **Public sector**

  It appears from Table 4-9 that contractors perceived public sector clients to be sometimes involved (mean<3.4>2.61) in half of the tasks of the post construction phase and often involved (mean<4.20>3.41) in the balance of the tasks. During this phase, clients were mostly involved in monitoring the process of testing and commissioning of all systems, plant and equipment in the project (mean=3.67), releasing retentions (mean=3.58) and releasing guarantees and securities (mean=3.53). On the other hand, the activities with the least client involvement were giving input into the development of maintenance plan (mean=3.21) and contributing to compiling a defects list (mean=3.21). Releasing retentions and securities can affect project success as these may cripple his cash-flow. The somewhat frequent client involvement in monitoring the process of testing and commissioning of completed facilities could be to ensure the proper functioning of the facilities and to minimize the possibility of any rework. Low client involvement in the development of the maintenance plan and contributing to the compilation of the defects list could possibly hinder project success by delaying project completion (Alsolaiman, 2014).

- **Private sector**

  From table 4-9 it is evident that clients were often involved (mean<4.20>3.41) in most of the post construction tasks. Monitoring the process of testing and commissioning of all systems, plant and equipment in the project (mean=4.32) and releasing guarantees and securities (mean=4.30) had the most client involvement. Recording warranties and certification information had the least client involvement (mean=3.95). Considering that recording warranties entails formulating the terms of refunding, repairing, or replacement of defective or unsatisfactory facility components, low client involvement in this activity is a cause of concern as it could result in compromising facility quality.

Evidently, contractors perceived both client sectors to be most concerned about monitoring the process of testing and commissioning of all systems, plant and equipment in the project. This could be to ensure proper functioning of the completed facilities and that the facilities were serving the purpose for which they were designed and built. The private sector client was perceived to be slightly more involved during the post construction phase when compared to the public sector client.

When compared to the private sector, contractors considered public sector clients to be more frequently involved in the release of retentions, this could probably be because public funding or expenditure is audited per financial period and any funds not expended within the allocated period would be returned to treasury. To have such funds released could follow long procedures and timeframes, and hence frequent client involvement in this activity.

When compared to public sector clients, private sector clients were more involved in issuing of certification acknowledging completion of the works. This could be probably to enhance prompt handover of the completed facilities once the client was satisfied with the outcome, as project duration is an important factor to private clients.

4.4.3.2.4. Mean client involvement per project phase

The mean ranking by contractors of client involvement in each phase is illustrated in Table 4-10.

Table 4-10: Mean client involvement per project phase according to contractors

Project Phase	Public	SD	Rank	Private	SD	Rank
Pre-construction	3.49	0.56	1	4.08	0.55	3
Post construction	3.41	0.74	2	4.14	0.54	1
Construction	3.28	0.68	3	4.10	0.54	2

- **Public sector**

  It is evident from Table 4-10 that contractors perceived public sector clients to be often involved (mean<34.20>3.41) in 2 of the 3 project phases, with the highest involvement in the pre-construction phase (mean=3.49). Undoubtedly, as suggested by Boton (2011) the pre-construction phase involves taking all necessary measures to ensure that the construction phase is efficiently undertaken and therefore calls for high client involvement. These findings align with those of Sivunen (2015) who highlighted on the need for high client involvement during the pre-construction phase. The generally neutral (mean<4.00) level of client involvement is a cause of concern as client involvement has been cited as an important contributing factor to the success or failure of construction projects (Boyd & Chinyio, 2006; Ryd, 2014).

- **Private sector**

  It appears from Table 4-10 that contractors perceived private sector clients to be often involved across all three project phases (mean<4.20>3.41), with the highest client involvement during the post-construction phase (mean=4.14). Alsolaiman (2014) found that the post construction phase facilitates project acceptance by the client and is crucial for facility operation success, therefore this high client involvement could foster client satisfaction and project success. The construction phase has the second highest level of client involvement (mean=4.10) and these findings are contrary to the findings of a study conducted by (Bubshaite and Al-musaid, 1992 cited in Alsolaiman, 2014), which found that it was during the construction phase that the client was mostly involved in the project. However, APUC (2012) found that client involvement during the construction phase generally declines as much of the responsibilities are transferred to consultants and the contractor, indicating that the pre-construction phase has higher client involvement when compared to the construction phase. Noteworthy to mention is that the consultants perceived the private sector client to be more involved in their projects when compared with the public sector client.

Contractors perceived the private sector client to be more involved in their projects when compared with the public sector client. The difference in involvement between the client sectors could be attributed to the fact that most private sector clients, such as, for example, property developers have vast experience of the building process Kamara et al. (2002) and as such are aware of the construction process and therefore are aware of their need to be adequately involved in their projects. Furthermore, frequent private client involvement could be because they were aware of the importance of their involvement in influencing project outcomes. One the other hand, lower client involvement by public clients could probably be because they tended to overly rely on the consultant team to perform their duties on their behalf.

4.4.3.3. Importance of client involvement during different project phases

Respondents were required to identify which project phase they considered to be the most important for client involvement. A 5-point scale of importance was used where 1=least important, 2=somewhat important, 3=neutral, 4=important and 5=most important. This would help in identifying the phase which the respondents perceived to require the most attention to ensure successful project delivery. The results are tabulated in table 4-12.

Table 4-11: Importance of construction project phases according to contractors

Project phase	Mean
Pre-construction	4.41
Post construction	3.98
Construction	3.96

The results in Table 4-12 indicate that contractors considered client involvement to be most important during the pre-construction phase (mean=4.41). The post-construction (mean=3.98) and construction (mean=3.96) phases were regarded as important. (Boton, 2011) indicated that the pre-construction phase was a very critical and significant phase of any construction project. Furthermore, Sivunen (2015) highlighted the need for greater client involvement during the pre-construction phase indicating the importance of this phase.

4.4.3.4. Ranking of contractors' view on client involvement

Reliability Test of client involvement statements

The Cronbach's Alpha test was used to determine the consistency and reliability of the 5-point Likert scale pertaining to the constructs for client involvement on their projects. It is evident from Table 4-13 that the Cronbach's Alpha coefficient was 0.849 which was indicative of a "very good" level of reliability. Overall, the data was found to be reliable and accepted for further analysis

Table 4-12: Summary of reliability test of client involvement

Construct	Cronbach's Alpha	Reliability
Overall	0.846	Very good

Contractors were presented with a series of statements within four constructs about client involvement on their projects and they were requested to indicate to what extent they either agreed or disagreed

with them. A 5-point scale was used where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The results are shown in table 4-14

Table 4-13: Client involvement according to contractors

Statement	Mean	S D	Rank
Client roles and involvement	**4.38**		
The lack of client understanding of the construction process contributes to unsuccessful project delivery	4.52	0.75	1
Appropriate client involvement is beneficial to the project	4.49	0.63	2
The lack of adequate client involvement in their projects leads to numerous problems encountered across the project lifecycle such as disputes, time and cost overruns, etc	4.45	0.52	3
Dealing with experienced clients is better than dealing with those that are inexperienced	4.40	0.73	4
The success of a project is linked to the extent of client involvement and client control in their projects	4.34	0.77	5
Client interference is a hindrance to project success	4.33	0.94	6
Expert and experienced clients play a more active role in their projects	4.32	0.73	7
Clients experience more satisfaction and product quality when involved in their projects	4.28	0.62	8
Construction clients understand their roles and responsibilities and adequately perform them	4.23	1.04	9
Contractor perceptions	**4.33**		
Delays in payments by clients contributes to negative project consequences	4.45	0.68	1
Prequalification of contractors is essential to ensure project success	4.40	0.66	2
Contractors strive to fulfill client satisfaction	4.32	0.67	3
Client satisfaction is essential to securing client loyalty and retention	4.26	0.73	4
Clients tend to delay payments due to the contractors	4.19	0.96	5
Procurement	**4.34**		
Clients tend to choose the procurement method which they are familiar with, which might not necessarily be the best	4.46	0.63	1
It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method	4.42	0.64	2
Clients must retain authority to exercise maximum control of the procurement process	4.40	0.88	3
The selection of an inappropriate procurement method can have a major impact on project success	4.38	0.76	4
Clients should have the right to choose the procurement method they want to use	4.29	0.88	5
Clients' understanding of the procurement process influences the level of their involvement on construction projects	4.24	0.85	6
Clients are adequately involved during the procurement stage	4.21	0.95	7
Project stakeholder relations	**4.40**		
Adequate client knowledge of construction projects influences teamwork and collaboration	4.45	0.75	1
Trust, honesty and cooperation by clients is vital for successful project delivery	4.40	0.73	2
Greater involvement of clients in their projects will change the current adversarial construction environment	4.37	0.72	3

4.4.3.4.1. Client roles & involvement

Evidently, from Table 4-14 the respondents regarded the lack of client understanding of the construction process to be contributing factor to unsuccessful project delivery (mean=4.52). Although they strongly agreed (mean<5.00>4.21) with all the statements under this construct, they agreed to a lesser extent that construction clients understood their roles and responsibilities and adequately performed them (mean=4.23). This low ranking of clients' understanding of their roles could be attributed to the view that clients' understanding of the construction process was varied, the variance largely emanating from industry experience (Boyd and Chinyio, 2006), with experienced clients understanding their roles more.

4.4.3.4.2. Contractor perceptions

It appears from Table 4-14 that contractors strongly agree that delays in payments by clients contributed to negative project consequences (mean=4.45). They however least agreed with the statement that clients tended to delay such payments (mean=4.19). This finding aligns with that of Aiyetan (2010) who found that the lack of prompt payment to contractors had negative consequences on the project, such as time and cost overruns

4.4.3.4.3. Procurement

Table 4-14 suggests that while contractors strongly agreed with all of the statements (mean<5.00>4.21) under this construct, they however agreed most with the fact that clients were biased in the selection of the appropriate procurement method as they tended to choose the procurement method they were most familiar with (mean=4.46). They also agreed that it was fundamentally important for clients to obtain appropriate advice on the choice of procurement method (mean=4.42). On the other hand, they agreed least with the fact that clients were adequately involved during the procurement stage (mean=4.21). The findings of Laedre et al. (2006) on the choice of procurement methods align with those of this study as it was found that habitual behaviours and resistance to change influenced construction clients to select the procurement methods they are familiar with, which may not necessarily be the most appropriate method. Furthermore, since both client sectors predominantly utilised the traditional method, it could be because they were not well informed about the other procurement methods and therefore contractors perceived that clients needed appropriate advice on the choice of procurement method to use.

4.4.3.4.4. Project stakeholder relations

It appears from Table 4-14 that the respondents strongly agreed with all of the statements (mean<5.00>4.21) under this construct. They however strongly agreed with that adequate client knowledge of construction projects influences teamwork and collaboration (mean=4.45). This could be because when a client is knowledgeable about the construction process, they are less likely to interfere in the project.

4.4.3.4.5. Summary of constructs relating to client involvement

Table 4-15 is a summary of the responses to the constructs relating to client involvement in order of importance from the perspective of contractors.

Table 4-14: Summary of constructs relating to client involvement according to contractors

Construct	Mean	S D	Rank
Project stakeholder relations	4.40	0.55	1
Client roles and involvement	4.38	0.40	2
Procurement	4.34	0.48	3
Contractor perceptions	4.33	0.48	4

It is evident from Table 4-15 that the respondents perceived all constructs to be extremely important for project success (mean<5.00>4.21), with project stakeholder relations viewed as the most important (mean=4.40).This could be attributed to the fact that the procurement method prevalent within the construction industry especially in Africa was the traditional architect-led method Oshungade and Kruger (2015), Watermeyer (2011) and Mbanjwa (2003), which has been linked to the adversarial construction environment (Kadefors, 2001), no doubt the emphasis and priority placed on trust, co-operation and shared understanding by the respondents.

4.5. Consultants' Survey

Although this study seeks to determine the effectiveness of client involvement based on the views of contractors, consultants were also surveyed in order to get an alternative perspective of client involvement in their projects. Additionally, the views of consultants were important in validating those of contractors.

4.5.1. Consultant profile

The consultant sample was made up of architects, quantity surveyors, construction managers, project managers, civil/structural engineers, electrical engineers and mechanical engineers. Architects and quantity surveyors represented more than half the sample (58%). Consultants had worked in the construction industry for between 1 and 45 years with the median years of experience being 9 years. These findings are presented in Table 4-16

Table 4-15: Number of years in industry

Years range	Frequency	%
< 5 years	4	24%
6 – 10 years	7	41%
11 – 15years	0	0%
16 – 20 years	3	18%
> 20 years	3	18%

The more the number of years in the industry, the more experienced an individual is expected to be (Alsolaiman, 2014). Experienced individuals have acquired a wide range of knowledge, understanding and application of the methods and techniques involved across the project cycle and this experience impacts positively in the respondents' judgement about client involvement in a project.

