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Determinants of Client Values and Satisfaction in Post-Disaster Reconstruction Projects

Sadegh Aliakbarlou

A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy in Civil Engineering – Construction Engineering and Management
The University of Auckland
2018
Abstract

In comparison to business-as-usual situations, construction services in a post-disaster rebuild environment are procured and managed in an ad hoc way. The increasing rate of natural disasters in recent years has highlighted the need to seek ways to improve the state of construction practices in the post-disaster rebuild environment. This is significant due to the poor performance of contractors in post-disaster reconstruction projects. There is a common belief that continuous improvement in delivery of contractor services can be achieved through analysing client values and satisfaction. Client satisfaction can be regarded as a major determinant of a service provider’s ability to meet client values. This research, adopting a mixed methodological (quantitative and qualitative) approach, was undertaken to identify client values in post-disaster reconstruction projects and to understand how service providers comply with those values to satisfy their clients.

Client values were identified through a comprehensive literature review which was complemented by expert interviews and analysis of documents obtained from archives of client construction organisations participating in this research. This resulted in a long list of values being identified and categorised into two groups, terminal and instrumental. Terminal values are the clients’ final goals, or they are in relation to a final goal, while instrumental values are the requirements needed to help achieve terminal values. Next, a comparative study, using interviews and a questionnaire survey, was conducted to examine how the importance of the identified values differs between business-as-usual and post-disaster reconstruction. The findings indicate that clients in disaster reconstruction have less concern regarding cost and more concern about time, compared to business-as-usual, while they have similar views regarding quality for both situations. Also, the significance of instrumental values such as integration, procurement and communication for reconstruction projects is highlighted. Due to the differences that exist for prioritisation of client values between the two situations, the study moved towards enhancing the understanding of client values within reconstruction services in a post-disaster situation. Using interviews, 39 values (extracted from the long list of values) were identified as client values within contractor services in a post-disaster situation. In addition, using a questionnaire survey with public and
private clients, the research determined the levels of importance and performance of the 39 client values. Satisfaction analysis, priority ranking, and importance-performance analysis are applied to identify and prioritise the critical client values which require improvement. In terms of importance, an analysis of the survey results revealed the nine most significant values under the nine Project Management Institute knowledge-management areas. Eight of these values are the same from both a public and private clients’ perspective, such as timeliness, to-budget delivery, higher standard of quality, availability of resources, competency, building a trust-based relationship, financial strength and stability, communication technique and documentation, and productivity. The ninth values for public and private clients are risk management skills & techniques, and financial strength and stability, respectively. In addition, based on these values, a conceptual client value index was proposed. In terms of satisfaction, the findings explored and prioritised the reconstruction contracting-service areas requiring improvement from the perspectives of public and private clients. In terms of terminal values, timeliness makes the largest contribution to client dissatisfaction, from both the public and private client perspective. In terms of instrumental values, competency and productivity make the largest contribution to private and public client dissatisfaction, respectively.

The study provides improved awareness as to how contractor services are valued, from the client perspective, particularly in post-disaster situations. The research ensures greater emphasis can be placed on values are a better predictor for successful delivery of constructing services in post-disaster situations. Accordingly, based on those values, the research designed a satisfaction assessment instrument which can be used to assess client satisfaction and contactor performance in post-disaster reconstruction projects. In addition, the study identified the values as area of concern for improvement. It is recommended that service providers devote more effort to improve their performance on the values identified as having significant association with client satisfaction.
Acknowledgements

First and foremost, I would like to thank my supervisor Professor Suzanne Wilkinson. I am sincerely grateful for her trust in my ability to do a PhD, as well as her constant enthusiasm and support throughout this doctoral journey. Without her excellent supervision and knowledge, completing this thesis would have been an insurmountable challenge.

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I am grateful to Dr Johnson Kayode Adafin, Dr Alice Chang-Richards, and Mr HwaRang Kim, as well as all my colleagues and friends during this journey, for their friendly encouragement and stimulating discussions.

My gratefulness is due to the thesis examiners for their review and valuable suggestions.

Finally, I am very grateful to the participants who were willing to spend time and took part in this research by answering interview questions or completing a questionnaire survey.
Dedication

To:

Iran where I belong, heart and soul

My beloved family:

My parents, Ghodrat and Kolsom, for their endless love and everlasting support

My sisters, Maryam and Elham, for their immutable kindness and inspiration

My brother, Hamid, for his constant help and encouragement

New Zealand, for its affable people and invaluable beauty
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<td>ARCOM</td>
<td>Association of Researchers in Construction Management</td>
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<tr>
<td>ASCE</td>
<td>American Society of Civil Engineers</td>
</tr>
<tr>
<td>AUBEA</td>
<td>Australian University Building Educator Association</td>
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<tr>
<td>BRANZ</td>
<td>Building Research Association of New Zealand</td>
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<tr>
<td>CBI</td>
<td>Confederation of British Industry</td>
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<tr>
<td>CCC</td>
<td>Christchurch City Council</td>
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<td>CCDU</td>
<td>Christchurch Central Development Unit</td>
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<td>CCG</td>
<td>Construction Clients’ Group</td>
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<td>CERA</td>
<td>Canterbury Earthquake Recovery Authority</td>
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<td>CRED</td>
<td>Centre for Research on the Epidemiology of Disasters</td>
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<tr>
<td>CVI</td>
<td>Client Value Index</td>
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<tr>
<td>DEST</td>
<td>Department of Education, Science and Training</td>
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<tr>
<td>ERA</td>
<td>Excellence in Research for Australia</td>
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<tr>
<td>GDCPP</td>
<td>Generic Design and Construction Process Protocol</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GR</td>
<td>Gap Rank</td>
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<td>HEFCE</td>
<td>Higher Education Funding Council for England</td>
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<td>HESA</td>
<td>Higher Education Statistical Agency</td>
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<tr>
<td>IPA</td>
<td>Importance Performance Analysis</td>
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<tr>
<td>IRMO</td>
<td>Infrastructure Rebuild Management Office</td>
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<tr>
<td>KPIs</td>
<td>Key Performance Indicators</td>
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<tr>
<td>NZBERS</td>
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<td>NZTA</td>
<td>New Zealand Transport Authority</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>PMBOK</td>
<td>Project Management Body of Knowledge</td>
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<td>PMI</td>
<td>Project Management Institute</td>
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<td>PR</td>
<td>Priority Rank</td>
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<td>PWC</td>
<td>Price Waterhouse Cooper</td>
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ROO    Research Operations Office
SCIRT  Stronger Christchurch Infrastructure Rebuild Team
SMEs   Subject Matter Experts
UNISDR United Nations Office for Disaster Risk Reduction
List of Journal Papers


List of Conference Papers


List of Co-Authorship Forms

- **Chapter 2:**

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- **Chapter 5:**
  
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  **Section 5.5.2:** Aliakbarlou, S., Wilkinson, S., Costello, S. B., & Jang, H. (2017).

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- that the candidate wrote all or the majority of the text.

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Last updated: 19 October 2015
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Chapter 1

Introduction

1.1 Background

1.1.1 Post-disaster reconstruction overview.

Various definitions of ‘disaster’ can be considered from different organisations involved in disaster management. According to the Centre for Research on the Epidemiology of Disasters (CRED, 2017), disaster can be considered as:

“a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance ... an unforeseen and often sudden event that causes great damage, destruction and human suffering. Though often caused by nature, disasters can have human origins.”

The CRED definition of a disaster highlights the impact of a disaster on human society, while, the International Federation of Red Cross (IFRC, 2017), by considering material, economic and environmental losses, defined a disaster as:

“a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. Though often caused by nature, disasters can have human origins.”

The United Nations Office for Disaster Risk Reduction (UNISDR (2017)) by considering the concept of vulnerability (the state of being exposed to a disaster) referred to a disaster as:

“a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.”

According to Shaluf (2007) disasters include:

natural phenomena, man-made disasters including social, technical and warfare disasters; and hybrid disasters, which are a combination of natural forces and human errors.
The way natural disasters are viewed can influence how disasters and their impact can be managed. There are several efforts in the literature aiming to define the term disaster management. The International Federation of Red Cross (IFRC, 2017), defined disaster management as:

“the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies.”

The IFRC definition of disaster management emphasises the humanitarian works affected by a disaster, while UNISDR (2017) highlights:

“the organisation, planning and application of measures preparing for, responding to and recovering from disasters”

Similar to UNISDR, Shaluf (2007) described disaster management as:

“a collective term encompassing all aspects of planning for and responding to the disasters, including both pre-disaster and post-disaster activities.”

Disaster management includes four main phases: mitigation, preparedness, response and recovery (Alexander, 2002; Perera et al., 2010; Twigg, 2004). Mitigation is about reducing the effects of future disasters and includes activities such as public training, developing better building codes and zoning, and vulnerability analyses. Preparedness includes planning processes to respond to predicted disasters. The response phase includes the emergency actions to save individual lives after a disaster, as well as search and rescue techniques required to minimise the threats produced by disasters. Recovery includes activities designed to return the community to a normal situation by restoration of major services such as communication and transportation, followed by reconstruction activities.

Recovery encompasses the community and four environments: social, economic, natural and built environments, and hence it should “support the cultural, emotional and physical well-being of individuals and communities; minimise the escalation of the consequences of emergencies; reduce future exposure to hazards and their associate risks – i.e. build resilience; and take opportunities to regenerate and enhance communities in ways that will meet future needs across the social, economic, natural and built environments” (New Zealand Ministry of Civil Defence and Emergency Management, 2016b).
According to Berke et al. (1993), among the four key phases in disaster management, recovery is not well-developed and understood. The New Zealand Ministry of Civil Defence and Emergency Management (2016a) indicated that, to date, the focus has not been on the recovery phase in comparison with other phases of disaster management and “it’s time to ensure recovery and the opportunity to build resilience are also given due attention”. Management and coordination of recovery programmes (including post-disaster reconstruction activities) can be slow, complex and expensive (Koria, 2009). This study is an attempt to understand the areas of concerns for improvements within reconstruction activities after disaster events.