4.5.2. Procurement methods in current use

Table 4-17 presents the procurement methods which the respondents had indicated as having used on the projects they were involved in.

Table 4-16 Usage of different procurement methods

Procurement method	Public		Private	
	N	%	N	%
Traditional procurement system (Architect-led)	14	74%	13	68%
Design-build	3	16%	6	32%
Construction management	2	11%	5	26%
Management contract	2	11%	2	11%
Turnkey	2	11%	3	16%
Negotiated	2	11%	3	16%
Cost-plus	2	11%	3	16%

- **Public Sector**

  From Table 4-17 it is evident that public sector clients predominantly utilized the traditional procurement (Architect-led) method (74%), with the next common method being design and build (16%). The other methods, namely construction management, management contracting, turnkey,

negotiated and cost-plus were not popular on public projects. These findings align with the findings of Watermeyer (2011) that the traditional procurement system (Architect-led) is prevalent in most countries in Sub-Saharan Africa. The adversarial construction environment, which is mostly attributed to the traditional procurement system (Architect-led), can therefore be one of the causes of inefficient project delivery.

- **Private sector**

Table 4-17 suggests that the private sector client predominantly utilized the traditional procurement system (Architect-led) 68% with the next most common method being design and build (32%) followed by construction management at 26%. The findings are consistent with those of Jaafar and Nuruddin (2012) who found that the private sector was more aggressive in adapting alternative procurement methods such as the design and build which potentially allow for greater and earlier client involvement.

4.5.3. Level of client involvement

4.5.3.1. Procurement methods

Consultants were asked to indicate the frequency or level of client involvement in different procurement methods from their experience. A 5-point scale was used where 1=never, 2=seldom, 3=neutral, 4=often and 5=always. The mean levels of client involvement are tabulated in Table 4-18.

Table 4-17: Client involvement according to consultants

Procurement method	Public	Private
Design-build	4.75	4.67
Traditional procurement system (Architect-led)	4.18	4.36
Construction management	4.00	4.25
Management contract	4.00	3.75
Turnkey	3.67	4.25
Negotiated	3.67	4.25
Cost-plus	3.00	3.50

- **Public sector**

It appears from Table 4-18 that consultants considered clients to be always involved in the design and build method (mean=4.75) and the traditional procurement system (Architect-led) (mean=4.18). Least client involvement was recorded for the cost-plus method (mean=3.00).The generally low level of client involvement when utilizing the cost plus method is a cause of

concern as most of the risk is borne by the client (SACQSP, 2016a) and as such client involvement is expected to be greater.

- **Private sector**

  It is evident from Table 4-18 that the procurement method in which the respondents perceived the clients to be frequently involved in was the design and build (mean=4.67), followed by the traditional procurement system (mean=4.36) and construction management (mean=4.25) respectively. Least client involvement was indicated to be for the cost-plus method (mean=3.50).

The findings suggest that private sector clients were slightly more involved in their projects than the public sector client. This could be attributed to the fact that private sector clients have generally more flexibility and aggression in utilizing alternative procurement methods, thereby implying that they have the experience in utilizing them (Jaafar and Nuruddin, 2012). This assertion aligns with that of Nutt (2006) who highlighted that the more experienced a client is, the more involved in their projects they would be.

4.5.3.2. Construction project phases

Consultants were requested from their experience to indicate the level of client involvement across each phase of a construction project using the 5-point scale where 1=never, 2=seldom, 3=sometimes, 4=often and 5=always.

Reliability Test of the construction project phases

Cronbach's alpha test was used to determine the consistency and reliability of the 5-point Likert scale pertaining to client involvement on the three project phases as shown in Table 4-19. The reliability test was done for each phase and the reliability coefficients are reported. Evidently, the Cronbach's Alpha coefficient was consistently greater than 0.70 across the scales for all three project phases indicative of at least a "good" level of reliability and therefore acceptable

Table 4-18: Reliability of scales used for client involvement

Project phase	Public Sector		Private Sector	
	Cronbach's Alpha	Reliability	Cronbach's Alpha	Reliability
Pre-construction	0.925	High	0.915	High
Construction	0.947	High	0.817	Very good
Post-construction	0.899	Very Good	0.702	Good

4.5.3.2.1. Pre-construction phase

Consultants were presented with 23 pre-construction phase tasks that related to client involvement. Their responses ranked by their mean scores are shown in Table 4-20

Table 4-19: Level of client involvement in the pre-construction phase according to consultants

Pre-construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Tendering (calling of tenders)	4.18	0.88	1	4.00	0.93	17
Estimation and approval of the project cost	4.18	0.88	1	4.69	0.48	1
Contractor appointment	4.18	1.07	3	4.69	0.60	2
Developing project brief	4.18	1.13	4	4.56	0.63	3
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.	4.06	0.97	5	4.25	0.68	6
Tender adjudication including clarification meetings	4.06	1.03	6	4.00	1.07	18
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)	4.06	1.09	7	4.15	0.81	9
Review of drawings and specifications	3.88	1.27	8	4.27	0.70	5
Documentation for both principal and sub-contract procurement	3.82	1.07	9	3.93	0.96	19
Monitor and guarantee design quality	3.81	0.98	10	4.13	0.96	10
Preparation and application of environmental requirements	3.76	1.03	11	4.00	0.85	16
Preparation and application of health and safety requirements	3.76	1.14	12	3.73	0.88	22
Studying the impact of the project on health and safety	3.75	1.00	13	3.88	0.96	21
Estimation and agreement of the project duration	3.71	0.92	14	4.19	0.83	8
Design development	3.71	0.92	15	4.25	0.86	7
Construction planning	3.71	1.05	16	4.12	0.62	12
Provide the consultants with all the necessary information required for the project	3.65	1.11	17	4.13	0.96	10
Studying the impact of the project on the environment	3.59	1.18	18	4.00	0.82	15
Selection of consultant/professional team	3.59	1.54	19	4.38	0.88	4
Preparation of schematic/preliminary designs	3.50	1.26	20	3.93	1.28	20
Description of the roles and responsibilities of the contractor and consultants	3.47	1.18	21	4.06	0.93	13
Negotiation of tender prices	3.35	1.37	22	4.06	0.93	14
Preparation of construction drawings	3.13	1.36	23	3.80	1.32	23

- **Public sector**

  From Table 4-20 it is evident that the consultants perceived public sector clients to be involved mostly in tendering, estimation and approval of the project cost, contractor appointment and developing of project brief (mean=4.18 for all four activities). Whereas, the activities where client

involvement was perceived to be the lowest (neutral to often) were during the preparation of construction drawings (mean=3.13), negotiation of tender prices (mean=3.35) and describing the roles and responsibilities of the project team (mean=3.47). Low client involvement during the early project phases gives rise to numerous problems which could hinder project success and these problems include but are not limited to design errors and numerous variations (Aiyetan, 2010; Anderson et al., 2006).

- **Private sector**

  Table 4-20 suggests that consultants perceived private sector clients to be frequently involved (always) in estimation and approval of the project cost (mean=4.69), contractor appointment (mean=4.69) and developing of project brief (mean=4.56). Whereas, the activities where client involvement was perceived to be the least (neutral to often) are the preparation and application of health and safety requirements (mean=3.73), preparation of construction drawings (mean = 3.80) and studying the impact of a project on health and safety (mean=3.88). Despite the great emphasis placed on the client to be primarily and explicitly responsible for H&S on their construction projects, the results indicate otherwise with clients being least involved in H&S tasks (Government Gazette, 2010).

Reportedly, both client sectors were mostly involved in the estimation and approval of the project budget, indicating that they were concerned about preventing cost overruns and the associated delays and potential for disputes. This is consistent since the traditional method was the found to be the mostly used method, as one of the key features of the traditional method is that it is based on a predetermined estimate (SACQSP, 2016b). Furthermore, as asserted by Doren and Briders (2005) early indication of the final project cost at the start of the project is requested by clients.

When compared to the private sector, consultants perceived public sector clients to be more frequently involved in calling for tenders. Typically public sector clients had to ensure that certain provisions have been made in their tender documents since the construction procurement process must follow and comply with very specific procedures Gould & Joyce (2014) such as the preferential procurement policies in South Africa. The private sector on the other hand is not obliged to adhere to those procedures. Likewise, public sector clients are frequently involved in the adjudication process as they might have to ensure that the tenderer to be ultimately appointed would satisfy all the requirements and objectives as deemed important within the public sector. Additionally, as earlier highlighted under the client survey, consultants also perceived public clients to be more involved in the health and safety aspects of a project and this could be because the public client is more mandated to adhere to the various regulatory frameworks.

Considering the fact that the majority of private sector clients advertised their proposed finished products for sell or rentals during the early project phases, the estimation and agreement of the project duration is consequently of paramount importance and requires frequent client involvement. Furthermore, when compared to public clients, consultants perceived private sector clients to be frequently involved in design development to avoid rework and the possibilities of time and cost overruns. Private sector clients were more involved in negotiation of tender prices when compared to public sector clients. This could be due to any deviations from the traditional procurement method within the public sector having to be justified and subjected to multiple levels of approvals failing which accusations of collusion, fraud and/or corruption may be levelled. Additionally, since client loyalty and repeat business are common to the private client (CIDB 2011a), both the client and contractor stand to benefit from negotiations and therefore the need for frequent client involvement by the private sector in this activity.

4.5.3.2.2. Construction phase

Consultants were presented with 14 tasks of the construction phase that relate to client involvement. Their responses ranked by the means are shown in Table 4-21

Table 4-20: Level of client involvement in the construction phase according to consultants

Construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Attending site handover meetings	4.12	0.99	1	4.50	0.82	2
Attending progress meetings	3.94	0.83	2	4.19	0.66	6
Making payments to contractors for work done	3.88	1.05	3	4.44	1.04	3
Conducting quality checks	3.76	0.98	14	4.06	0.85	10
Interpretation and clarification of ambiguities in the contract documents and drawings.	3.75	1.00	4	4.33	0.62	4
Making decisions quicker about design changes or variations	3.75	1.06	5	4.50	0.63	1
Dispute resolution	3.65	1.06	6	4.25	0.58	5
Management and inspection of the site	3.65	1.15	7	4.18	0.91	8
Sub-contractor appointments	3.56	1.21	8	3.93	1.16	12
Attending technical meetings	3.47	1.23	9	4.13	0.62	9
Giving input into the project program	3.35	1.22	10	4.19	0.98	7
Monitoring environmental management principles during project implementation.	3.29	1.16	11	3.69	1.01	14
Monitoring health and safety principles during project implementation.	3.29	1.10	12	3.88	0.89	13
Selection of materials	3.24	1.14	13	4.00	0.63	11

- **Public sector**

  Table 4-21 indicates that the respondents perceived public sector clients to be often involved (mean<4.20>3.41) in most of the construction phase tasks, with the most involvement being in

attending site handover meetings (mean=4.12). Their level of involvement in the remainder of the tasks was neutral, with the least involvement being in the selection of the materials (mean=3.24), monitoring H&S principles and monitoring environmental management principles (means=3.29 for both tasks respectively. The findings suggest low client involvement on H&S tasks which is a cause of concern as Lopes et al., (2011) indicated that clients as project owners employed others to perform all construction-related activities on their behalf, and therefore they needed to be more involved to cater for the wellbeing of all involved.

- **Private sector**

  Table 4-21 shows that consultants perceived private sector clients to be frequently involved in attending site handover meetings and making decisions quicker about variations (means=4.50 for both tasks respectively). The activities where client involvement was perceived to be the least are (neutral to often) monitoring H&S principles (mean=3.88) and monitoring environmental management principles (mean=3.69). These findings are consistent with those of CIDB (2014) which indicated that contractors were satisfied with the prompt management of variation orders by 76% private sector clients they surveyed. On the contrary, low client involvement in monitoring environmental principles is a cause of concern as the contractor could inadequately adhere to the management plan this could negatively affect the project.

When compared to private sector clients, consultants perceived public sector clients to be more frequently involved in attending progress meetings. This could be because the public clients would want to be aware of any issues arising and if those issues would have any additional cost implications so that if need be, funds can be requested from the government promptly as the sourcing and granting of such funds could involve lengthy periods.