Post-disaster reconstruction plays a key role in the recovery phase. It is also important for the mitigation and preparedness phases. It can be seen as an opportunity to re-plan the community and improve the built environment and infrastructure in comparison to as they were prior to a disaster (Kijewski-Correa & Taflanidis, 2012; Sankaran et al., 2014). Reconstruction after a disaster can involve “the full restoration of all services, and local infrastructure, replacement of damaged physical structures, the revitalisation of the economy and the restoration of social and cultural life” (Aysan & Davis, 1993). Following emergency and restoration activities, the programmes for reconstructing the physical structures damaged in a disaster should start as soon as possible. The recovery of the community can be slowed by poor performance of construction organisations in rebuilding physical structures (Dynes & Quarantelli, 2008). To address this issue, among different aspects of reconstruction, this study considers the physical aspect.

Table 1.1 shows the rising estimated damage from disasters reported by the Red Cross (2016) over the period between 2006 and 2015. The estimated disaster damages, as shown in Table 1.1, highlights the significance of construction activities required for rebuild programmes after a disaster event. In addition, Figure 1.1 illustrates a line graph, using the values in Table 1.1, to show the trend of estimated disaster damage by type from 2006 to 2015.
Table 1.1 *Estimated Disaster Damages (2006-2015), millions of US $ (2015 prices)*

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<thead>
<tr>
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<td>Droughts</td>
<td>3,799</td>
<td>596</td>
<td>246</td>
<td>2,326</td>
<td>3,712</td>
<td>11,490</td>
<td>26,318</td>
<td>1,849</td>
<td>11,016</td>
<td>6,476</td>
<td>67,828</td>
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<td>Earthquakes</td>
<td>4,157</td>
<td>17,635</td>
<td>97,307</td>
<td>6,862</td>
<td>52,959</td>
<td>249,957</td>
<td>19,711</td>
<td>9,233</td>
<td>7,183</td>
<td>6,028</td>
<td>471,031</td>
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<td>Extreme temperatures</td>
<td>1,211</td>
<td>n.a.</td>
<td>24,884</td>
<td>1,251</td>
<td>517</td>
<td>848</td>
<td>162</td>
<td>1,017</td>
<td>2,521</td>
<td>94</td>
<td>32,506</td>
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<tr>
<td>Floods</td>
<td>9,871</td>
<td>28,365</td>
<td>22,818</td>
<td>9,105</td>
<td>46,391</td>
<td>85,522</td>
<td>27,232</td>
<td>54,211</td>
<td>38,110</td>
<td>21,078</td>
<td>342,703</td>
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<td>Storms</td>
<td>21,486</td>
<td>34,815</td>
<td>68,876</td>
<td>29,729</td>
<td>31,488</td>
<td>55,214</td>
<td>91,164</td>
<td>53,335</td>
<td>40,162</td>
<td>32,948</td>
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<tr>
<td>Wild fires</td>
<td>1,138</td>
<td>5,415</td>
<td>2,872</td>
<td>1,723</td>
<td>2,318</td>
<td>3,188</td>
<td>1,276</td>
<td>1,091</td>
<td>259</td>
<td>3,038</td>
<td>22,317</td>
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<td>Industrial accidents</td>
<td>n.a.</td>
<td>1,024</td>
<td>n.a.</td>
<td>1,736</td>
<td>22,508</td>
<td>n.a.</td>
<td>32</td>
<td>203</td>
<td>n.a.</td>
<td>n.a.</td>
<td>25,503</td>
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<td>Total damages</td>
<td>41,662</td>
<td>87,850</td>
<td>217,003</td>
<td>52,732</td>
<td>159,893</td>
<td>406,219</td>
<td>165,895</td>
<td>120,939</td>
<td>99,251</td>
<td>69,662</td>
<td>1,421,105</td>
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Note. Modified from Red Cross (2016)

*Figure 1.1. Estimated disaster damages (2006-2015), millions of US $ (2015 prices)*
Reconstruction services can be procured by public and private client sectors, independently, in cooperation, or in competition (Labadie, 2008). Following a disaster event, the construction service providers are called upon by clients to assist with reconstruction programmes (Wilkinson et al., 2016). Providing contracting services in post-disaster reconstruction is viewed as undertaking the business-as-usual construction process of replacing the built environment, but over a very intense time frame (Norling, 2013), with greater uncertainties (Bosher et al., 2007; Hayles, 2010; Sun & Xu, 2011) and complexity (Boano & García, 2011; Coffey & Trigunarsyah, 2012; Haigh & Amaratunga, 2010), and with a shortage of material, machinery and human resources (Chang et al., 2011a). Following small-scale disasters, existing business-as-usual methods can be adapted and modified for reconstruction projects, while for larger scale disaster events, it is essential to develop appropriate systems, in place in advance, to improve the effectiveness of reconstruction delivery (Rotimi et al., 2009). This highlights the need for development of practices to ensure that the services provided to clients in reconstruction projects are based on decisions and activities which are effective for post-disaster situations.

In addition, although existing business-as-usual construction practices can be used in post-disaster situations, it is important to note that despite several impressive efforts supporting the improvement of contracting-service delivery in business-as-usual construction, there is still room for rethinking and further improvements (Egan, 1998; Latham, 1994; Wolstenholme et al., 2009).

Despite the increasing amount of construction organisations’ experience in post-disaster reconstruction projects, the rebuild programmes are still poorly managed and the industry needs to seek better performance (Halvorson & Parker Hamilton, 2010; Lloyd-Jones, 2006; Sankaran et al., 2014; Sawyer et al., 2010), as they often fail to achieve the project objectives (Ika et al., 2012; Kim & Choi, 2013; Lyons, 2009), and satisfy clients.

1.1.2 Significance of understanding client values and satisfaction.

To ensure that reconstruction programmes are successfully implemented, construction organisations should understand how to perform effectively in post-disaster situations (Wilkinson et al., 2014). Central to this is to implement service practices that meet the reconstruction project’s client values. Hence, issues such as what the practices are that
service providers have to improve (to satisfy the client values), throughout the post-disaster project life cycle, need to be addressed.

Post-disaster reconstruction is procured and managed in an ad hoc way (Le Masurier et al., 2006b). Hence, having appropriate guidelines and procedures in place in advance is imperative, to accelerate the process of recovery after disaster events through effective reconstruction delivery (Rotimi et al., 2009). One essential ingredient is the presence of good practice, within contractual systems, that determines the client values within constructing services and ensures that the procured services will satisfy the client. This is because project success, as well as construction quality, can be considered as the satisfaction of expectations of major stakeholders such as clients (Barrett, 2000; Sanvido et al., 1992). In other words, contractual systems include the construction client values within contracting services (Masterman, 2003), and service providers should comply with these values (Yang & Peng, 2008). To help achieve this, a concerted effort is required to understand the client values (Ahmed & Kangari, 1995).

To achieve client satisfaction within procured disaster reconstruction services, first it is important to understand what clients value from contractor services in a post-disaster situation. Although clients may have similar values for business-as-usual construction and post-disaster reconstruction, it is the weightings of these values that is not well understood for post-disaster reconstruction situations. Disaster reconstruction procurement and management priorities are modified from business-as-usual activities (Le Masurier et al., 2006a; Prieto & Whitaker, 2011) inducing changes to the client values employed to the management of projects. Exploring and prioritising client values within contracting services in a post-disaster situation are important, particularly, to improving services delivery practices.

Boyd and Chinyio (2006) categorised client values into terminal values and instrumental values. Issues related to time, cost and quality can be regarded as terminal values, while instrumental values are associated with the delivery team’s participants, relationships, coordination and so on (Boyd & Chinyio, 2006). Clients have the same objectives, such as procuring a service or product within a reasonable cost, quality, and time (Hatush & Skitmore, 1997a; Jafari, 2013; Plebankiewicz, 2010; Soetanto & Proverbs, 2002). Hence, in
the construction literature (Hatush & Skitmore, 1997a; Jafari, 2013; Marzouk, 2008; Plebankiewicz, 2010; Shen et al., 2006; Topcu, 2004), contractor attributes and practices are assessed by various traditional terminal values in relation to cost, time, and quality. However, clients can still be dissatisfied if explicit time, cost and quality criteria have been met (Torbica & Stroh, 2001), as determination of the project success is far more than the satisfactory delivery of terminal values (Westerveld, 2003).

According to Butcher and Sheehan (2010), achieving compliance with terminal values “no longer represents excellent performance. Rather, such compliance tends to be viewed as the minimum performance requirement on construction programmes.” There are various instrumental values within client-contractor relationships which can determine the success or failure of projects (Isik et al., 2009). As a result, in addition to those traditional values, various researchers (Butcher & Sheehan, 2010; Ibrahim et al., 2014; Meng, 2012) have identified different criteria, such as environmental impact, trust and respect, commitment, effective communication, attitude, innovation, and occurrence of litigation, disputes and claims. These values are the competencies required for managing the contractual relationships in any type of construction project and should be treated as intangible assets in construction organisations (Erik Eriksson et al., 2009; Jay et al., 2009; Voss & Kock, 2013; Yasamis et al., 2002; Zou et al., 2014). However, issues such as what client terminal and instrumental values are within post-disaster reconstruction services, their importance levels and priorities, and how they differ between business-as-usual and post-disaster reconstruction, have yet to be addressed.