On the other hand, private sector clients were most concerned about making decisions quicker about design changes or variations. Prompt decision making regarding variation orders by the private sector client could minimize the consequences of inadequate project delivery such as cost and time overruns. This assertion is backed by the findings of a study conducted by Endut, et al. (2005) which indicated that fewer private sector projects experienced time overruns when compared to public projects.

4.5.3.2.3. Post-construction phase

Respondents were presented with 11 tasks of the post-construction phase that related to client involvement. Their responses ranked by the means are shown in Table 4-22

Table 4-21: Level of client involvement in the post construction phase according to Consultants

Post-construction phase	Public			Private		
	Mean	SD	Rank	Mean	SD	Rank
Establishment of criteria for acceptance of completed project	4.19	0.83	1	3.93	1.03	8
Release of guarantees and securities	4.06	0.85	2	4.06	0.77	4
Record the warranties and certificates information	4.00	0.82	3	4.06	0.77	4
Input into project review and close out report	4.00	0.94	4	4.31	0.87	1
Release of retentions where applicable	3.94	0.90	5	4.12	0.72	3
Issuing of certification acknowledging completion of the works	3.88	1.05	6	4.20	0.77	2
Contribute to compiling snagging or defects list	3.71	1.05	8	3.88	0.96	10
Input into development of maintenance plan	3.76	0.75	9	3.88	0.50	9
Final account settlement	3.65	1.06	10	4.06	0.85	6
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.	3.65	1.06	11	4.00	0.75	7

- **Public sector**

  After ranking the means of the respondents' responses, establishment of acceptance criteria of completed project (mean=4-22) and releasing of guarantees and securities (mean=4.06) were rated as the tasks with high client involvement. Monitoring the process of testing and commissioning of all systems, plant and equipment in the project and final account settlement (mean=3.65 for both task respectively) were rated as the tasks with least client involvement. Testing of the completed project requires high client involvement to ensure the final product is free from defects, as CIDB (2011) reported that around 12% of completed projects surveyed had levels of defects which were regarded as inappropriate.

- **Private sector**

  The results in table 4-22 show that consultants perceived private sector clients to be always involved in providing input into project review (mean=4.31) and close out report (means=4.20). The activities where client involvement was perceived to be the least (sometimes to often) were contributing to compiling a defects list and giving input into development of maintenance plan (mean=3.88 for both tasks). Both the tasks which are ranked low affect project quality and success.

When compared to the private sector, consultants perceived public sector clients to be more frequently involved in establishing the acceptance criteria of completed projects. This could be because the public client would want the completed facilities to be as per the prescribed criteria to enhance smooth handover of the facilities to the end user.

Evidently, private sector clients were more involved in providing input into project review and close out report. Since the close out report formally closes the project and transfers the project to the client,

and ensures successful project completion and documenting of lessons learned and best practices (CDC, 2006), it is likely that private clients were more frequently involved in this activity than public sector clients. Additionally, the private sector was generally more involved in monitoring the process of testing and commissioning the facilities because the private sector client was likely more concerned about the quality and proper functioning of the completed facilities as any rework could have a major cost implication on the client and it could result in loss of returns.

Noteworthy to mention is that the activities which were ranked highly by both client sectors were factors linked to the overall project quality. The importance placed on project quality as highlighted in this study aligns with the findings of CIDB (2011) which found that value and quality of construction projects is of concern to both public and private sector clients.

4.5.3.2.4. Mean client involvement per project phase

The mean ranking of client involvement in each phase is illustrated in table 4-23.

Table 4-22: Mean client involvement per project phase according to consultants

Project Phase	Public	Rank	Private	Rank
Post construction	3.88	1	4.41	1
Pre-construction	3.77	2	4.27	2
Construction	3.58	3	4.16	3

- **Public sector**

  The respondents perceived clients to be involved most during the post construction phase (mean=3.88). This finding is consistent with that of Alsolaiman (2014) as he indicated that the handover phase had the highest client involvement. However, considering that the post construction phase facilitates project acceptance by the client upon completion and that all tasks within this phase are very crucial for facility operation success (Ibid), client involvement was not sufficiently high (mean<4.20) and this could be one of the factors inhibiting successful project delivery. Furthermore, it is important to note that the mean client involvement across all three project phases was often (mean<4.20>3.41) and this is a cause of concern as client involvement has been cited as an important contributing factor to the success or failure of construction projects (Boyd & Chinyio, 2006; Ryd, 2014).

- **Private sector**

  It appears from Table 4-23 that respondents perceived private sector clients to be always involved across all three project phases (mean<5.00>4.20), with the highest client involvement during the post-construction phase (mean=4.41). Alsolaiman (2014) found that the post construction phase

facilitates project acceptance by the client and is crucial for facility operation success, hence the high client involvement could foster client satisfaction and project success. The construction phase has the second highest level of client involvement (mean=4.27) and these findings align with what Boton (2011) indicated namely that the pre-construction phase is a very crucial and significant phase in the construction project life cycle.

Consultants perceived the private sector client to be more involved in their projects (mean>4.20) when compared with the public sector client (mean<4.20). This could be due to the fact that private sector clients funded their own projects whereas public projects were funded using government funds (Masterman, 2002), resulting in private clients being more inclined to safeguard their investments. Furthermore, there is a possibility that private sector clients believed that there was a link between their level of involvement and project success and also perceived frequent involvement to contribute to the attainment of expected standards of quality

4.5.3.3. Importance of client involvement during different project phases

Respondents were required to identify which project phase they considered to be the most important for client involvement. A 5-point scale was used where 1=least important, 2=somewhat important, 3=neutral, 4=important and 5=most important. This would help in identifying the phase that clients perceive to require the most attention to ensure successful project delivery. The results are tabulated in table 4-24

Table 4-23: Importance of construction project phases according to Consultants

Project phase	Mean
Pre-construction	4.79
Post construction	4.00
Construction	3.84

The results in Table 4-24 indicate that consultants considered client involvement to be extremely important during the pre-construction phase (mean=4.79). The second most important phase for client involvement is the post construction phase (mean=4.00), with the construction phase being the least important (mean=3.84). Boton (2011) concurs with these findings as he indicated the importance of the pre-construction phase citing that it is a very crucial and significant phase of any construction project. On the other hand, the findings are in contrast with those of Alsolaiman (2014) who indicated that the post construction phase was the most important phase for client involvement.

4.5.3.4. Ranking of consultants' view on client involvement

Reliability Test of client involvement statements

The Cronbach's Alpha test was used to determine the consistency and reliability of the 5-point Likert scale pertaining to the constructs for client involvement on their projects. It is evident from Table 4.22 that the Cronbach's Alpha coefficient was 0.849 which indicates a "very good" level of reliability. Overall, the data was found to be reliable and accepted for further analysis.

Table 4-24: Reliability of scales used for client involvement

Construct	Cronbach's Alpha	Reliability
Overall	0.849	Very good

Consultants were presented with four constructs about client involvement on their projects and were requested to indicate to what extent they either agreed or disagreed with them. A 5-point scale was used where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The results are shown in Table 4-26.

Table 4-25: Client involvement according to consultants

Statement	Mean	S D	Rank
Client roles and involvement	**4.14**		
Dealing with experienced clients is better than dealing with those that are inexperienced	4.39	0.50	1
Appropriate client involvement is beneficial to the project	4.33	0.59	2
The lack of adequate client involvement in their projects leads to numerous problems encountered across the project lifecycle such as disputes, time and cost overruns, etc	4.24	1.03	3
Construction clients understand their roles and responsibilities and adequately perform them	4.11	0.68	4
Client interference is a hindrance to project success	4.11	1.02	5
The lack of client understanding of the construction process contributes to unsuccessful project delivery	4.06	0.87	6
Expert and experienced clients play a more active role in their projects	4.06	0.54	7
Clients experience more satisfaction and product quality when involved in their projects	4.00	0.59	8
The success of a project is linked to the extent of client involvement and client control in their projects	3.88	0.99	9
Contractor perceptions	**4.23**		
Delays in payments by clients contributes to negative project consequences	4.67	0.59	1
Prequalification of contractors is essential to ensure project success	4.33	0.77	2
Client satisfaction is essential to securing client loyalty and retention	4.29	0.69	3
Contractors strive to fulfill client satisfaction	4.06	0.64	4
Clients tend to delay payments due to the contractors	3.83	1.29	5

Statement (Continuation)	Mean	S D	Rank
Procurement	**4.18**		
The selection of an inappropriate procurement method can have a major impact on project success	4.50	0.79	1
Clients are adequately involved during the procurement stage	4.41	0.62	2
It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method	4.39	0.61	3
Clients tend to choose the procurement method which they are familiar with, which might not necessarily be the best	4.17	0.62	4
Clients' understanding of the procurement process influences the level of their involvement on construction projects	4.17	0.71	5
Clients should have the right to choose the procurement method they want to use	4.06	1.09	6
Clients must retain authority to exercise maximum control of the procurement process	3.47	1.28	7
Project stakeholder relations	**4.59**		
Trust, honesty and cooperation by clients is vital for successful project delivery	4.65	0.61	1
Adequate client knowledge of construction projects influences teamwork and collaboration	4.64	0.49	2
Greater involvement of clients in their projects will change the current adversarial construction environment	4.47	0.87	3

4.5.3.4.1. Client roles & involvement

From Table 4-26 it is evident that consultants regarded dealing with experienced clients better than dealing with inexperienced ones (mean=4.39).This could probably be because experienced clients were knowledgeable about the construction process and are less likely to interfere with project processes. Additionally, the respondents perceived appropriate client involvement to be beneficial to the project (mean=4.33). On the other hand, consultants agreed to a lesser extent that there was a link between project success and client involvement (mean=3.88). The findings align with those of Kamara et al., (2002) that complexities may arise when dealing with inexperienced clients and such complexities may hinder project success. This finding is supported by Nutt (2006) who asserted a direct link between the level of client involvement and client experience.

4.5.3.4.2. Contractor perceptions

Evidently, consultants agreed with most of the statements (mean>4.20), especially with the fact that delays in contractor payments impact negatively on the project (mean=4.67). They however least agreed with clients tending to delay these payments (mean=3.83). This finding is not consistent with that of Aiyetan (2010) who found that clients tended to delay payments to contractors and the lack of prompt payments hindered project success.

4.5.3.4.3. Procurement

From Table 4-26 it is evident that the selection of the appropriate procurement method can impact project success (mean=4.50) and that consultants perceive clients to be adequately involved during project procurement (mean=4.41). Consultants agreed least that clients must retain authority to exercise maximum control of the procurement process (mean=3.47). Probably because of fear that their role as consultants/professionals might be undermined or brought into question. Similarly, in their study, Mathonsi and Thwala, (2009) indicated that the type of procurement method followed influenced project success or failure.

4.5.3.4.4. Project stakeholder relations

It appears from Table 4-26 that the respondents strongly agreed with all of the statements (mean>4.20) under this construct. They agreed mostly that trust, honesty and cooperation by clients was vital for successful project delivery (mean=4.67). These findings are consistent with those of Kadefors (2001) and Pinto et al. (2009) as they emphasized the importance of trust between contract parties, because it fostered good working relations in the process minimizing the possibility of adversarial inter-organizational relations which could contribute to project failure.

4.5.3.4.5. Summary of constructs

Table 4-27 is a summary of the constructs in order of importance.

Table 4-26: Summary of constructs according to consultants

Construct	Mean	S D	Rank
Project stakeholder relations	4.59	0.55	1
Contractor perceptions	4.23	0.52	2
Procurement	4.18	0.55	3
Client roles and involvement	4.14	0.45	4

It is evident from Table 4-27 that consultants perceived half the constructs to be extremely important for project success (mean>4.20), with project stakeholder relations viewed as the most important (mean=4.59).This could be attributed to the fact that the procurement method prevalent within the construction industry especially in Africa is the traditional architect-led method Watermeyer (2011), which has been linked to the adversarial construction environment (Kadefors, 2001), and as a result, great emphasis and priority has been placed on trust, co-operation and shared understanding by the respondents.

4.6. Client Survey

Although this study seeks to determine the effectiveness of client involvement based on the views of contractors, clients were also surveyed in order to get additional perspectives of client involvement in their projects. Additionally, the views of clients were important in validating those of contractors.

4.6.1. Client Profile

The type of client is presented in Table 4-28. It is evident that 56% of the sample were private sector clients.

Table 4-27: Type of client

	Frequency	%
Public Sector	8	44
Private Sector	10	56
Total	18	100

4.6.2. Client Experience

In response to being asked about their levels of experience as construction clients, respondents reported as shown in Table 4-29. It is evident that just more than half (53%) regarded themselves as being very experienced with only 10% of the respondents having limited experience. Based on these findings the sample of clients can be described as being experienced construction clients.

Table 4-28: Client industry experience

	Frequency	%
Very Experienced	10	53%
Some Experience	7	37%
Limited Experience	2	10%
Total	**19**	**100%**

4.6.3. Procurement methods widely used

Table 4-30 presents the experience respondents had with various procurement methods used on the projects they were involved in.

Table 4-29: Procurement methods

Procurement Method	Public		Private	
	N	%	N	%
Traditional procurement system (Architect-led)	7	88%	6	60%
Design-build	3	40%	5	50%
Negotiated	2	25%	5	50%
Construction management	1	13%	0	0%
Cost-plus	0	0%	1	10%
Management contract	0	0%	0	0%
Turnkey	0	0%	0	0%

- **Public Sector**

  From Table 4-30 it is evident that public sector clients predominately utilised the traditional (architect-led) procurement system (88%) with next most common method being design-build (40%) followed by the negotiated method at (25%). The other methods, namely management contracting, turnkey and cost-plus were not popular on public sector projects. These findings are consistent with those of Bennett (2003) and Mathonsi and Thwala (2012) namely that the traditional procurement system has been the first if not only choice for the majority of construction industry clients. Muriro and Wood (2010) also found the traditional method to be the most common method in the UK.

- **Private Sector**

  It also appears from Table 4-30 that private sector clients predominately utilised the traditional (architect-led) procurement system 60% with the next most common methods being design-build and negotiated methods (50%) respectively. The other methods, namely construction management, management contracting, turnkey and cost-plus were not popular for private sector clients. These findings are consistent with the findings of Watermeyer (2011) and Oshungade & Kruger (2015) who found that the traditional method was the most common method used by private sector clients in Africa.

4.6.4. Current client involvement on projects

Clients were requested from their experience to indicate how involved they had been in their construction projects across each project phase, namely pre-construction, construction, and post-construction, using the 5-point scale where 1=never, 2=seldom, 3=sometimes, 4=often and 5=always.

Reliability Test of the construction project phases

The Cronbach's alpha test was used to determine the level of consistency and reliability of the 5-point Likert scales pertaining to client involvement on the three project phases as shown in Table 4-31. The reliability test was done for each phase and the reliability coefficients are shown. Evidently, the Cronbach's Alpha coefficient was consistently greater than 0.70 across the scales for all three project phases indicative of at least a "good" level of reliability and therefore acceptable.

Table 4-30: Reliability of scales used for construction project phases

Project phase	Public Sector		Private Sector	
	Cronbach's Alpha	Reliability	Cronbach's Alpha	Reliability
Pre-construction	0.942	High	0.870	Very good
Construction	0.802	Very good	0.825	Very good
Post-construction	0.802	Very good	0.866	Very good

4.6.4.1. Pre-construction phase

Client participants were presented with 23 tasks/activities related to the pre-construction phase and asked to indicate how frequently they engaged with them. Their responses ranked by the means are shown in Table 4-32.

Table 4-31: Client involvement in the pre-construction phase

Pre-construction phase	Public Sector			Private Sector		
	Mean	S D	Rank	Mean	S D	Rank
Provide the consultants with all the necessary information required for the project	4.63	0.52	1	4.80	0.42	1
Description of the roles and responsibilities of the contractor and consultants	4.63	0.52	1	4.60	0.70	8
Preparation and application of health and safety requirements	4.57	0.79	3	4.30	0.82	17
Tendering (calling of tenders)	4.50	0.53	4	4.30	0.82	17
Tender adjudication including clarification meetings	4.50	0.53	4	4.40	0.70	12
Studying the impact of the project on health and safety	4.50	1.07	6	4.20	0.79	20
Construction planning	4.43	0.79	7	4.40	0.84	13
Review of drawings and specifications	4.38	0.52	8	4.60	0.52	4
Developing project brief	4.38	0.58	9	4.20	0.79	20
Studying the impact of the project on the environment	4.38	0.79	10	4.60	0.52	4
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.	4.38	1.06	11	4.60	0.52	3
Preparation and application of environmental requirements	4.25	0.89	12	4.60	0.52	4
Negotiation of tender prices	4.13	0.64	13	4.30	0.67	15
Selection of consultant/professional team	4.00	1.07	14	4.40	0.84	13
Preparation of schematic/preliminary designs	4.00	1.07	14	4.60	0.70	8
Design development	4.00	1.07	14	4.70	0.48	3

Pre-construction phase (Continuation)	Public Sector			Private Sector		
	Mean	S D	Rank	Mean	S D	Rank
Monitor and guarantee design quality	4.00	1.15	17	4.80	0.42	1
Estimation and approval of the project cost	3.88	0.99	18	4.50	0.71	10
Contractor appointment	3.88	0.99	18	4.60	0.84	7
Estimation and agreement of the project duration	3.88	1.13	20	4.50	0.85	11
Documentation for both principal and sub-contract procurement	3.75	1.06	21	4.30	0.82	17
Preparation of construction drawings	3.68	1.04	22	3.90	0.88	23
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)	3.63	1.13	23	4.20	0.79	20

- **Public sector**

From Table 4-32 it is evident that during the pre-construction phase, client involvement was mostly in providing consultants with all the necessary information they needed or requested (mean=4.63) and describing the roles and responsibilities of the project team (mean=4.63). The activity in which their level of their involvement was the lowest was in the selection of the form of construction contract to be used (mean=3.63). Selecting the form of contract is very important as they spell out the roles and responsibilities of the clients, especially when choosing an appropriate contract enhances successful project delivery (CIDB, 2005). According to Alharthi et al. (2014) establishing the basis of selecting any procurement route was among the primary roles in which every client ought to adequately perform and be involved in. However the results indicate that the client was least involved in this activity which could be one of the reasons leading to unsuccessful project delivery. Given that each of these activities are considered important in the pre-construction phase, it was expected that all means should be >4.00.

- **Private sector**

From Table 4-32 it is evident that the private sector client considered themselves to be mostly involved in the majority of the pre-construction phase tasks (mean>4.20), with the most involvement recorded for the monitoring and guaranteeing design quality (mean=4.80) and providing consultants with all the necessary information (mean=4.80). The activity in which their level of their involvement was the least was in the preparation of construction drawings (mean=3.90). Low client involvement in the preparation of construction drawings is a cause of concern because when they are adequately involved they are likely to be satisfied with the design, therefore minimizing the possibilities of redesigns. The findings align with what Alharthi (2014) suggested, that the preparation of the project brief, which entails compiling and distributing all the necessary information is a significant and crucial activity for client involvement during the pre-construction phase. The high client involvement during the design process is an indication that the client is aware of the need to be actively involved during this phase and Aiyetan (2010) &

Anderson et al. (2006) concur with this finding as they highlighted the need for the client to be proactive so as to limit design errors and variations.

The differences in the rankings of the tasks between the two sectors could be as a result of the extent of government engagement and influence on public projects and the need to adhere to various regulatory frameworks. When compared to the private sector, the public sector regarded themselves to be frequently involved in describing the roles and responsibilities of the project team. This could be as a result of public clients tending to overly rely on the professional team to manage their projects on their behalf whereas private clients tended to be more hands on, and therefore describing these roles from the onset is of greater relevance to public sector clients particularly considering the transfer of risk to another party to avoid government liability. While private clients were involved in the preparation and application of health and safety requirements, public clients tended to be more involved in this task. This could be attributed to the fact that public sector clients are subject to pressure to adhere to stricter regulatory requirements, such as for example, the inclusion of adequate provisions for the costs of health and safety implementation in the bills of quantities which form part of the tender documents. This finding is supported by Gould & Joyce (2014) who highlighted that in public sector projects the construction process follows specific procedures and rigorous administrative controls.

Since the majority of private sector clients are generally profit-driven and concerned with the return on their investments and profit maximization, they were frequently involved in design development and monitoring and guaranteeing those designs. This could possibly help in minimizing design errors (Aiyetan, 2010) and rework which increase costs to the client and possibly contribute to time and cost overruns, thereby reducing project profitability. The private sector was also more frequently involved in the selection of procurement strategies when compared to the public sector. This could be attributed to the private sector being more open to adopting alternative methods of procurement. Selecting the most appropriate method was therefore critical by matching the procurement approach with the requirements of the project brief.

4.6.4.2. Construction phase

Clients were presented with 14 construction phase tasks and were asked based on their experience to indicate what their level of involvement in each construction phase task was. Their responses ranked by the response means are shown in Table 4-33.

Table 4-32: Client involvement in the construction phase

Construction phase	Public Sector			Private Sector		
	Mean	S D	Rank	Mean	S D	Rank
Attending progress meetings	4.75	0.46	1	4.30	0.67	3
Monitoring health and safety principles during project implementation.	4.43	0.79	2	4.10	0.74	12
Giving input into the project program	4.38	0.52	3	3.90	0.74	13
Making decisions quicker about design changes or variations	4.38	0.52	3	4.40	0.70	6
Attending technical meetings	4.38	0.77	5	4.10	0.57	11
Making payments to contractors for work done	4.38	1.06	6	4.40	0.70	6
Dispute resolution	4.25	0.71	7	4.40	0.52	2
Interpretation and clarification of ambiguities in the contract documents and drawings.	4.14	0.69	8	4.20	0.79	10
Attending site handover meetings	4.13	0.64	9	4.20	0.63	9
Monitoring environmental management principles during project implementation.	4.13	0.99	10	4.30	0.95	**7**
Management and inspection of the site	4.00	0.76	11	4.30	0.67	3
Selection of materials	4.00	1.07	12	4.50	0.53	1
Sub-contractor appointments	3.88	0.99	13	4.30	0.67	3
Conducting quality checks	3.75	0.89	14	3.70	1.16	14

- **Public sector**

The findings in Table 4-33 suggest that while the respondents regarded themselves to be always involved in half of the construction phase tasks (mean>4.20), with the highest involvement in attending progress meetings (mean=4.75). On the other hand, the respondents indicated that they were least involved in sub-contractor appointments (mean=3.88) and conducting quality checks (mean=3.75). The generally high level of involvement indicates that the respondents were aware of the need to be actively involved in all the tasks of the construction phase. These findings align with those of Bubshaite and Al-musaid (1992) cited in Alsolaiman (2014), who claimed that it was during this stage that the client was mostly involved in the project. Attending to site progress meetings, enables clients to promptly resolve any claims, monitor the work schedule and contractor productivity, and to enforce the quality and safety control of the project thereby minimizing the occurrence of disputes and enhancing project success. Additionally, clients tended to make prompt and necessary decisions while on site facilitating successful project delivery. The low level of client involvement in conducting quality checks raises concerns within the construction industry (CIDB, 2011) as quality is one of the parameters against which project success is measured (Alharthi et al. 2014).

- **Private sector**

  It appears from Table 4-33 that private sector clients regarded themselves to be frequently involved in most of the activities within this phase (mean>4.20), with the most involvement being in the selection of materials (mean=4.50). However, the respondents indicated that they were least involved in conducting quality checks (mean=3.70). Interestingly, selection of materials is an aspect of quality measures and the respondents indicated high involvement when performing that task yet they reported low involvement in conducting quality checks. The relatively low level of private client involvement in quality related matters is a cause of concern as it is one of the parameters against which project success is measured (Alharthi et al., 2014). This low level of client involvement could be linked to the quality concerns expressed within the industry (CIDB, 2007b), as it was reported that clients were dissatisfied with the quality of construction on around 20% of completed projects CIDB (2011). As noted by FIDIC, lack of quality in construction is as a result of poor workmanship which could be attributed to this low level of client involvement.

Similar to the findings of the pre-construction phase, when compared to the private sector, the public sector regarded themselves to be more involved in health and safety aspects of a project possibly because of the need for the public sector to adhere strictly and rigidly to the various regulatory frameworks for public projects. The public client could be more involved in giving input into the program to ascertain which tasks occur when, and when these activities fall within a particular financial period to ensure the availability of adequate funding from the government.