After exploring client values within contracting services, it is necessary to understand how well the contractor is meeting client values. Hence, the service providers can adopt strategies to satisfy client expectations, with emphasis on continuous improvement (Barrett, 2000). In this context, the satisfactory delivery of client values within contractor services can be recognised as a prerequisite to maintaining a contractual relationship and project success. In the construction domain, several studies attempted to assess and improve delivery of contracting services based on analysing client satisfaction levels within different dimensions of provided services (Cheng et al., 2006; Nkado & Mbachu, 2001; Soetanto et al., 2001). Satisfaction is represented by the differences between expectations and performances within different dimensions of contracting services, as perceived by assessors.
(Cheng et al., 2006; Oliver, 2014). “Client satisfaction in the construction industry can be defined as the ability of a contractor to meet the client expectations” (Rahman & Alzubi, 2015). It is viewed as an important indication of quality (Smith & Love, 2001; Yasamis et al., 2002) and success (Chan & Chan, 2004; Delgado-Hernandez & Aspinwall, 2005) in construction projects. It can also be considered as a means to providing better working relationships (Soetanto et al., 2001), and achieving mutual learning (Love et al., 2000). However, despite the role of client-satisfaction assessment in continuous improvement of contracting services, it has not been well-developed in post-disaster reconstruction situations. For example, a search of the literature using the key words in relation with client values and contractor services as well as ‘post-disaster reconstruction’, indicates a lack of awareness and details in understanding client-satisfaction levels within provided construction services in post-disaster reconstruction.

1.1.3 Key words.

The key words used in this study need to be defined in order to provide consistency in terminology. Table 1.2 shows the key words and their descriptions used in this study. There are further key words included in this study, in addition to the key words shown in Table 1.2, and they are described in different chapters of this thesis.
### 1.2 Problem Statement

The concept of client values and satisfaction assessment is fully developed in the marketing domain. As such, a concept has been widely acknowledged as an approach to improve the state of service delivery, it has been introduced and implemented in business-as-usual construction situations. It can also be applied to post-disaster reconstruction situations. Yet, its importance in post-disaster reconstruction projects has received little attention. For example, few, if any, studies have focused on developing a systematic approach to assessing client satisfaction within post-disaster reconstruction contracting services. This research was undertaken to address this gap. The following two research questions were therefore developed:

- What do clients value within constructing services for post-disaster reconstruction?
- How well do service providers satisfy the client values within constructing services for post-disaster reconstruction?

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**Table 1.2  
Key words and descriptions**

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<th>Key words</th>
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<td>Client values</td>
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</tr>
<tr>
<td>Client satisfaction</td>
<td>Levels of perceived satisfaction by clients as result of contractors’ services</td>
</tr>
<tr>
<td>Construction services</td>
<td>Services required for constructing a building or infrastructure</td>
</tr>
<tr>
<td>Contractor services</td>
<td>Services provided by a contractor for constructing a building or infrastructure</td>
</tr>
<tr>
<td>Contracting services</td>
<td>Services that are contracted for constructing a building or infrastructure</td>
</tr>
<tr>
<td>Contractual relationships</td>
<td>Relationships that are developed due to an existing contract for constructing a building or infrastructure</td>
</tr>
<tr>
<td>Construction project</td>
<td>Constructing a building or infrastructure with a defined timeline and scope</td>
</tr>
<tr>
<td>Procured services</td>
<td>Services that are procured for constructing a building or infrastructure</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>Restoration of all services, infrastructure, and replacement of damaged physical structures</td>
</tr>
<tr>
<td>Reconstruction service</td>
<td>Services required for restoration of all services, infrastructure, and replacement of damaged physical structures</td>
</tr>
<tr>
<td>Reconstruction programmes</td>
<td>Programmes required for restoration of all services, infrastructure, and replacement of damaged physical structures</td>
</tr>
<tr>
<td>Reconstruction projects</td>
<td>Restoration of all services, infrastructure, and replacement of damaged physical structures with a defined timeline and scope</td>
</tr>
<tr>
<td>Post-disaster rebuild environment</td>
<td>The environment in which restoration of all services, infrastructure, and replacement of damaged physical structures is occurred</td>
</tr>
<tr>
<td>Post-disaster reconstruction</td>
<td>Restoration of all services, infrastructure, and replacement of damaged physical structures after a disaster event</td>
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<tr>
<td>Disaster situations</td>
<td>Situations after a disaster event</td>
</tr>
<tr>
<td>Nine PMI knowledge-management areas</td>
<td>Project management knowledge and practice in terms of its component can be categorised into nine knowledge areas</td>
</tr>
</tbody>
</table>
Due to the benefits of understanding client values and satisfaction to improving construction practices, this study is motivated to explore client values within contracting services for post-disaster reconstruction situations and to determine the client-satisfaction levels of those values. Studying and developing such concepts will contribute to knowledge in the satisfaction and performance domains, which have received little attention in post-disaster reconstruction literature, in comparison with business-as-usual. Ultimately, it will benefit clients and service providers involved in reconstruction projects.

First, the study will help to understand what clients value from contractor services in a post-disaster situation, aiding the reconstruction practitioners to make better informed decisions in the reconstruction effort. Understanding the client values can aid contractors to better prepare for reconstruction programmes and provide improved services to clients. Focusing the attention of service providers on these values is believed to have the greatest impact on the project’s success. If reconstruction practitioners are aware of client expectations, then preparing good practices and recommendations for reconstruction works can become much easier, particularly in developing a contractual mechanism suitable for post-disaster reconstruction programmes.

Second, the study will provide more awareness as to how construction service providers can perform in a post-disaster situation, hence, “opportunities can be found for improving and increasing the speed of the overall recovery, including community recovery” (Wilkinson et al., 2016). The study will reveal the areas of concern for pre-planning and rethinking to improve the services provided in the disaster rebuild environment. According to Project Management Institute (PMI), assessing contracting services’ performance, in the form of monitoring and controlling, is essential to effective project management (PMI, 2005). Analysing client satisfaction will enable service providers to identify the areas that require improvement and, consequently, move towards improving their performance, which will result in successful reconstruction programmes (Oliver, 2014). Understanding what level of performance contractors need to target to achieve their clients’ satisfaction, can help maintain client-contractor relationships and help contractors to build better reputations in the reconstruction market place. Finally, the study will equip clients with an invaluable performance-assessment system.
1.3 Research Objectives

This research aims to understand the client values within contracting services for post-disaster reconstruction projects and, from these, identify the critical values that require improvement to promote reconstruction projects in the event of a natural disaster in New Zealand. Objectives are developed based on the aforementioned research problem statement.

Based on the following objectives, as result of the first research question, this study aims to:

1. Explore construction client values in the construction literature.

   Continuous improvement of construction services is achievable with concerted efforts on deliver client values (Ahmed & Kangari, 1995; Egan, 1998). Thus, continuous effort is needed to articulate and define client values to the project team (Tang & Shen, 2013). In other words, client values should be the key point of references for project participants throughout the project life cycle (British Standard Institute, 2014). To help achieve this, objective 1, in Chapter 2, by conducting a comprehensive review of relevant literature on client values and qualities, aims to define and map the construction client values within construction services. Objective 1 therefore will make contributions to the existing literatures concerning client values by exploring and categorising the client values and qualities which can help in securing clients’ objectives during project life cycle.

2. Understand what New Zealand clients value from business-as-usual contracting services.

   Due to increasing competition in the construction industry, the way of conducting business in construction industry has changed (Ximena & Alfredo, 2013). For example, the New Zealand construction industry has been called upon to seek a way forward which will improve delivery practices to provide better value to clients (Allan et al., 2008; Building Research Association of New Zealand, 2012). This indicates that the perception of businesses in the construction industry needs a greater emphasis on seeking ways to deliver better value for clients (Allan et al., 2008). In order to address this need, objective 2, in Chapter 3, using expert opinions (Chua et al., 1999; Yu et al., 2006), aims to understand what New Zealand clients value and how they perceive value from contractor services. This will assist the New Zealand
construction industry to deliver improved services and, hence, contribute to providing better value to clients.

3. Investigate how client values for reconstruction differ from business-as-usual. Reviewing research trends shows that there is less research on global guidelines for best practice in reconstruction programmes after disaster, in comparison with business-as-usual. The project conditions and management of post-disaster reconstruction is modified from business-as-usual construction (Le Masurier et al., 2006a; Prieto & Whitaker, 2011), inducing changes to the client values and priorities within contracting services. However, it is not clear how the importance levels of client values differ between business-as-usual construction and post-disaster reconstruction. Hence, objective 3, in Chapter 4, aims to address this gap. This will help the construction industry (performing in business-as-usual situations) to better prepare for and perform in post-disaster situations.

4. Identify construction client values within contracting services for post-disaster reconstruction projects.
Due to the specific environment and scarcity of mature research on the topic of client values and priorities for post-disaster situations, limited research information exists that could assist the construction industry. A number of guidelines are available for post-disaster reconstruction, “but hardly any which are widely endorsed and can be followed by humanitarian agencies” (Ahmed, 2011). For example, there is a need to conduct research to develop critical factors for success in post-disaster reconstruction projects (Coffey & Trigunarsyah, 2012). To describe the need, objective 4, in Chapter 5, aims to develop a consolidated conceptual framework encompassing a number of client values within contracting services for post-disaster situations. This will be helpful for reconstruction participants, such as clients and contractors, to implement the reconstruction programmes in an orderly and efficient manner. Understanding client values can help reconstruction practitioners to prepare good practices and recommendations for reconstruction works, particularly in developing a contractual system suitable for reconstruction programmes.

5. Determine a conceptual client value index (CVI) for post-disaster reconstruction contracting services.
Following a disaster event, there is an urgent need to develop an effective contractual system for rebuilding, for clients (Zuo, 2010), as contractors are called upon by clients to assist with reconstruction programmes (Wilkinson et al., 2016). Assessing the contracting services in the rebuild environment requires a specific approach and concept. Hence, objective 5, in Chapter 5, aims to develop a conceptual CVI encompassing a number of values as a basis towards development of a practical mechanism for assessing the contracting services in post-disaster reconstruction projects. This will help in developing an effective contractual relationship as well as monitoring and controlling the contracting services throughout the relationship. Ultimately, it will contribute to the smooth delivery of post-disaster reconstruction programmes.