Private sector clients were more involved in the selection of construction materials when compared to the public sector. This could be because private sector clients were generally more concerned with the overall quality and aesthetics of the finished product and tended to be more unwilling to compromise on these aspects. Additionally, disputes arising from inappropriate and/or poor quality materials could affect project outcomes because of time and cost overruns. Being cognizant of the potential risk of loss of profits from project schedules not being met, private sector clients tended to be frequently involved in the timeous resolution of disputes. Lastly, private clients were more involved in the management and inspection of their project sites which could be to minimize any errors so that these could be dealt with at an early stage in the process minimizing the chances of rework which again could negatively impact on the project.

4.6.4.3. Post-Construction Phase

Clients were presented with 10 post-construction phase tasks and were asked to indicate what their level of involvement in each task was. Their responses ranked by the response means are shown in Table 4-34

Table 4-33: Client involvement in the post construction phase

Post-construction phase	Public Sector			Private Sector		
	Mean	S D	Rank	Mean	S D	Rank
Input into development of maintenance plan	4.63	0.52	1	4.30	0.67	3
Release of guarantees and securities	4.50	1.07	2	4.10	0.99	8
Contribute to compiling snagging or defects list	4.14	0.38	3	4.60	0.52	1
Input into project review and close out report	4.13	0.35	4	4.20	0.63	6
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.	4.13	0.83	5	4.10	1.20	9
Release of retentions where applicable	4.13	1.13	6	4.40	0.70	2
Issuing of certification acknowledging completion of the works	3.88	0.35	7	4.30	0.67	3
Record the warranties and certificates information	3.88	0.83	7	4.30	0.82	5
Establishment of criteria for acceptance of completed project	3.88	0.71	7	4.00	0.94	10
Final account settlement	3.75	0.99	10	4.20	0.63	6

- **Public sector**

  From Table 4-34 it is evident that the respondents were most frequently involved in giving input into the development of maintenance plans (mean=4.63). They are however least involved in final account settlement (mean=3.75). When settling the final account there must be a proactive approach and active involvement by both the client and contractor to avoid any delays as the delays can, inter alia, adversely affect the contractors' cash flow (Ashworth & Hogg, 2002). However despite the need for high client involvement during the final account preparation, client involvement has been reported as low.

- **Private sector**

  From Table 4-34, it appears that private sector clients were frequently involved in all the post construction phase tasks (mean>4.20), with their involvement being most frequent in compiling the defects list (mean=4.60). Their involvement was however the lowest in establishing the criteria for acceptance of the completed project (mean=4.00). It appears that the respondents are aware of the need to be pro-active and to adequately contribute to the activities of this phase.

When compared to private clients, public sector clients regarded themselves to be more involved in releasing guarantees. This could probably be as a result of that since the majority of public sector

contractors are the historically disadvantaged, and even a small delay in releasing the guarantees can have a negative impact on the contractor's ability to provide guarantees for new projects, the public client seeks to eliminate such implications.

When compared to public sector clients, private sector clients were more involved in contributing to compiling the defects list. This could probably because, the private client is more concerned about the quality of the facilities and wants a defects free project handed over to them. Furthermore, this is an indication that the private client is proactive in minimizing project delays that could emanate from the inadequate compilation of project the defects list. Additionally, the private sector client was more involved in issuing of certification acknowledging completion of the works; this could be because the private sector client was more eager to expedite project handover.

4.6.4.4. Mean client involvement per project phase

Table 4-35 presents the mean ranking of client involvement per project phase

Table 4-34: Mean client involvement per project phase

Project Phase	Public Sector		Private Sector	
	Mean	Rank	Mean	Rank
Pre-construction	4.73	1	4.45	1
Construction	4.71	2	4.22	3
Post construction	4.70	3	4.25	2

From Table 4.35 it is evident that both public and private sector clients were always involved in all project phases (means>4.20). Furthermore, the results suggest that public sector clients were slightly more involved in their projects than private sector clients. Both types of clients indicated highest involvement during the pre-construction phase. These findings align with the findings of Sivunen (2015) and Thomson (2010) who indicated that clients had the greatest influence and involvement during the early stages of the project. The results reflect the client's awareness and need to be actively involved throughout all project phases.

4.6.5. Importance of client involvement during different project phases

Respondents were required to identify which project phase they considered to be the most important for client involvement. A 5-point scale was used where 1=least important, 2=somewhat important, 3=neutral, 4=important and 5=most important. The results are tabulated in Table 4.10

Table 4-35: Importance of construction project phases

Project phase	Public Sector	Private Sector
	Mean	Mean
Pre-construction	4.94	4.90
Construction	4.57	4.60
Post construction	4.43	4.20

From Table 4.36 it is evident that both types of clients considered their involvement in all three project phases to be very important (mean>4.20). The pre-construction phase predominated, followed by the construction phase for both sectors respectively. The client views are in line with what Boton (2011) indicated namely that the pre-construction phase is a very crucial and significant phase in the construction project life cycle.

4.6.6. Ranking of clients' view on their involvement

Reliability Test of client involvement statements

The Cronbach's Alpha test was used to determine the consistency and reliability of the 5-point Likert scale pertaining to the constructs for client involvement on their projects. It is evident from Table 4-37 that the Cronbach's Alpha coefficients were 0.813 and 0.837 for both public and private sector clients respectively which indicates a "very good" level of reliability. Overall, the data was found to be reliable and accepted for further analysis.

Table 4-36: Reliability of scales used for construction project phases

Construct	Public Sector		Private Sector	
	Cronbach's Alpha	Reliability	Cronbach's Alpha	Reliability
Overall	0.813	Very good	0.837	Very good

Clients were presented with 23 statements about their involvement on their construction projects and were requested to indicate to what extent they either agreed or disagreed with them. A 5-point scale was used where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The results are shown in Table 4-38

Table 4-37: Client involvement according to clients

Statement	Public Sector			Private Sector		
	Mean	SD	Rank	Mean	SD	Rank
Your understanding of the procurement process influences your level of involvement on construction projects	4.75	0.46	1	4.50	0.53	2
Greater involvement of clients in their projects will change the current adversarial construction environment	4.75	0.46	1	4.20	0.79	18
Clients should have the right to choose the procurement method they want to use	4.75	0.71	3	4.40	0.70	6
It is crucial that construction clients understand their roles to ensure prompt delivery of projects	4.63	0.52	4	4.60	0.52	1
It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method	4.63	0.52	4	4.40	0.70	6
Clients must retain maximum authority to exercise maximum control of the procurement process	4.63	0.52	4	4.40	0.97	14
Client satisfaction is linked to adequate client involvement	4.63	0.52	4	4.50	0.71	4
The level of client involvement is affected by the level of client understanding of technicalities	4.63	0.52	4	4.40	0.70	7
Trust, honesty and cooperation of clients is vital for successful project delivery	4.57	0.53	8	4.40	0.70	7
Clients have the ability to influence and change the attitudes, behaviours and procedures of other parties	4.50	0.53	9	4.40	0.70	7
Clients want to be adequately involved throughout the project phases	4.50	0.53	9	4.10	0.74	21
The role of the client has generally evolved from one of a passive fund provider to an increasingly active participant	4.50	0.76	11	4.40	0.70	7
As a client, you are adequately involved in the choice of procurement method	4.50	0.76	11	4.50	0.71	4
The selection of an inappropriate procurement method can have a major impact on project success	4.50	0.76	11	4.40	0.70	13
As a client, you fully understand the risks involved under various procurement methods	4.50	0.76	11	4.30	1.06	17
Adequate client knowledge of construction projects influences teamwork and collaboration	4.50	0.76	11	4.50	0.53	2
The industry can do more to ensure optimum client involvement, e.g. client training	4.43	0.53	17	4.44	0.53	6
Clients tend to select the procurement method they are familiar with, which might not necessarily be the best	4.43	0.79	18	4.30	0.82	16
Expert and experienced clients play a more active role in their projects	4.38	0.74	19	4.00	0.87	22
The importance of client roles in their construction projects has generally been ignored or undermined	4.13	0.64	20	4.11	0.78	20
Procurement is a very important part of a construction project and clients need to be actively involved	4.13	0.64	20	4.33	0.71	15
Construction clients clearly understand their roles and responsibilities	4.13	0.83	22	4.20	0.92	19
The current state of the construction industry allows for optimum client involvement	4.13	0.83	22	4.00	0.94	23

- **Public sector**

  From Table 4-38 it is evident that clients tended to agree strongly with all the statements about their involvement in their construction projects (means>4.20) but agreed most strongly that understanding the procurement process influenced their level of involvement on construction projects (mean=4.58). The respondents agreed to a lesser extent with the statement that the current state of the construction industry allowed for optimum client involvement (mean=4.13). Since the respondents agreed strongly with all the statements, it is an indication that that they believed that there was still more that they could do to improve their involvement in projects.

- **Private sector**

  From Table 4-38 it is evident that clients tended to strongly agree with all the statements (means>4.20) but agreed most strongly that they needed to understand their roles to ensure successful project delivery (mean=4.60). However, they agreed to a lesser extent that the current state of the construction industry allowed for optimum client involvement (mean=4.00). The need for clients to understand their roles could be due to the fact that at any one time about 95% of the industry's customers were once-off or occasional clients who were unclear about their roles (UK Parliament, 2007). Cox et al. (2006) highlighted the importance of clients understanding their roles as they asserted that the lack of understanding thereof posed a threat to successful project delivery.

Evidently, public sector clients were mostly concerned about understanding the procurement process while the private sector clients were more concerned about understanding their roles. This difference could be due to the fact that although public sector clients were not open to utilising alternative procurement methods as much as private sector clients (Jaafar and Nuruddin, 2012), Ambrose and Tucker (1999) indicated that in recent times there has been a proliferation in the usage of other methods and therefore understanding of the procurement process would be vital for project success.

When compared to the private sector, public sector clients tended to agree strongly that greater involvement by clients could potentially change the current adversarial construction environment. This could be attributed to the fact that public clients were generally not adequately involved in their projects and they perceived that should they be more involved the construction environment would be better.

When compared to public clients, private sector clients tendered to agree strongly that they needed to understand their roles to ensure prompt delivery of projects. This could be as a result of the private sector utilizing a wider range of procurement methods and their roles being different under each

method. Additionally, the private client might be aware of the importance of their roles as contributing to project success and therefore the emphasis placed on understanding these roles.

4.7. Client involvement as perceived by different samples

4.7.1. Procurement methods in current use

Table 4-39 presents the experience that clients, consultants and contractors had of procurement methods which are currently used in construction projects in SA.

Table 4-38: Comparison of usage of different procurement methods

Procurement Method	Clients		Consultants		Contractors	
	Public	Pvt	Public	Pvt	Public	Pvt
Traditional procurement system (Architect-led)	88%	60%	74%	68%	83%	60%
Design-build	40%	50%	16%	32%	9%	12%
Negotiated	25%	50%	11%	26%	26%	40%
Construction management	13%	0%	11%	16%	2%	2%
Cost-plus	0%	10%	11%	16%	5%	16%
Management contract	0%	0%	11%	11%	2%	2%
Turnkey	0%	0%	11%	16%	2%	1%

From Table 4-39, it can be seen that the traditional procurement method was the most dominant method according to clients, consultants and contractors. It is clear that the public sector utilised the traditional method more than the private sector, with >70% and >60% of each respondent sample reporting to having used this method on public sector and private sector projects respectively. This finding aligns with findings of studies conducted by Mbanjwa (2003) and Oshungade & Kruger (2015) who found that the traditional procurement method was the most widely used method, especially within the public sector. The predominately high usage of the traditional method is in line with the perceptions noted in literature review in which clients are viewed as being resistant to change and their habitual behaviours impeding changes of the procurement methods in use (Laedre et al., 2006).

Contractors had the negotiated method as next most common whereas both the client and consultant samples indicated that the design and build method was the second most common method. A study conducted by Oshungade & Kruger (2015) concurs with outcome of the consultant and client samples as they found that the design and build method was the second most common method in South Africa. It can be deduced that the procurement methods widely used for construction projects in South Africa were the traditional, design and build and negotiated methods respectively.

The high usage of the negotiated method by contractors can be linked to the fact that the negotiated method somewhat guaranteed repeat business for the contractors as it is mostly based on contractor

reputations and it provides opportunities for adjustments (SACQSP, 2016b). The use of the design and build method could be as a result of the advantages it has for the clients and consultants as it allows for innovative designs by the contractor, and allows for cost and time savings on the project (Moore, 2015).