Based on the following objective, as result of the second research question, this study aims to:

6. Understand the satisfaction levels of client values within procured contracting services for post-disaster reconstruction projects.

Service providers “have not been able to deliver satisfactory reconstruction projects and this is something that must be remedied as a matter of urgency” (Von Meding, 2008). Despite the increasing amount of construction organisations’ experience in post-disaster reconstruction projects, the rebuild programmes are still poorly managed and the industry needs to seek better performance (Halvorson & Parker Hamilton, 2010; Lloyd-Jones, 2006; Sankaran et al., 2014; Sawyer et al., 2010). Opportunities can be found for improving reconstruction programmes by understanding how the construction sector performs in a post-disaster situation (Wilkinson et al., 2016). Objective 6, in Chapter 6, aims to understand how contractors comply with client values, and determine the satisfaction levels of client values within contracting services. This will contribute to improving post-disaster reconstruction practices based on determining the critical values for improvement to promote reconstruction projects. This will assist in the satisfactory delivery of client values within contracting services and, consequently, the achievement effective reconstruction projects in post-disaster situations.
1.4 Research Scope

The New Zealand construction industry is a small but competitive construction market and very important for the overall economy of the country (Construction Strategy Group, 2015). For example, it contributed 8% to GDP and employed 10% of the workforce in 2015 (PWC, 2016). Despite the importance of the construction sector for New Zealand, its performance is still low in comparison with some other comparable sectors of the New Zealand economy (PWC, 2016), and other similar economies and countries (Constructing Excellence, 2009).

According to Building and Economics Research Limited (2003), a 10% improvement in New Zealand business-as-usual construction performance would increase the country’s GDP by about $2 billion. To help achieve this, a study of New Zealand construction industry performance conducted by Allan et al. (2008), recommends reducing the emphasis on lowest contract price and, rather, seeking an approach which provides better services to clients. The Building Research Association of New Zealand (2012), reported the need for investigating the issues related to the construction client value. Internationally, contractor failure to provide the best value to their clients (The Times, 2008; CECA, 2008; CIOB, 2009; ASCE, 2009, as cited in Holt, 2010) has highlighted the importance of value-added contractual approaches, in which construction service providers are assessed based on perceived values within contracting services rather than contract price (Holt, 2010).

Construction organisations are not only a growth driver of the New Zealand economy, but they also play key roles within post-disaster reconstruction in the country. They are called upon by clients to assist with rebuild programmes after a disaster event (Wilkinson et al., 2016). Similar to the business-as-usual situation, it has been widely accepted that construction organisations need to improve their performance to meet the challenging demands in post-disaster situations (Halvorson & Parker Hamilton, 2010; Lloyd-Jones, 2006; Sankaran et al., 2014; Sawyer et al., 2010). This is further highlighted in New Zealand due to the significance of rebuild programs and the essential role of construction organisations in the country’s rebuild programs after recent disasters.

Figure 1.2 illustrates the cost to the insurance industry in paying claims for damage due to natural disasters which have occurred in New Zealand since 2000 (Insurance Council of New Zealand, 2017).
Figure 1.2. Line graphs for disaster damages in New Zealand (2000-2017)
In terms of post-disaster reconstruction, the Canterbury earthquake in New Zealand, on 22 February 2011, highlighted the significance that construction organisations play in New Zealand. Canterbury had two major earthquakes and several aftershocks. In the first earthquake on September 2010, a large number of homes and infrastructure systems were damaged in Christchurch’s Central Business District while there were no fatalities (Wilkinson et al., 2016). In the second major earthquake, on 22 February 2011, Central Canterbury, especially Christchurch, was severely damaged. For example, over 60% of buildings, about 52% of urban sealed roads (1,021 km of roading), 58 km of the sewer system, and 51 km of water supply, in the city were significantly damaged (CERA, 2012a, 2012b). The earthquake also caused rock falls, cliff collapse, and land movement, and 185 people lost their lives. In the first year following the earthquake, there were more than 600,000 claims for buildings, land and contents damage (Earthquake Commission, 2011). The rate of insurance settlement following the damaging February 2011 earthquake (Figure 1.3) highlights the scale of the rebuild after the earthquake. For example, insurers had paid out $26 billion, as at 2015. According to The Reserve Bank, the cost of the Canterbury rebuild has been upped to $40 billion, comprised of about $7 billion for infrastructure, $16 billion for residential construction, and $16 billion for commercial construction (Wood et al., 2016).

![Figure 1.3. Canterbury earthquake paid claims](image)

Note. Adapted from Wood et al. (2016).
The reconstruction of major infrastructure has been managed and funded by central government and local government agencies (Christchurch City Council, 2016). In response, to the September earthquake, an Infrastructure Rebuild Management Office (IRMO) was created by Christchurch City Council (CCC) which was responsible for finance, procurement, design, and construction management of the reconstruction process. However, due to the significance of the February 2011 earthquake, the government recognised the need for a different approach and set up an Earthquake Recovery Authority (CERA) for rebuild and recovery of Canterbury. In addition, the Stronger Christchurch Infrastructure Rebuild Team (SCIRT), was created by CCC responsible for rebuilding horizontal infrastructure such as roads and potable-water/storm-water/waste-water systems. SCIRT is made up of representatives from the three Client organisations/owning organisations (including CCC, New Zealand Transport Authority (NZTA), and CERA) as well as the five private/non‐owning organisations (including MacDonnell Dowel, Downer, City Care, Fulton Hogan, Fletcher). Once SCIRT had been formed, it took over 148 projects from IRMO as well as another 125 projects that were redefined as standard SCIRT projects (Controller and Auditor-General, 2017). In addition to infrastructure, government has significant vertical assets such as commercial buildings that needed rebuilding and strengthening. A partnership was developed between central government through the Christchurch Central Development Unit (CCDU) including CERA, CCC, and other groups to focus on rebuilding Christchurch’s central business district.

Alongside the aforementioned central government and local government agencies engagements (as public clients) in the Canterbury rebuild process, individual homeowners and private organisations/property owners (as private clients) also engaged in the reconstruction of commercial and residential properties, as well as new land development projects due to the demands for new buildings. To support these private clients, the New Zealand government engaged Fletchers Construction Ltd, and Fletcher Earthquake Recovery (EQR) was established to run a Project Management Office for liaising between private owners and contractors, and managing insurance claims on behalf of Earthquake Commission (Wilkinson et al., 2016).
1.4.1 Involving different types of clients’ perspective

Client values can be broadly assessed, based on client perceptions of the provided product/service (Zeithaml, 1988). However, the perception of what is received will differ depending upon the particular perspective of different clients. In other words, the client’s perceptions of the provided services (Cheng et al., 2010), is influenced by their type, as different types of clients would have different perspectives regarding their procured services.

“A client is a person or organisation using the services of a lawyer or other professional person or company” (Oxford English Dictionary, 2012). Literature on the subject of construction clients (Bertelsen & Emmitt, 2005; Brandon & Lu, 2008; Strategic Forum for Construction, 2014) shows that different terms are applied to refer to similar categorisations. Brandon and Lu (2008) categorized different client types based on:

- Paying client and users
- Knowledge and experience within construction industry
- Organisation nature
- Type of business
- Type of product
- Change on environment
- Size of organisation

Among the above categories, “organisation nature” which includes the terms public clients and private clients has been widely used in the construction literature. Boyd and Chinyio (2006) categorised clients into three types, such as public, private and mixed. They added “mixed” client to public and private categories. “Public” was divided into national, whereby services are provided throughout the country, and local, whereby services are resourced and managed locally. “Private” client was divided into industry (e.g., construction and building services; energy and water; manufacturing and engineering) and service (e.g., business services; education; health and social work). The final division, mixed, includes a degree of both public and private organisations.

In this study, a client is a person or organisation that buys/receives the services and a contractor is a person or organisation that provides the services. The study’s participants
are categorised as public and private clients. Private clients’ participants can also act as service providers, for example, for other public clients. However, all the participants are involved and contribute to this study from a client perspective, as they were requested to identify or rank their values (as client values) within the services they receive from their service providers (contractors).

Desire to change, to provide better construction services, particularly in post-disaster situations, makes the New Zealand disaster reconstruction sector (as explained above) an appropriate base for the current study. Construction experts from business-as-usual and leading reconstruction-related organisations, in both the public sector (such as central government and local government agencies) and private sector (such as individuals and organisation owners), were eligible to participate since the study seeks to investigate client values and their satisfaction levels within construction services from the clients’ perspective. Research participants ranged from middle management to top management levels. Also, all construction types could be included in this research, as the main focus is to understand client values and satisfaction, with provided services, during a contractual relationship, rather than with the final product.

1.5 Research Methodology

Research is an art of scientific information and refers to a search for knowledge through movement from the known to the unknown (Raja & Kumar, 2016). The Research Operations Office (ROO) of the University of Cambridge, Higher Education Statistical Agency (HESA), Higher Education Funding Council for England (HEFCE), and the Department of Education, Science and Training (DEST) in Australia use a definition for research as provided by the Organisation for Economic Co-operation and Development (OECD) which indicates research comprises of:

“creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and the use of this stock of knowledge to devise new applications” (OECD, 2015).

Based on the research purpose, there are there major research types, namely exploratory that explores a new phenomenon, explanatory that investigates and establishes casual relationships, and descriptive that explains a phenomenon as it naturally exists/happens
(Saunders et al., 2009). A combination of different research types can be included in conducting research (Neuman, 2013). In this research, while exploratory research is required in achieving a number of research objectives (e.g., exploring construction client values), explanatory research explores the relations among the findings acquired from the exploratory research.

The research contribution to the existing body of knowledge is influenced by the research methodology (Cherns & Bryant, 1984). The research methodology is the plan of action which deals with why, what, how, when, and from where data is collected and analysed (Scotland, 2012). It is a framework by which research is conducted and includes the procedures and principles which can be used for a scientific investigation (Masterman & Gameson, 1994). It determines the adaption and application of appropriate approaches, strategies, and methods to carry out the research (Higgin & Jessop, 1965).

Different models have been designed to show the elements of research methodology which lie behind the adaption and application of particular methods in development of a research methodology. In other words, those elements need to be considered before selection of the research data collection and analysis methods. For example, the Generic Design and Construction Process Protocol (GDCPP) research model developed by Kagioglou et al. (2000) includes research philosophy, approach, and techniques as the key elements of the research model. Similarly, Saunders et al. (2009) used the research ‘onion’ model, to explain a research methodology within different layers/elements. It includes research philosophy at the outer layer, research approaches and strategies as the middle layers, and data collection and analysis techniques/methods as the final layer. As shown in Figure 1.4, both of these models indicate that the research philosophy at the outer layer guides the inner research approaches, and that the research techniques at the last central layer are based on the research strategies and approaches.
1.5.1 Research philosophies

Different possible approaches for conducting research can be determined from understanding the research philosophical background (Gill & Johnson, 2010). Research philosophy is an “over-arching term relating to the development of knowledge and the nature of that knowledge” and includes assumptions of how a researcher views the world and it influences the selection of the research strategies and methods (Saunders et al., 2009). Ontology, epistemology, and axiology are three major different ways of thinking (assumptions) about research philosophy. Ontology relates to researcher assumptions about how the world operates. It is concerned: “with the nature of reality” and can be objectivism, that indicates “social entities exist in reality external to social actors concerned with their existence”, or it can be subjectivism, that indicates “social phenomena are created from the perceptions and consequent actions of social actors concerned with their existence” (Saunders et al., 2009). Epistemology is concerned with “what constitutes acceptable knowledge in a field of study” (Saunders et al., 2009). It is about how the researchers know what they know. Thus, it aims to investigate the connectivity between a particular field of study which is being researched and the researcher (Collis & Hussey, 2013). Axiology “studies judgements about value” (Saunders et al., 2009). It includes assumptions to investigate whether research is value free and unbiased, or value laden and biased (Collis & Hussey, 2013). Based on these philosophical assumptions there are different
research philosophy aspects. However, according to Tashakkori and Teddlie (1998), viewing the research philosophy as a continuum rather than opposite positions is important, as “at some points the knower and the known must be interactive, while at others, one may more easily stand apart from what one is studying”. Table 1.3 explains, and compares, four aspects of research philosophy in management research.

Table 1.3
Comparison of four research philosophies in management research

<table>
<thead>
<tr>
<th></th>
<th>Positivism</th>
<th>Realism</th>
<th>Interpretivism</th>
<th>Pragmatism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontology: the researcher’s view of the nature of reality or being</strong></td>
<td>External, objective and independent of social actors</td>
<td>Is objective. Exists independently of human thoughts and beliefs or knowledge of their existence (realist), but is interpreted through social conditioning (critical realist)</td>
<td>Socially constructed, subjective, may change, multiple</td>
<td>External, multiple, view chosen to best enable answering of research question</td>
</tr>
<tr>
<td><strong>Epistemology: the researcher’s view regarding what constitutes acceptable knowledge</strong></td>
<td>Only observable phenomena can provide credible data, facts. Focus on causality and law like generalisations, reducing phenomena to simplest elements</td>
<td>Observable phenomena provide credible data, facts. Insufficient data means inaccuracies in sensations (direct realism). Alternatively, phenomena create sensations which are open to misinterpretation (critical realism). Focus on explaining within a context or contexts</td>
<td>Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivating actions</td>
<td>Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data</td>
</tr>
<tr>
<td><strong>Axiology: the researcher’s view of the role of values in research</strong></td>
<td>Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance</td>
<td>Research is value laden; the researcher is biased by world views, cultural experiences and upbringing. These will impact on the research</td>
<td>Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective</td>
<td>Values play a large role in interpreting results, the researcher adopting both objective and subjective points of view</td>
</tr>
<tr>
<td><strong>Data collection techniques most often used</strong></td>
<td>Highly structured, large samples, measurement, quantitative, but can use qualitative</td>
<td>Methods chosen must fit the subject matter, quantitative or qualitative</td>
<td>Small samples, in-depth investigations, qualitative</td>
<td>Mixed or multiple method designs, quantitative and qualitative</td>
</tr>
</tbody>
</table>

Note. Adapted from Saunders et al. (2009).
1.5.2 Research approaches

Research design development is guided by the research approach. In other words, decision making regarding determining appropriate research data types and sources, as well as its data collection and analysis techniques, are based on the research approach (Easterby-Smith et al., 2012). Research approaches can be categorised into quantitative, qualitative, and triangulation which is mix quantitative and qualitative (Fellows & Liu, 2015). As shown in Table 1.3, from the philosophical perspective, quantitative and qualitative approaches follow positivism and interpretivism, respectively, while the triangulation approach draws upon pragmatism or realism. The research approaches can be inductive or deductive. In the inductive approach, the researcher formulates a theory (hypothesis) and then develops a strategy to test it, while in the deductive approach the researcher collects data and then develops a theory as a consequence of the data analysis (Saunders et al., 2009). The quantitative research approach follows the deductive process, while the qualitative research approach follows the inductive process (McNeill & Chapman, 2005a). Table 1.4 compares the strengths and weaknesses of these research approaches.

Qualitative research (with a focus on ‘how’) studies the operation of concepts and theories by exploring the context in which they occur through guidance provided by individuals (Denzin & Lincoln, 2011). It is “concerned with subjective assessment of attitudes, opinions and behaviour” (Kothari, 2004). Hence, it has interpretative orientation due to encounters with individuals’ perspectives during the research.

Quantitative research explores causal relations among variables (Denzin & Lincoln, 2011), by providing a snapshot of a situation and the data (Fellows & Liu, 2015), which help in investigating ‘how much’ or ‘how often’, the variables occur in the context they are researched. It has positivism orientation as it aims to collect factual data and to explore relations among them to understand how they align with any available theory (Fellows & Liu, 2015).

The term triangulation is used for mixed quantitative and qualitative research (Amaratunga et al., 2002; Fellows & Liu, 2015). Different researchers (Amaratunga et al., 2002; Bryman, 2015; Morgan, 2007; Teddlie & Tashakkori, 2009) have acknowledged the advantages of
using triangulation as, for example, it eliminates the weaknesses of quantitative and qualitative approaches while gaining the advantages of both approaches.

Table 1.4

*Strengths and weaknesses of quantitative, qualitative, and triangulation*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Quantitative| • Provide wide coverage of the range of situations  
• Fast and economical  
• Where statistics are aggregated from large samples, they may be of considerable relevance to policy decisions | • The methods used tend to be inflexible and artificial  
• Not very helpful in generating theories  
• Difficult for decision makers to infer what changes and actions should take place in future  
• Not effective in understanding processes or the meanings that individuals attach to actions |
| Qualitative | • Data collection methods seem to be more natural than artificial  
• Able to observe changes processes over time  
• Able to understand individuals’ meaning  
• Able to generate theory | • Data collection can be tedious, requiring more resources  
• Analysis and interpretation of data may be more difficult  
• Harder to control the pace, progress and end-points of research process  
• Policy makers may give low credibility to results from qualitative research |
| Triangulation| • Enable confirmation of results  
• Elaborate or develop analysis with more details  
• Obtain the relevant strengths and avoid weaknesses of both methodology | • Possible constraints imposed by available resources |

Note. Adapted from Amaratunga et al. (2002)

In this research, a qualitative approach is helpful in achieving the exploratory study objectives, while a qualitative approach is helpful in conducting the explanatory study. Hence, to achieve the research objectives, this study employs the triangulation approach. Mixing qualitative and quantitative techniques allows researchers to capitalise on the strengths, and offset the weaknesses, of each approach. In addition, a personal bias that the study may likely experience, due to using a single methodological design, is reduced by mixing qualitative and quantitative techniques (Edmondson, 1992). According to Miles and Huberman (1994), there are four major ways (as shown in Figure 1.5) for combining quantitative and qualitative approaches. The first way includes the integrated collection of both types of data. The second way involves a multivalve survey (which use more than one
survey) along with continues filed of research. In the third way, qualitative research is conducted as an exploratory study and acts as a precursor to conduct quantitative research and, finally, the findings (of the quantitative research) can be tested by conducting another round of qualitative study. The forth way is the opposite (reverse) way of conducting the third way. This study closely follows the third way as illustrated in Figure 1.5. The qualitative parts of this research provide insights into the understanding of construction client values (where there is a lack of theoretical and empirical insight), while its quantitative parts explore the relations among the findings from the qualitative parts.

Figure 1.5. Ways of combining qualitative and quantitative approaches

Note. Adapted from Miles and Huberman (1994)

1.5.3 Research strategies

A research strategy is “an overall plan for conducting a research study” which offers guidance in planning, executing, and monitoring the research (Johannesson & Perjons, 2014). Different criteria need to be considered for selection of an appropriate strategy such as:

- Philosophies and approaches of the research (Saunders et al., 2009);
- Characteristics and aims of the research, availability of the required resources for conducting the research, and ethical considerations (Johannesson & Perjons, 2014);
- Personal experience of the researcher and the research’s participants (Tashakkori & Creswell, 2008);
• Form of research questions, requirement for control of behavioural events, and capability to focus on contemporary events (Yin, 2014).