4.7.2. Mean client involvement per project phase

Table 4-40 presents mean client involvement per project phase as reported by the three respondent samples.

Table 4-39: Comparative client involvement per project phase

Project Phase	Contractors		Consultants		Clients	
	Public	Private	Public	Private	Public	Private
Pre-construction	3.49	4.08	3.88	4.41	4.73	4.45
Post construction	3.41	4.14	3.77	4.27	4.71	4.22
Construction	3.28	4.10	3.58	4.16	4.70	4.25

It is evident that although contractors considered both client sectors to be often involved (mean<4.20>3.41) in all project phases they considered private sector clients to be more frequently involved in their projects. This could be attributed to the dominant usage of the traditional method in which, as indicated by Assaf & Al-Hejji (2006) there is separation between the contractor and the client as consultants are appointed by clients to act or operate in their best interest. The contractor therefore had to rely on a third party and not the client. This therefore implies that the contractor had limited interaction with clients, leaving the contractor with the desire to be more engaged with clients. Probably because, inter alia, of the longer and indirect communication channels involved and the generally slower or late provision of project related information (which sometimes would be critical), as the contractor would have to go through the consultants to relay any information to the client and vice versa. It is likely that contractors would prefer alternative procurement methods which allow for frequent and direct client involvement such as for example, the design and build method.

Consultants had similar but more positive perceptions about the level of involvement for both client sectors. This could be because consultants had a more direct and frequent interaction with clients. Undoubtedly, both client sectors considered themselves to be mostly involved throughout all project phases (mean>4.20). This could imply that public sector clients were oblivious of their inadequate involvement on projects and this could be an indication that public clients might be unaware of the extent to which they must be involved in their projects and the need to improve in terms of their involvement.

Since both contractor and consultant samples perceived public sector clients to be less involved in their projects, and this could be, inter alia, why public sector projects are generally not delivered within the anticipated project parameters of time, cost and quality (CIDB, 2011a). This finding is supported by Alsolaiman, (2014) and Assaf & Al-Hejji (2006) who found that the lack of adequate client involvement in their projects was linked to numerous problems encountered during the project cycle such as cost and time overruns, and disputes.

4.7.3. Importance of project phases

Respondents were required to identify the project phase which they considered most important for clients to be involved in. Identifying the priority phase/s would indicate the phase that needed more attention to facilitate successful project delivery. Table 4-41 is a presentation of the results.

Table 4-40: Importance of project phases

Project phase	Contractors	Consultants	Clients	
			Public	Private
Pre-construction	4.41	4.79	4.94	4.90
Construction	3.96	3.84	4.57	4.60
Post construction	3.98	4.00	4.43	4.20

Evidently, contractors considered the pre-construction phase to be the most important for client involvement, followed by the post-construction phase. Similarly, the consultants reported that the pre-construction and post construction phases were the two most important phases respectively. These findings align with those of APUC (2011) who indicated that during the construction phase client involvement on projects generally declines as much of the responsibilities are transferred to consultants and the contractor. On the other hand, both clients sectors agreed that all three project phases were important for their involvement (all means>4.20), with the order of importance being pre-construction, post-construction and the construction phase respectively.

Unlike the contractor and consultant samples, clients however regarded the construction phase as more important than the post-construction phase. This could be due to the fact that the construction phase entails the actual execution of the works and clients tended to want to be involved so as to see the project progress to its completion. However, as reported in literature, once-off clients constituted the largest proportion of all construction industry clients, and as such they possessed very little or no experience and knowledge of the construction process (Boyd & Chinyio, 2006; Cox et al., 2006). Therefore, it is plausible that contractors could be sceptical about high involvement, so as to avoid client interference and hindrance during project execution. Client interference could lead to inefficient project delivery (Odeh and Batteinah, 2010).

The importance of the pre-construction phase was illustrated by Alharthi et al. (2014) who indicated that every client ought to perform nine primary roles and six of those nine roles were performed within the pre-construction. Additionally, a study conducted by Alsolaiman (2014) supports this finding as he found that the design phase and the planning phase, which both fall under the pre-construction phase were the two most important phases for clients during a construction project. Although, a study conducted by (Bubshaite and Al-musaid, 1992 cited in Alsolaiman, 2014) found that clients should be mostly involved during the construction phase so that they timeously defined all tasks during the construction phase because clearer defined tasks contributed to optimum client involvement, the results of this study indicate otherwise. The findings of this study align with those of Ambrose and Tucker (1999) who indicated that client involvement was rated as the most important need of clients

4.7.4. Summary of client involvement constructs

Table 4-42 is a summary of the constructs for client involvement in order of importance.

Table 4-41: Summary of constructs for client involvement

Construct	Contractors	Consultants
Project stakeholder relations	4.40	4.59
Client roles and involvement	4.38	4.14
Procurement	4.34	4.18
Contractor perceptions	4.33	4.23

The findings in Table 4-42 indicate that both contractor and consultant samples regarded all the constructs to be very important (all means>4.20), with the most importance placed on project stakeholder relations. As clearly indicated in this study, the traditional procurement is the single most used method in South Africa. The shortcomings of the traditional method, which include but are not limited to adversarial relations (Kadefors, 2001; Pinto et al., 2009; Ling et al., 2013a) and high occurrence of misunderstandings and conflicts (Kadefors, 2001) could be linked to the importance placed on stakeholder relations. The second next important construct according to contractors is client roles and involvement. This is an indication that contractors are aware and want clients to fully understand the importance of their roles and importance of their frequent involvement in projects, as these are key factors influencing project outcomes (Aiyetan, 2010; Alsolaiman, 2014; ASCE, 2012). The importance placed on client roles and involvement could be attributed to the dissatisfaction which contractors have with the traditional approach which deters clients from being frequently involved in their projects as they tended to depend on consultants.

Furthermore, the results indicate that there was congruence between the consultant and contractor views on client involvement indicating that both respondent samples concurred that there was still more that clients could do to improve their involvement in projects thereby improving overall project performance.

4.8. Chapter Summary

The purpose of the analysis presented in this chapter was to investigate the respondents' perception of client involvement during the three construction project phases. Descriptive and inferential statistical analyses of the respondents' responses were then conducted. The Cronbach's alpha test was done to check the reliability of the measures.

It was found that the significant and dominant usage of the traditional procurement method by both public and private sector clients in South Africa can be confirmed. The possible reasons why the traditional method was predominantly used could be that clients were resistant to change and they tended to choose the method they were most familiar with. Additionally, it could be that clients wanted to minimize the amount of risk they were exposed to, and that clients required cost certainty. The study also found that although alternative procurement methods were not widely adopted in South Africa, the private sector was more open and flexible in utilising them, with the next most used methods being the design and build and negotiation. Considering the high usage of the traditional procurement method, it was therefore not surprising that all respondent samples emphasised on the need for good project stakeholder relations as important factors that facilitated project success and this could be attributed to the adversarial nature of the traditional method.

In terms of client involvement, when compared to public sector clients, contractors regarded private sector clients to be more frequently involved throughout all project phases. The high private client involvement could be linked to the generally better project delivery by the private sector. The findings are an indication that there is a difference in the way the two client sectors operated and this could be attributed to, inter alia, the extent to which the clients needed to adhere to various regulatory frameworks, the extent to which the client sectors relied on their professional advisors, with the public sector having to adhere to stringent regulations and overly relying on the professional team to act on their behalf.

Although optimum client involvement across all the project phases is crucial for project success, contractors regarded the pre-construction phase to be a priority phase for client involvement, followed by the post construction phase. They however considered the construction phase to be the least

important for client involvement, as the contractor is responsible for project execution and this could be so as to avoid client interference which could hinder project success.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter summarises and concludes the study. The study hypotheses will be tested. Recommendations for future study are made.

The primary objective of the study was to examine the role and effectiveness of client involvement on construction projects from the perspective of contractors. This objective was to be achieved by:

- Identifying the roles and responsibilities of clients in their construction projects throughout the entire project lifecycle;
- Determining the level of client involvement in their projects and whether their involvement facilitates successful project delivery;
- Assessing to what extent a client should be involved in the various construction phases to improve project delivery;
- Assessing whether early client involvement facilitates project success, and;
- Determining the impact of trust and co-operation between the client and contractor on successful project delivery.

An extensive review of literature was conducted to establish a theoretical framework for the area under study. Semi-structured questionnaires were distributed and used to collect data from the field. The data was then analysed using the Statistical Package for Social Services (SPSS) version 24 software. This chapter reviews the findings relative to the study objectives and hypotheses. Thereafter, conclusions are drawn based on these findings and recommendations

5.2. Hypotheses testing

- **Hypothesis 1: The level of client involvement in their projects is low.**

  A study conducted by Ambrose and Tucker (1999) found that one of the most important client needs is their involvement on construction projects. It is important that the level of client involvement in their projects be high as client involvement is a key factor influencing project

outcomes (Al-Kharashi & Skitmore, 2009; Baccarini, 1999; Kylindri et al., 2012). This assertion is supported by Alsolaiman (2014) who found that effective and appropriate involvement by clients in their projects influenced successful project outcomes. However, Alsolaiman (2014) and Assaf & Al-Hejji (2006) highlighted the lack of adequate client involvement in their projects, which they linked to numerous problems encountered during the project cycle and they indicated that these problems impede project success.

In this study, samples of contractors in the main, consultants and clients were requested to indicate based on their experiences the level of client involvement in their construction projects. The results indicated that private sector clients were more involved in their projects (mean>4.00) while public sector clients were less involved in their projects.

Therefore, the hypothesis that the level of client involvement in their projects is low can be rejected, for the private sector client and it cannot be rejected for the public sector client.

- **Hypothesis 2: Appropriate client involvement facilitates successful project delivery**

As suggested by (Kometa et al., 1995) quoted in (Kamara et al., 2002) clients ought to take an active role in performing their duties, which include inter alia, appropriate involvement in their projects so as to achieve project success. When clients are appropriately involved in their respective projects, they are likely to be satisfied with the end product as their expectations are usually met or exceeded Ahmed and Kangari (1995) quoted in (Kamara et al., 2002). This is because the success of a project in terms of construction time and cost performance is linked to the extent of client involvement and client control in construction projects (Ibid).

A study conducted by Bubshait & Al-Musaid (1992) found that when clients were frequently and appropriately involved in their projects they were usually most satisfied with the project outcomes. Additionally, Odeh and Batteinah (2010) highlighted the importance of appropriate client involvement as fostered contributing to project success. Although the level of client involvement may change over the project duration (Blyth and Worthington, 2010), it is important for clients to be frequently involved in their projects, as Boyd & Chinyio (2006) & Ryd (2014) suggested a link between appropriate client involvement and efficient delivery of projects. The study found that the both contractors and consultants strongly agreed (mean>4.00) that appropriate client involvement was beneficial to the success of a project. The findings indicate that contractors were aware of the influence clients had on project success and therefore concurred with the need or importance of appropriate involvement by clients in projects.

Therefore, the hypothesis that appropriate client involvement facilitates successful project delivery cannot be rejected.

- **Hypothesis 3: Early client involvement increases the chances of successful project delivery**

  Boton et al. (2011) indicated that the pre-construction phase calls for high client involvement as it involves taking all necessary measures to ensure that the project is efficiently and successfully undertaken. Although the level of client influence and involvement on a project varies over the course of the project life cycle (Alharthi et al., 2014), the greatest involvement should be during the early project phases (Sivunen, 2015; Thomson, 2010) where the project brief is defined (PMI, 2013). Early project briefing enhances client values to be fulfilled, in the instance increasing the chances of successful project delivery (Ballard, 2006). The pre-construction phase involves taking all necessary measures to ensure that the construction phase is efficiently undertaken, it basically paves the way for all later stages and if implemented correctly, necessitates for the minimization of risks, waste and overheads at the same time maximizing productivity and efficiency , therefore it calls for early client involvement (Boton et al., 2011). Furthermore, studies conducted by Sivunen (2015) Alsolaiman (2014) emphasized the need for high client involvement during the pre-construction phase to enhance project success.

  It was found that contractors in the main, consultants & clients all regarded client involvement most important and influential during the pre-construction phase (mean>4.00). The findings of this study align with what was highlighted in literature as the respondents clearly indicated the priority of early client involvement in their projects.

  Therefore, the hypothesis that early client involvement increases the chances of successful project delivery cannot be rejected.