Table 1.5 shows a number of research strategies as used by different researchers. In addition, it indicates three criteria mentioned by Yin (2014) for selection of the appropriate research strategy. This research uses the survey strategy and, therefore, employs research questions such as ‘what’, ‘how’, and ‘how much’ to deal with the characteristic and objectives of the study, as well as the available data. The survey strategy allows the researcher to use the triangulation approach. In addition, this study benefits from archival analysis to explore archival documents that help in understanding the research topic.

Table 1.5

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Purpose</th>
<th>Form of research question</th>
<th>Needs control of behavioural events</th>
<th>Focuses on contemporary events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>Investigate cause and effect relationships</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Investigate some aspects of a phenomenon to get an overview</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>Explore data from archival records and documents</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>History</td>
<td>Explore historical events</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Case study</td>
<td>Investigate in depth a phenomenon with a well-defined boundary</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Action</td>
<td>Produce useful knowledge by addressing practical problems in real-world settings</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Grounded theory</td>
<td>Develop concepts and theories through analysing empirical data</td>
<td>How, why</td>
<td>No</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Ethnography</td>
<td>Investigate cultural practices and social interaction</td>
<td>How, why</td>
<td>Yes/ No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note. Modified from Johannesson and Perjons (2014)
1.5.4 Research techniques/methods

Research methods/techniques refer to the methods/techniques which are required to collect and analyse data during the research study (Masterman & Gameson, 1994). Depending on the purpose, approach and strategy of the research, as well as type of available data, different techniques/methods can be used to collect and analyse qualitative (e.g., words, images, video clips) and quantitative (e.g., numeric) data. Regardless of type of data, questionnaires, interviews, focus groups, observations, and document analysis are the five major data collection techniques (Johannesson & Perjons, 2014). In this research, while the questions need qualitative data to derive exploratory findings, quantitative data are required to acquire explanatory research outcomes.

After conducting a literature review, this research benefited from document analysis, interviews, and questionnaire surveys in the data collection and validation process.

1. **Document analysis** is a procedure that helps in evaluating documents and includes investigating records produced by individuals, professionals and organisations (Gibson & Brown, 2009). The second research objective is concerned with exploring construction client values in New Zealand. Analysing documents including the criteria used by construction clients to select their service providers or assess their performance (such as tender documents and progress reports) can be an appropriate approach to explore what values they expect to receive from their service providers. A document analysis also can complement the study interview responses and validate the findings from the literature review.

2. **An interview** is a “communication session between a researcher and a respondent, in which the researcher controls the agenda by asking questions of the respondent” and it is “often used for eliciting emotions, attitudes, opinions, and experiences from the respondents” (Johannesson & Perjons, 2014). An interview can be structured with predetermined and planned questions, semi-structured with a certain extent of structured sequence of questions, or unstructured with no structured sequence of questions (Fellows & Liu, 2015; Johannesson & Perjons, 2014). In this study, semi-structured in the form of open-ended questions are used to conduct interviews with experts. In this case, open-ended questions are discussed with individuals, who are experts in the field being researched, in a way that the experts can formulate the answers in their own words.
Using semi-structured interviews can explore a wide range and rich descriptive data by offering balance between the flexibility of an open-ended interview and the focus of a structured interview (Patterson & Spreng, 1997). This helps the study to expand its findings (due to its flexibility), while maintaining its focus. Conducting semi-structured interviews with experts in this study is helpful in exploring construction client values. For example, interviewees are involved to get their feedback for shortlisting the identified values from literature. In addition, using semi-structured interviews with experts is helpful for validation of the study questionnaire findings (King, 1994). Conducting interviews with experts in their particular field of expertise, which is known as interviewing Subject Matter Experts (SMEs), has been recognised as an appropriate method to validate and modify the research findings (Egbelakin et al., 2015; King, 1994).

3. A questionnaire is a “written document including a list of questions to be distributed to a number of respondents”, to generate responses as data that can be analysed and interpreted by the researcher (Johannesson & Perjons, 2014). A questionnaire type can be self-administered or interviewer-administered (Saunders et al., 2009). By using a self-administered questionnaire, a respondent receives, completes, and returns the questionnaire using internet (e.g., email), post (e.g., mail), or a person (e.g., researcher) who delivers the questionnaire and collects it later. Interviewer-administered questionnaires can be administered using telephone (telephone questionnaires) or through face-to-face meetings (structured interviews) with a determined schedule of questions from which an interviewer should not deviate (Saunders et al., 2009). This study benefited from a questionnaire survey to extend its exploratory findings (Saunders et al., 2009). While most of the questionnaires were distributed using email, some of them were delivered by the researcher to the respondents and collected later.

In addition, the collected data in this study are analysed using a combination of qualitative (e.g., content analysis) and quantitative techniques (e.g., statistical data analysis).

4. Content analysis is a procedure that aims to make sense of the data collected from textual material in the form of writing, sounds or pictures (such as articles, transcripts, memos, archival documents, audio and video records) and to highlight the important messages, features or findings. The procedure of conducting content is clear and simple,
“which means that reliability will be high, i.e. different researchers will come to essentially the same results” (Johannesson & Perjons, 2014). It involves classifying (coding or indexing) elements of the data into categories and then calculating the frequencies of those elements within the developed categories (Deanscombe, 2010; Johannesson & Perjons, 2014). This study follows the basic steps of conducting content analysis (shown in Table 1.6) introduced by Deanscombe (2010). The second objective of this study benefited from using content analysis in exploring client values within available literature. Content analysis also is helpful in identifying the client values indicated in reviewed literature and documents. Finally, it was helpful in categorising the identified client values under nine PMBOK knowledge areas. The content analysis of this research benefited from using NVivo 9 (a computer software package) which is helpful for development of codes and categories, and analysis of the text codes within each category.

Table 1.6
Activities of content analysis

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Select a sample of texts or images</td>
<td>Criterion for sample selection needs to be explicit.</td>
</tr>
<tr>
<td>2. Break the texts down into smaller units</td>
<td>Words, sentences, or even whole paragraphs can be a unit.</td>
</tr>
<tr>
<td>3. Develop relevant categories for analysis</td>
<td>Categories need to be relevant to the research issues/ideas/questions.</td>
</tr>
<tr>
<td>4. Code the units based on the developed categories</td>
<td>The units (activity 2) are coded by using the categories (activity 3).</td>
</tr>
<tr>
<td>5. Count the units' frequency for each category</td>
<td>The number of units (activity 2) is calculated for each category (activity 3).</td>
</tr>
<tr>
<td>6. Analyse the texts in terms of the frequency of the units</td>
<td>Study the frequencies (activity 5) to further explore the texts.</td>
</tr>
</tbody>
</table>

Note. Modified from Deanscombe (2010).

5. **Statistical data analysis** is a procedure that aims to make sense of the data collected from different kinds of quantitative data (such as nominal, ordinal, interval, and ratio). It can be descriptive or inferential (Deanscombe, 2010). Descriptive data analysis describes a given sample of data by using various aggregate measures (such as mean, median, standard deviation etc...), tables, charts, and figures. Inferential data analysis, on the other hand, aims to determine inferences from collected data to more general conditions for example, by exploring a relationship/difference among data such as
variables or populations. In this study, the mean (or average) is used in exploring the ranking, importance, and performance of the identified client values. In addition, a simple correlation coefficient is used to understand the relationships between variables.

This thesis is a manuscript-based thesis. Hence, instead of providing only one research methodology chapter, it is appropriate to provide details on the research techniques used to achieve each objective in its respective chapter. Following is a discussion of the research design and different methods that were employed to achieve the research aim and objectives.

1.5.5 Research design and methods

The research design consists of four stages. The research objectives were achieved through the following research design stages.

1.5.5.1 First stage: The research background highlighted the significance of understanding construction client values and satisfaction, especially in post-disaster situations. In addition, expert interviews (Interview Survey 1 in Appendix 2) were conducted with five highly experienced construction participants in New Zealand. Conducting expert interviews with individuals who are experts in the particular field that is being researched (Sugar & Schwen, 1995) can help to validate the research findings (Egbelakin et al., 2015). All the interviewees (in first stage) were experts in construction management with more than ten years’ experience and they all had clear ideas about contractor evaluation. The number of expert interviews was considered adequate, as the interviewees could answer in a way that a data saturation point was achieved. For example, all of the interviews could confirm the validity of the research problem that was earlier identified and formulated by the research team and literature review. The data saturation was achievable due to the fact that the purpose of the expert interviews (at this stage of the study) was to refine and validate the research problem that was earlier identified and formulated by the research team and literature review.

Analysis of responses obtained from the interviews justified the significance of understanding what clients value within contractor services in the New Zealand construction industry. Further details about the interview questions, participants’ profile, and results can be found in Appendix 2.
After defining the research problem, the research aim and objectives (indicated above) were determined, as the specific environment and scarcity of mature research on the topic in New Zealand requires a systematic framework and in-depth research to be conducted to facilitate post-disaster reconstruction success.

**1.5.5.2 Second stage:** In order to fulfil objective 1, an in-depth, systematic literature review was used to identify construction client values (see Chapter 2) and “to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question” (Higgins & Green, 2010). Semantic analysis and extraction of the research sample through codified terms were used to find keywords in the selected articles and map the extracted terms. The results helped in developing a conceptual framework based on the key client values in construction projects, with the intention of understanding their relative importance from a client perspective and gaining insight into how service providers satisfy those values.

Due to the large number of the values identified from the literature review, this study, using document analysis and interviews with New Zealand construction client organisations, identified a manageable set of client values within contractors’ services suitable for the New Zealand construction context (see Chapter 3). In addition, analysis of the documents and interview responses (Interview Survey 2 in Chapter 3) helped in developing a basis to identify the ways in which clients perceive value. Chapter 3 helped in achieving objective 2. Based on an in-depth review of the findings as detailed in Chapter 2 and the findings obtained from interviews and documents analysis as detailed in Chapter 3, a long list of values, was developed to provide a basis for conducting the study interviews and questionnaire survey.

**1.5.5.3 Third stage:** The third stage included four phases. The identification of the values (as mentioned in the second stage) was supported by a validation study, through interviews conducted with seven experts working in the New Zealand construction industry.

In the second phase, in order to fulfil objective 3, a two-step method (detailed in Chapter 4), including interviews (Interview Survey 3) and a questionnaire survey (Questionnaire Survey 1), was used. For step 1, expert interviews with a total of seven New Zealand construction practitioners were conducted. The interviewees were asked to select two key values (for
each Project Management Institute (PMI) knowledge-management area) from the long list of values. For step 2, a questionnaire survey was used to investigate the significance of the identified values for business-as-usual and post-disaster situations. This helped to gain an insight into how the importance in levels of these values can differ between these two situations.

In the third phase (Chapter 5), in order to achieve objective 4, an interview technique (Interview Survey 4) based on open-ended questions was used as a basis for further examination of the identified values. The interviews, conducted with 16 reconstruction experts in New Zealand, developed a series of client values within post-disaster reconstruction contracting services. In so doing, the interviewees were asked to select the most significant values for post-disaster situations from the long list of values developed in Chapter 2. Based on the interviews, a new list was developed of client values (39 in total) within contracting services for post-disaster reconstruction situations.

The fourth phase included a survey questionnaire (Questionnaire Survey 2) in order to fulfil objective 5 (represented in Chapter 5) and objective 6 (represented in Chapter 6) as well as to assist in developing Chapter 5. The 39 identified values from the third phase were incorporated into a survey questionnaire. In designing the survey questionnaire, a pilot survey with seven respondents was used to determine the required time to complete the questionnaire and to understand how easy it would be for respondents to interpret and answer the questionnaire. The pilot study questionnaire was used as the final questionnaire, due to positive feedback obtained from the pilot survey respondents. The questionnaire, using the Likert scale, considered the levels of importance and performance of the identified values (on a scale of 1 to 5, where 1 = least significant, 2 = slightly significant, 3 = significant, 4 = very significant, 5 = most significant). Having significant knowledge and understanding of reconstruction in post-disaster situations, was an important factor for selection of the survey participants. To achieve the objective 5, the importance levels obtained from the survey questionnaire were analysed. In addition, in achieving the objective 6, satisfaction analysis, priority ranking, and importance-performance analysis were applied to identify and prioritise the critical values. The validity of findings for objective 6 was also confirmed through interviews (Interview Survey 5) conducted with five post-disaster reconstruction practitioners. Selection of the interviewees was based on their expertise in the field being
researched. In addition, the number of experts that participated in the interviews can be justified based on the level of agreement about the validity of the research findings among the respondents. In other words, conducting expert interviews lead to the selection of five individuals who were experts in post-disaster reconstruction. In addition, they all had a similar view about the research findings. Figure 1.6, shows the research design and its four stages, and Figure 1.7, illustrates the third stage and its four phases.

**Figure 1.6. Research stages and methodology.**
Figure 1.7. Detailed process of third stage of the research
1.5.6 Ethical considerations

Ethics approval was achieved from the University of Auckland Human Participants Ethics Committee on 17 October, 2014 (reference number: 010690) for the duration of three years after the approval date to conduct this research, including anonymous interviews and questionnaire surveys. Participant information sheets and consent forms were designed for the research participants. Appendix 1 includes the related ethics documents.

1.6 Thesis Organisation

This doctoral thesis is in the format of “thesis with publications.” The University of Auckland doctoral guidelines indicate that the core of the thesis should include a series of published and unpublished research papers, of which the doctoral candidate should be the lead or sole author. According to the guidelines, introduction and conclusion chapters should also be included in the thesis, in addition to the research papers. Hence, in this document, five chapters have been produced based on published and unpublished research papers, to address the research aim and objectives. In addition, an introduction chapter (Chapter 1) was included to cover the research justification, objectives, and methodology. Finally, a conclusion chapter (Chapter 7) was prepared to outline the study contributions, limitations, and possible future research. The following outlines the thesis chapters and all contributing research papers.

- **Chapter 1**: Introduction: This chapter provides the research background, problem, aim and objectives. It also outlines the research scope, methodology, and ethical considerations.

- **Chapter 2**: Exploring Construction Client Values and Qualities. This chapter provides insight into client values and qualities that are associated with construction processes and products.
  

- **Chapter 3**: Rethinking What Clients Value From Contractor Services. This chapter helps in better understanding what New Zealand clients value from business-as-usual contracting services.

**Chapter 4:** Comparing Client Values Between Business-As-Usual and Post-Disaster Reconstruction. This chapter investigates how client values for reconstruction differ from business-as-usual, prompting the need to identify and prioritise client values in post-disaster situations.


**Chapter 5:** Exploring Client Values in Post-Disaster Reconstruction. This chapter develops a list of client values within contracting services for post-disaster situations, and recommends a conceptual CVI.


**Chapter 6:** Achieving Effective Post-Disaster Reconstruction. This chapter investigates the levels of client satisfaction within contracting services and defines areas requiring improvement.

Chapter 7: Conclusion: This chapter highlights research contributions, limitations, and future research.

The following manuscripts have also been used to support this thesis. They are part of the doctoral candidate’s work, and where completed during the doctoral study.


Chapter 2
Exploring Construction Client Values and Qualities

This chapter was extracted from the following manuscript:


2.1 Introduction

In construction literature, the term *construction* “refers to a process of delivering value to the client through a temporary production system” and the term *client* “is a representative for a number of – often conflicting – values, interests and time perspectives” (Bertelsen & Emmitt, 2005).

As mentioned in Chapter 1, the significance of providing better services to clients has been widely highlighted in the construction literature. To help achieve this, exploring construction client values and qualities within construction services is an essential area of research.

The provision of satisfactory services by construction service providers with respect to time, cost, and quality has been widely accepted as desirable if clients’ expectations are to be met (Jafari, 2013; Maloney, 2002; Soetanto & Proverbs, 2002). In many cases, however, clients can still be dissatisfied even though explicit time, cost and quality criteria have been achieved (Torbica & Stroh, 2001). In fact, there are other values within services by which client perceive satisfaction. Each construction services procurer may hold numerous values and expectations, with varying degrees of importance and performance. This means that a particular value or quality measure may be very important to one individual, but relatively unimportant to another (Rokeach, 1973).

Understanding that value is inherent in things, or a function of individual desires, is a controversial issue. Plato regarded value as inherent in a commodity, but Aristotle
attributed it to a commodity’s utility, stating that the standard of value lies in wants (George, 2006, as cited in Davies, 2016), such as goodness, friendship, and knowledge (Bradley, 2006; Aristotle, 350BC, book 10: 8 as cited in Thyssen et al., 2010).

Schwartz and Bilsky (1990) indicated that “values (a) are concepts or beliefs, (b) pertain to desirable end states or behaviours, (c) transcend specific situations, (d) guide selection or evaluation of behaviour and events, and (e) are ordered by relative importance”. According to them, values could be divided into “individualistic interests” (e.g., pleasure, independence), “collective interests” (e.g., equality, responsibility), or include both types of interests (e.g., wisdom).

Studies have different views for representation of the perceived value and quality. For example, a number of studies have attempted to explain that value is a trade-off between qualities and perceived psychological, as well as monetary, sacrifice (Berry & Parasuraman, 2004; Parasuraman et al., 2002). However, Cronin et al. (2000) indicated that the value of a service product is mostly interpreted by perceptions of quality.

Clients expect the best possible value from their service providers (Kelly et al., 2009). Professional service providers, for example, cater for a variety of clients who have incessant requirements (Hart et al., 1992), and they expect a high level of attention to all of their specific needs (Egemen & Mohamed, 2006; Yasamis et al., 2002). If these qualities and values, particularly from the client perspective, are not fully understood by contracting parties then it can result in low fulfilment of client expectations within a contractual relationship.

In construction literature, various studies concerning different subjects such as appropriate communications, (Soetanto et al., 2001; Yeung et al., 2008), understanding the client (Meng, 2012), trust (Cheung et al., 2013; Meng et al., 2011), commitment to the client (Davis & Walker, 2009; Ling et al., 2014a), partnering (Black et al., 2000; Bygballe et al., 2006), and public private partnerships (Babatunde et al., 2016; Hu et al., 2014), have highlighted construction client values and qualities. However, a systematic summarisation of these attributes appears to be absent from the literature. Hence, this research, in the current chapter, focuses on the commonalities and differences between value and quality.
constructs in construction studies. In addition, in regard to these two concepts, client needs and requirements reported in the literature are represented.

2.2 Evolutionary Stages of Value and Quality in the Construction Literature
While much has been written about the importance of quality and value in the construction context, the improvement in terms of service qualities and values in the construction industry is slow, compared with other industries such as manufacturing (Sezer, 2015; Sezer & Bröchner, 2014). One reason could be the lack of availability of sufficient and classified information on construction service qualities and values. For example, Kashiwagi and Byfield (2002) stated “owners are unable to differentiate high-quality from low-quality contractors owing to the lack of performance information, and as a result perceive that the lowest priced contractor is the best value. Kelly (2007) stated that “in respect of certain facets of value Kano would suggest the client has no discretion”. This motivated this study to look at the historical development of the two concepts, focusing on the most frequently mentioned aspects of values and qualities in construction studies.

Taking a specific research lens may help researchers considering definite indicators and their relationships, more than others (Padalkar & Gopinath, 2016). A historical development of construction studies in value and quality concepts, from 1995 to 2016 (shown in Figure 2.1), was investigated as part of this research. In so doing, by searching the Construction Management related journals, initially 898 abstracts were selected. Out of them, 177 articles were selected through a sample selection procedure as explained further below in the research design section. The 177 selected articles created a database for this study. Reorganising this data to present the percentage of published articles in value and quality studies, Figure 2.1 shows that the number of scholars in construction who investigated value-related topics increased during the last five years, compared with quality studies.