- **Hypothesis 4: Trust and co-operation between the client and contractor facilitate successful project delivery**

  According to Graham (2006) the relationship between the client and contractor must be positive and trusting considering the frequency of interaction that both parties will have throughout the project duration. Additionally, Kadefors (2001) and Pinto et al. (2009) emphasized the importance of trust between the parties, highlighting how it facilitated good working relations while enhancing project success through minimizing the possibility of adversarial inter-organizational relations, which are a major problem within the construction industry. Considering the generally disruptive and adversarial construction environment, resulting mostly from the widespread usage of the traditional method Eshun (2013) and Kadefors (2004) also highlighted

the importance of increased levels of trust among different project participants as it contributed to the formation of sound co-operative relationships which, in turn improved project success. It has also been indicated that client-contractor interactions should be good and co-operative for there to be fair and open collaboration between both parties so as to foster the optimal use of their competencies and enhance successful project delivery (Sebastian, 2011). This study found that the respondents regarded project stakeholder relations as being of paramount importance to successful project delivery (mean>4.00). Issues of trust, honesty and cooperation in the context of clients underpinned project stakeholder relations and were regarded as vital for project success.

Therefore, the hypothesis that trust and co-operation between the client and contractor facilitates successful project delivery cannot be rejected.

5.3. Conclusion

Comparison was made between the two client sectors, namely the private and public sectors. This was important in determining whether there were any differences in their involvement level based on the sector in which the clients operated. This study confirmed that there were more differences than similarities in the level and extent of their involvement. One of the key findings to emerge from this study is that the current level of client involvement in construction projects was different for the two client sectors, with private sector clients being more involved in their projects. Previous studies Babatunde et al. (2010) & Jha (2011) found that one of the most important needs of construction clients is for a project to be delivered on time, within budget and to the desired quality. Furthermore, Al-Kharashi & Skitmore (2009) and Alsolaiman (2014) indicated that if adequately involved in their projects, clients had the potential to influence project success. It is therefore evident that in order to enhance successful project delivery, both client sectors, especially the public sector clients need to improve in terms of their involvement in projects, as the public sector was found to be more prone to experiencing negative project performance outcomes such as time overruns (Alsolaiman, 2014; Endut, et al., 2005). This study further confirmed the need for adequate and effective client involvement in their projects to ensure successful project delivery.

There is widespread recognition of the importance of client involvement throughout all the phases of a construction project (Boyd and Chinyio, 2006; Ambrose and Tucker, 1999). Boton (2011), Sivunen (2015) and Alsolaiman, 2014) found that out of the three construction project phases, the pre-construction phase was considered to be a priority phase for client involvement, as it encompasses many important activities such as planning and design, which are critical for project success. According to (ASCE, 2012) clients' key roles fall within the pre-construction phase and these include early formation of the project team and assigning responsibilities. In the present study, although all the

respondents agreed that the pre-construction phase was the most important phase for client involvement, both the contractors and consultants indicated that public sector clients were inadequately involved during this phase and this low involvement could possibly be linked to the inefficient delivery of most of the public sector projects in South Africa.

The study confirmed the findings of Watermeyer (2011), Mbanjwa (2003), Oshungade and Kruger (2015), Mathonsi and Mathwala (2012) and Muriro and Wood (2010) that the most significant and dominant procurement method utilized by both public and private sector clients in South Africa was the traditional method. Despite its various shortcomings, it is still the most common method, and this could be due to the resistance to change by the client sectors. Additionally, the study found that private sector clients were generally more aggressive in adapting alternative procurement methods when compared to the public sector (Jaafar and Nuruddin, 2012; Karna, 2004; Ling et al., 2013). Contractors regarded the negotiation method as the second most common procurement method whereas consultants and clients considered the design and build method to be second most common. In a study conducted by Oshungade & Kruger (2015) it was found that the design and build method was the second most common method in South Africa. Despite whichever procurement method was used, client involvement was varied, with the private sector reportedly being more involved in the procurement process when compared to public sector clients.

Masterman (2002) argued that clients tended not to fully understand their roles and this lack of understanding posed as a risk to successful project delivery. Additionally, it was found that client's perception of their role affected their decisions making capabilities especially in the early phases of a project (Courtney, 2008). Ramabodu (2014) highlighted the need for clients to understand the entire desired quality requirements so as to attain customer satisfaction. Based on the findings of this study, it is evident that contractors placed great importance on clients understanding their roles, as this could improve the level of their involvement in projects at the same time improving project performance. In terms of the various constructs or factors considered important in enhancing project success, the order of importance for the four constructs was project stakeholder relations, client roles and involvement, procurement and contractor perceptions respectively. This order could be attributed to the fact that the procurement method most significantly used within the construction industry especially in Africa was the traditional method. Since adversarial relations are inherent to the traditional procurement method (Ling et al., 2013a; Kadefors, 2001; Pinto et al., 2009), it therefore makes sense that all respondents agreed that project stakeholder relations were important, with great importance being placed on trust and co-operation among the members of the project team. Good project stakeholder relations facilitate for successful project delivery.

5.4. Recommendations for future research

Based on the findings of this research, the following are recommended for future research endeavours namely:

- It would be interesting to undertake a study investigating the dominant factors that lead to low client involvement in construction projects. This would help in identifying the areas with the highest impact on limiting optimum and efficient client involvement in construction projects and therefore contribute to overall improvement in client involvement. The investigation would also help in identifying possible methods for enhancing client involvement and this could lead to the formulation of ideas that would improve the current state of client involvement.

- Since the study was concerned with respondents from the Kwazulu-Natal region, similar studies could be conducted with sample populations from other regions across South Africa to determine whether the findings of this study would be evident nationally. This would help in ascertaining and getting a full understanding of the current state of client involvement on a national level.

- This study was predominantly quantitative in nature. Future research could also employ a qualitative approach to provide other useful insights into this study.

- There is a need to investigate whether the preference in adopting alternative procurement methods by the private sector is an indication that private sector clients desire to be more involved in their projects as the traditional method limits their involvement.

Based on the findings of this study, the study recommends that public sector clients should be more flexible to adopt the most suitable procurement method instead of relying on the traditional procurement method which might not necessarily be the most appropriate.

5.5. Summary

This chapter interpreted and discussed the findings of the study. The present study investigated the effectiveness of client involvement in their construction projects as client involvement impacts on project outcomes. Most of the findings of this research support what was found in literature. The findings of this study suggest that clients should take an active role in performing their duties to ensure appropriate and optimum involvement on their projects, as this is a key, among other factors, to project success.

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APPENDICES

APPENDIX A: CONTRACTOR QUESTIONNAIRE

Contractor Questionnaire

1. How long have you been working in the construction industry? …… years

2. What proportion of your work do you obtain from the following types of clients? **(MUST ADD UP TO 100%)**

Type of client	%
Public sector	
Private sector	
Total	

3. What proportion of your work have you obtained using the following procurement methods? **(MUST ADD UP TO 100%)**

Procurement method	Public sector %	Private sector %	Total %
Traditional procurement system (Architect-led)			
Design-build			
Construction management			
Management contract			
Turnkey			
Negotiated			
Cost-plus			
Other (specify)			
Totals			100%

4. Indicate the frequency of client involvement based on YOUR experience of the following procurement methods using the 5-point scale where 1= never; 2= seldom; 3=sometimes; 4= often; and 5=always

Procurement method	Public sector	Private sector
Traditional procurement system (Architect-led)		
Design-build		
Construction management		
Management contract		
Turnkey		
Negotiated		
Cost-plus		
Other (specify)		

5. Indicate the frequency of client involvement based on YOUR experience during EACH of the project phases using the 5-point scale where 1= never; 2= seldom; 3=sometimes; 4= often; and 5=always

Project phase	Public sector	Private sector
Pre-construction phase		
Developing project brief		
Selection of consultant/professional team		
Provide the consultants with all the necessary information required for the project		
Construction planning		
Description of the roles and responsibilities of the contractor and consultants		
Estimation and agreement of the project duration		
Estimation and approval of the project cost		
Preparation of schematic/preliminary designs		
Design development		
Preparation of construction drawings		
Review of drawings and specifications		
Monitor and guarantee design quality		
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.		
Documentation for both principal and sub-contract procurement		
Tendering (calling of tenders)		

Tender adjudication including clarification meetings		
Negotiation of tender prices		
Contractor appointment		
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)		
Preparation and application of health and safety requirements		
Studying the impact of the project on health and safety		
Preparation and application of environmental requirements		
Studying the impact of the project on the environment		
Construction phase		
Management and inspection of the site		
Attending site handover meetings		
Attending progress meetings		
Attending technical meetings		
Interpretation and clarification of ambiguities in the contract documents and drawings.		
Giving input into the project program		
Making decisions quicker about design changes or variations		
Selection of materials		
Making payments to contractors for work done		
Monitoring health and safety principles during project implementation.		
Monitoring environmental management principles during project implementation.		
Conducting quality checks		
Dispute resolution		
Sub-contractor appointments		
Post-construction phase		
Establishment of criteria for acceptance of completed project		
Contribute to compiling snagging or defects list		
Input into development of maintenance plan		
Final account settlement		
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.		
Issuing of certification acknowledging completion of the works		
Input into project review and close out report		

Release of guarantees and securities		
Release of retentions where applicable		
Record the warranties and certificates information		

6. How do you rate the following project phases for client involvement in the order of importance, on a 5-point scale where 1 is the least important and 5 most important)

Project phases	Rating
Pre-construction	
Construction	
Post construction	

7. Using the following scale where 1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree indicate to what extent you agree with the following statements about clients

Statement	1	2	3	4	5
Client roles and involvement					
The success of a project is linked to the extent of client involvement and client control in their projects					
Clients experience more satisfaction and product quality when involved in their projects					
The lack of client understanding of the construction process contributes to unsuccessful project delivery					
Construction clients understand their roles and responsibilities and adequately perform them					
Dealing with experienced clients is better than dealing with those that are inexperienced					
Expert and experienced clients play a more active role in their projects					
Appropriate client involvement is beneficial to the project					
The lack of adequate client involvement in their projects leads to numerous problems encountered across the project lifecycle such as disputes, time and cost overruns, etc					
Client interference is a hindrance to project success					
Contractor perceptions					
Client satisfaction is essential to securing client loyalty and retention					
Contractors strive to fulfill client satisfaction					
Prequalification of contractors is essential to ensure project success					
Clients tend to delay payments due to the contractors					

Delays in payments by clients contributes to negative project consequences					
Procurement					
Clients' understanding of the procurement process influences the level of their involvement on construction projects					
It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method					
Clients are adequately involved during the procurement stage					
Clients tend to choose the procurement method which they are familiar with, which might not necessarily be the best					
The selection of an inappropriate procurement method can have a major impact on project success					
Clients must retain authority to exercise maximum control of the procurement process					
Clients should have the right to choose the procurement method they want to use					
Project stakeholder relations					
Trust, honesty and cooperation by clients is vital for successful project delivery					
Greater involvement of clients in their projects will change the current adversarial construction environment					
Adequate client knowledge of construction projects influences teamwork and collaboration					

8. How would you rate your overall experience with the involvement of clients in their projects on a 5-point scale where 1=totally unsatisfactory, 2=unsatisfactory, 3=neutral, 4=satisfactory and 5=totally satisfactory.

1	2	3	4	5

9. Do you consider that client involvement in construction projects can be improved? If so, please elaborate

……

……

APPENDIX B: CONSULTANT QUESTIONNAIRE

Consultants' Questionnaire

1. How long have you been working in the construction industry? …… years

2. What is your profession? **(TICK APPROPRIATE)**

Discipline	
Architect	
Construction Manager	
Health and Safety Manager	
Project Manager	
Quantity Surveyor	
Civil Engineer	
Structural Engineer	
Electrical Engineer	
Mechanical Engineer	
Other (specify)	

3. What type of client are you frequently involved with? **(MUST ADD UP TO 100%)**

Type of client	%
Public sector	
Private sector	
Total	

4. What proportion of the projects that you are involved in have been obtained using the following procurement methods? **(MUST ADD UP TO 100%)**

Procurement method	**Public sector** **%**	**Private sector** **%**	**Total** **%**
Traditional procurement system (Architect-led)			
Design-build			
Construction management			
Management contract			
Turnkey			
Negotiated			
Cost-plus			
Other (specify)			
Totals			100%

5. Indicate the frequency of client involvement based on **YOUR** experience of the following procurement methods using the 5-point scale where 1= never; 2= seldom; 3=sometimes; 4= often; and 5=always

Procurement method	**Public sector**	**Private sector**
Traditional procurement system (Architect-led)		
Design-build		
Construction management		
Management contract		
Turnkey		
Negotiated		
Cost-plus		
Other (specify)		

6. Indicate the frequency of client involvement based on **YOUR** experience during **EACH** of the project phases using the 5-point scale where 1= never; 2= seldom; 3=sometimes; 4= often; and 5=always

Project phase	Public sector	Private sector
Pre-construction phase		
Developing project brief		
Selection of consultant/professional team		
Provide the consultants with all the necessary information required for the project		
Construction planning		
Description of the roles and responsibilities of the contractor and consultants		
Estimation and agreement of the project duration		
Estimation and approval of the project cost		
Preparation of schematic/preliminary designs		
Design development		
Preparation of construction drawings		
Review of drawings and specifications		
Monitor and guarantee design quality		
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.		
Documentation for both principal and sub-contract procurement		
Tendering (calling of tenders)		
Tender adjudication including clarification meetings		
Negotiation of tender prices		
Contractor appointment		
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)		
Preparation and application of health and safety requirements		
Studying the impact of the project on health and safety		
Preparation and application of environmental requirements		
Studying the impact of the project on the environment		

Construction phase		
Management and inspection of the site		
Attending site handover meetings		
Attending progress meetings		
Attending technical meetings		
Interpretation and clarification of ambiguities in the contract documents and drawings.		
Giving input into the project program		
Making decisions quicker about design changes or variations		
Selection of materials		
Making payments to contractors for work done		
Monitoring health and safety principles during project implementation.		
Monitoring environmental management principles during project implementation.		
Conducting quality checks		
Dispute resolution		
Sub-contractor appointments		
Post-construction phase		
Establishment of criteria for acceptance of completed project		
Contribute to compiling snagging or defects list		
Input into development of maintenance plan		
Final account settlement		
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.		
Issuing of certification acknowledging completion of the works		
Input into project review and close out report		
Release of guarantees and securities		
Release of retentions where applicable		
Record the warranties and certificates information		

7. How do you rate the following project phases for client involvement in the order of importance, on a 5-point scale where 1 is the least important and 5 most important

Project phases	**Rating**
Pre-construction	
Construction	
Post construction	

8. Using the following scale where 1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree indicate to what extent you agree with the following statements about clients

Statement	1	2	3	4	5
Client roles and involvement					
The success of a project is linked to the extent of client involvement and client control in their projects					
Clients experience more satisfaction and product quality when involved in their projects					
The lack of client understanding of the construction process contributes to unsuccessful project delivery					
Construction clients understand their roles and responsibilities and adequately perform them					
Dealing with experienced clients is better than dealing with those that are inexperienced					
Expert and experienced clients play a more active role in their projects					
Appropriate client involvement is beneficial to the project					
The lack of adequate client involvement in their projects leads to numerous problems encountered across the project lifecycle such as disputes, time and cost overruns, etc					
Client interference is a hindrance to project success					
Contractor perceptions					
Client satisfaction is essential to securing client loyalty and retention					
Contractors strive to fulfill client satisfaction					
Prequalification of contractors is essential to ensure project success					
Clients tend to delay payments due to the contractors					
Delays in payments by clients contributes to negative project consequences					
Procurement					
Clients' understanding of the procurement process influences the level of their involvement on construction projects					

It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method					
Clients are adequately involved during the procurement stage					
Clients tend to choose the procurement method which they are familiar with, which might not necessarily be the best					
The selection of an inappropriate procurement method can have a major impact on project success					
Clients must retain authority to exercise maximum control of the procurement process					
Clients should have the right to choose the procurement method they want to use					
Project stakeholder relations					
Trust, honesty and cooperation by clients is vital for successful project delivery					
Greater involvement of clients in their projects will change the current adversarial construction environment					
Adequate client knowledge of construction projects influences teamwork and collaboration					

9. How would you rate your overall experience with the involvement of clients in their projects on a 5-point scale where 1=totally unsatisfactory, 2=unsatisfactory, 3=neutral, 4=satisfactory and 5=totally satisfactory.

1	2	3	4	5

10. Do you consider that client involvement in construction projects can be improved? If so, please elaborate

……

……

APPENDIX C: CLIENT QUESTIONNAIRE

Client Questionnaire

1. What type of client are you?

Public sector	
Private sector	

2. How would you rate yourself in terms of experience as a construction client?

No experience	Limited experience	Some experience	Very experienced

3. On average how many construction projects do you commission per year?

_____

4. What proportion of your work have you awarded using the following procurement methods? **(MUST ADD UP TO 100%)**

Procurement method	%
Traditional procurement system (Architect-led)	
Design-build	
Construction management	
Management contract	
Turnkey	
Negotiated	
Cost-plus	
Other (specify)	
Total	

5. Indicate how often you get involved in each of these activities based on YOUR experience during EACH of the project phases using the 5-point scale where 1= never; 2= seldom; 3=sometimes; 4= often; and 5=always.

Project phase	
Preconstruction	
Developing project brief	
Selection of consultant/professional team	
Provide the consultants with all the necessary information required for the project	
Construction planning	
Description of the roles and responsibilities of the contractor and consultants	
Estimation and agreement of the project duration	
Estimation and approval of the project cost	
Preparation of schematic/preliminary designs	
Design development	
Preparation of construction drawings	
Review of drawings and specifications	
Monitor and guarantee design quality	
Selection of procurement strategy e.g. Traditional (Architect led), Design and Build, etc.	
Documentation for both principal and sub-contract procurement	
Tendering (calling of tenders)	
Tender adjudication including clarification meetings	
Negotiation of tender prices	
Contractor appointment	
Choice on the form of construction contract to use (JBCC,FIDIC,NEC,GCC)	
Preparation and application of health and safety requirements	
Studying the impact of the project on health and safety	
Preparation and application of environmental requirements	
Studying the impact of the project on the environment	
Construction phase	
Management and inspection of the site	
Attending site handover meetings	
Attending progress meetings	

Attending technical meetings	
Interpretation and clarification of ambiguities in the contract documents and drawings.	
Giving input into the project program	
Making decisions quicker about design changes or variations	
Selection of materials	
Making payments to contractors for work done	
Monitoring health and safety principles during project implementation.	
Monitoring environmental management principles during project implementation.	
Conducting quality checks	
Dispute resolution	
Sub-contractor appointments	
Post-construction phase	
Establishment of criteria for acceptance of completed project	
Contribute to compiling snagging or defects list	
Input into development of maintenance plan	
Final account settlement	
Monitoring the process of testing and commissioning of all systems, plant and equipment in the project.	
Issuing of certification acknowledging completion of the works	
Input into project review and close out report	
Release of guarantees and securities	
Release of retentions where applicable	
Record the warranties and certificates information	

6. How do you rate your involvement in the following project phases in terms of importance, on a 5-point scale where 1 is the least important and 5 most important)

Project phases	**Rating**
Pre-construction	
Construction	
Post construction	

7. Using the following scale where 1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree indicate to what extent you agree with the following statements about clients

Statement	**1**	**2**	**3**	**4**	**5**
Clients want to be adequately involved throughout the project phases					
The importance of client roles in their construction projects has generally been ignored or undermined					
Clients have the ability to influence and change the attitudes, behaviours and procedures of other parties					
Construction clients clearly understand their roles and responsibilities					
It is crucial that construction clients understand their roles to ensure prompt delivery of projects					
The current state of the construction industry allows for optimum client involvement					
The industry can do more to ensure optimum client involvement, e.g. client training					
Client satisfaction is linked to adequate client involvement					
Expert and experienced clients play a more active role in their projects					
The role of the client has generally evolved from one of a passive fund provider to an increasingly active participant					
The level of client involvement is affected by the level of client understanding of technicalities					
Procurement is a very important part of a construction project and clients need to be actively involved					
It is fundamentally important for clients to obtain appropriate advice on the choice of procurement method					
As a client, you are adequately involved in the choice of procurement method					
Clients should have the right to choose the procurement method they want to use					
Clients tend to select the procurement method they are familiar with, which might not necessarily be the best					
The selection of an inappropriate procurement method can have a major impact on project success					
Clients must retain maximum authority to exercise maximum control of the procurement process					
Your understanding of the procurement process influences your level of involvement on construction projects					
As a client, you fully understand the risks involved under various procurement methods					
Project stakeholder relations					

Trust, honesty and cooperation of clients is vital for successful project delivery					
Greater involvement of clients in their projects will change the current adversarial construction environment					
Adequate client knowledge of construction projects influences teamwork and collaboration					

8. When embarking on a building project, would you prefer a single point of contact (for example, Design and Build contractor) for all the design, costing and construction processes? Using the following scale where 1: Strongly Disagree; 2: Disagree; 3: Unsure; 4: Agree; 5: Strongly Agree indicate to what extent you agree

1	2	3	4	5

9. How would you rate your involvement in your projects on a 5-point scale where 1=totally unsatisfactory, 2=unsatisfactory, 3=neutral, 4=satisfactory and 5=totally satisfactory.

1	2	3	4	5

10. Do you consider that your involvement in construction projects can be improved? If so, please elaborate

……

……

APPENDIX D: DECLARATION OF CONSENT

PROJECT TITLE: EFFECTIVENESS OF CLIENT INVOLVEMENT IN CONSTRUCTION PROJECTS: A CONTRACTOR PERSPECTIVE

RESEARCHER

Full Name: PROGRESS S CHIGANGACHA

School: SCHOOL OF ENGINEERING, PROP. DEV.

College: UKZN

Campus:HOWARD COLLEGE

Proposed Qualification: MSC CONSTRUCTION MANAGEMENT

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SUPERVISOR

Full Name of Supervisor: PROF. THEO HAUPT

School: SCHOOL OF ENGINEERING, PROP. DEV.

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HSSREC RESEARCH OFFICE

Full Name: Prem Mohun
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Govan Bheki Building
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I, **Progress S. Chigangacha**, Student no. 216073498 am a MSc student, in the School of Engineering, Property Development Program at the University of KwaZulu Natal. You are invited to voluntarily participate in a research project entitled: EFFECTIVENESS OF CLIENT INVOLVEMENT IN CONSTRUCTION PROJECTS: A CONTRACTOR PERSPECTIVE. The study aims to investigate the optimum involvement of clients in their construction projects so as to facilitate successful project delivery.

I guarantee your anonymity in that your responses will not be identified or linked with you personally. No identifiers or personal information will be recorded on any research instrument. All data collected will be aggregated to ensure that anonymity and confidentiality are achieved. Your participation is completely voluntary and there is no penalty if you do not wish to participate in the study. Should you wish to receive a summary of the key findings of the study will you provide your contact information for that purpose only.

Please sign on the dotted line to show that you have read and understood the contents of this letter. The questionnaire will take approximate 15 minutes to complete.

DECLARATION OF CONSENT

I…… (Full Name) hereby confirm that I have read and understand the contents of this letter and the nature of the research project has been clearly defined prior to participating in this research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire. I accept that anonymity and that the strictest confidentiality are assured.

Participants Signature……

Date…….

APPENDIX E: ETHICAL CLEARANCE

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

3 June 2016

Ms Progress Shingai Chigangacha 216073498
School of Engineering
Howard College Campus

Dear Ms Chigangacha

Protocol reference number: HSS/0614/016M
Project Title: Effectiveness of client involvement in construction projects: A Contractor perspective.

Full Approval – Expedited Application

In response to your application received 24 May 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....

Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Professor Theo Haupt
Cc. Academic Leader: Professor Christina Trois
Cc School Administrator: Ms Nombuso Dlamini

Humanities & Social Sciences Research Ethics Committee
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BIOGRAPHICAL SKETCH

Progress S. Chigangacha was born in Bulawayo, Zimbabwe on March 01, 1989. She completed her Honours Degree in Quantity Surveying at the National University of Science and Technology in 2013. Since then she has been working in consulting firms across South Africa, and has had the opportunity to engage with diverse construction industry stakeholders. She has had the opportunity to be involved in and manage various medium to large scale projects, most of which are commercial, educational and residential facilities. Having had the opportunity to interact with clients on a first hand basis sparked the interest of this dissertation so as to ascertain the optimum level of client involvement which facilitates project success.

She is a registered Candidate Quantity Surveyor with the South African Council of the Quantity Surveying Profession and aims at continuous professional and academic improvement. A dedicated quantity surveyor who strives for excellence and aims at making a contribution to influencing change within the construction industry.