It appears that there is a growing interest among scholars using value concepts in construction. For example, the percentage of quality studies from 2004 to 2008 is higher than value studies, while statistics indicate that the years 2004 to 2008 can be seen as an explorative stage of both value and quality researches in the construction and building sector. In addition, the highest percentage of cumulative research for value studies was from 2013 to 2016.
2.3 Value in the Context of Construction

Value definition is the fundamental issue in value theory (Perry, 1914), as “value” may have different meanings to all concerned, that is, the stakeholders, including internal and external stakeholders (Kelly, 2007). This problem comes from the subjective and ambiguous nature of value, compounded by the fact that value has a dynamic nature, which is changing and evolving over time.

Value can be perceived within a final goal or within a process towards a goal (Perry, 1914; Rice, 1943). Allport et al. (1960) described value as having different aspects such as: theoretical, economic, aesthetic, social, political and religious. According to Patterson and Spreng (1997), value in economics is understood to be concerned with utility or desirability.

Value engineering in industrial settings refers to a methodology that decreases costs while maintaining required standards. In the social sciences, Rokeach (1973) stated that “a value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence.”

In the marketing literature (e.g. Patterson & Spreng, 1997), value is typically defined as a ratio or trade-off between perceived benefits and sacrifices. While benefits can be defined as profits, costs can determine the sacrifices.

In the context of construction, the term value is used over the term quality. However, clients can value elements of a service/product without necessarily associating them with quality. For instance, Kelly et al. (2009), by analysing value management literature, identified that the most common expression for value is based on relationship between...
perceived function and cost. Similarly, Dreschler et al. (2005) concluded that all definitions of value in construction, except for the ethical one, compare some levels of performance, functionality, utility, and benefit, with the associated level of sacrifice such as price or cost. In other words, construction performance improvement can result in enhancing client-perceived value. Understanding the performance levels of the provided services is essential to determine the client-perceived value from the procured services.

It should be noted that there is a distinction between the term value (a judgement) and the term ‘values’, and values not simply being the plural of value. According to Thomson et al. (2003), values can be subjective as they frame the individual’s judgements. However, value relates to judgements about a product or service and can be subjective, if they remain internalised within an individual, or objective, if they are expressed. Values are the principles, beliefs, and standards by which individuals live and by which the actions of individuals and organisations are guided (Thomson et al., 2003). In this sense, clients make value judgements based on their expectations and values.

Analysing the content of values in construction can help in understanding organisational cultures in the construction industry (Drevland & Svalestuen, 2013; Mills et al., 2009; Wandahl, 2015; Yuan et al., 2015). Different categories for representing client values and priorities have been produced in construction management literature. For instance, the terms internal values and external values are used for represent client values (Emmitt et al., 2005; Kelly, 2007). External values are associated with goals, and the value associated with the completed project. However, internal values are associated with the delivery team’s participants. These external and internal values can be defined as process value and product value. Process value is about giving the client the best experience during the construction project, and includes soft values (such as communication and problem-solving skills) and hard values (such as within time and budget delivery).

Product values are based on the Vitruvian values, combined with harmony with the surroundings, build-ability and environmental issues (Drevland & Svalestuen, 2013; Emmitt et al., 2005). While product values are important for clients, process values are the keys to achieving client satisfaction during a contractual relationship. However, process value is not
paid the same amount of attention and, hence, there is need for more focus on process values (Wandahl & Bejder, 2003).

Terminal values and instrumental values are other important terms which are used to categorise values in construction literature (Boyd & Chinyio, 2006). The concept of terminal and instrumental values has been introduced to construction literature from the context of social sciences (Rokeach, 1973). Instrumental values relate to an activity or an object that individuals conceive as a means to further ends, while terminal values are the purposes and goals that individuals make for themselves (Kluckhohn, 1951).

Boyd and Chinyio (2006) defined instrumental and terminal values under the means-ends principle. They determined instrumental values by referring to the relationships, coordination and administration of physical resources, people and organisations and the management of boundaries between them. Also, they described terminal values by referring to the achievement of end goals and desires. Clients and industry believe terminal values justify instrumental values (Boyd & Chinyio, 2006). However, there is not a direct relationship between these two types of values. One instrumental value can contribute to different terminal values, while different instrumental values can contribute to a particular terminal value. For example, contractor honesty and politeness, which are means values, can contribute to client-contractor true friendship which is an end value.

2.4 Quality in the Context of Construction

There are a variety of definitions about quality, from a theoretic perspective to a pragmatic perspective. Definitions go from “delighting the customer” to “conformance to specified customer requirements and expectations” or, more specifically, how well a service/product is delivered (Murphy, 2002). This would be much more achievable with a good relationship between service/product providers and customers or clients. Client satisfaction, in fact, depends on client perceptions; it is hard to find predetermined specifications of quality (Ikediashi et al., 2015).

To describe the roles that various quality attributes play for customers, Kano et al. (1984) presented the theory of attractive quality. They stated that maximum quality is achieved when targeted attributes are obtained and the customer is satisfied. In the marketing and management field, many publications have considered different aspects of quality, such as
service quality (Berry & Parasuraman, 2004; Collier & Bienstock, 2015; Cronin Jr & Taylor, 1992; Kandampully, 1998; Venetis & Ghauri, 2004), cost of quality (Carr, 1992; Guinot et al., 2016; Schiffauerova & Thomson, 2006), quality and satisfaction (Olorunniwo et al., 2006; Pantouvakis & Patsiouras, 2016; Sivadas & Baker-Prewitt, 2000), and perceived quality, satisfaction and loyalty (Callarisa Fiol et al., 2009; Loureiro & González, 2008).

Similarly, in the construction literature, quality is a critical component of project success and belongs more to competency and proficiency. Also, it is often associated with words like product, process, continuous improvement, customer requirements, complaints, and corrective actions. It is evident that quality is measured by its features and attributes (qualities) with regard to meeting customer requirements and needs in construction projects (Thomson et al., 2003). Moreover, much research has been conducted to increase system quality and decrease overall project cost as a result (Heravi & Jafari, 2014; Zhang et al., 2014).

Implementing quality management systems such as total quality management has been very popular in the construction sector (Elghamrawy & Shibayama, 2008; Talha, 2004). It would appear that there has been a historical shift from inspecting quality, to the strategic quality phase in construction (Murphy, 2002). Although the quality concept is similar to the value concept in construction management literature, some important concepts, such as corporate social responsibilities and environmental issues, have been neglected in exploring quality (Kim et al., 2012), in comparison with value.

The relationship between quality and value has been a controversial debate between a variety of researchers and practitioners, and they may use these concepts interchangeably (Choi et al., 2004). This is one of the difficulties in the wide variety of values and qualities (Zeithaml, 1988). Moreover, looking from different perspectives may result in more commonalities or differences in terms of quality and value attributes and features. This is covered in more detail in the next sections. Table 2.1 shows some of the most cited definitions of value and quality in the construction literature.
Table 2.1
*Definitions of Value and Quality in the Construction Literature*

<table>
<thead>
<tr>
<th>Reference</th>
<th>Value definition</th>
<th>Quality definition</th>
<th>Cited by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly and Male (2003)</td>
<td>“The highest level of quality for a given cost or from an optimum compromise between the two”</td>
<td></td>
<td>275</td>
</tr>
<tr>
<td>Thomson et al., (2003)</td>
<td>The values held by individuals influence their perception of the world and, more specifically, their assessment of products and services</td>
<td>An assessment of how well a product’s qualities (that is, its features or attributes) meets the customer’s needs</td>
<td>119</td>
</tr>
<tr>
<td>Arditi and Gunaydin (1997)</td>
<td></td>
<td>“Meeting the legal, aesthetic and functional requirements of a project”</td>
<td>235</td>
</tr>
<tr>
<td>Yasamis et al. (2002)</td>
<td></td>
<td>The degree to which the features of the product/service conform to the client’s needs</td>
<td>142</td>
</tr>
<tr>
<td>Emmitt et al., (2005)</td>
<td>A result of the collective efforts of the parties contributing to the process of design and construction, including soft and hard values</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Shillito and De Marle (1992)</td>
<td>Needs related to the ability to satisfy divided by cost</td>
<td></td>
<td>106</td>
</tr>
<tr>
<td>This study’s author</td>
<td>Value relates to judgment between achievements (satisfactions) and sacrifices regarding anything based on individual’s beliefs and perceptions</td>
<td>Quality relates to judgment about satisfactions with performance of a product or process based on individual’s perceptions and or standards</td>
<td></td>
</tr>
</tbody>
</table>

2.5 Research Design

This study benefited from a social constructionist stance that can be considered as an interpretive framework by which an individual (a researcher) can search to understand the world and form meanings (Creswell, 2013). To achieve the objectives of this study, the evidence was systematically reviewed to evaluate and interpret the related documents from various databases. A systematic literature review with a repeatable approach is conducted to answer research questions (Geraldi et al., 2011). A systematic review assists in collecting
empirical evidence in order to answer a research question (Higgins & Green, 2010). In the construction literature, only a few studies, typically in highly ranked peer-reviewed journals, use a systematic literature review (Chai et al., 2013; Yang et al., 2011). This study follows such an approach and, more specifically, draws on the approach adopted by previous studies (e.g. Kuhn et al., 2007; Padalkar & Gopinath, 2016; Thomé et al., 2015). In this regard, The Cochrane Handbook for Systematic Reviews, by Higgins and Green (2010) was also used in the methodology of this study. This study also benefited from semantic analysis (by exploring and understanding the natural meanings embedded in texts) and extraction of the research sample through codified terms. This helped to find keywords in the selected articles and map the extracted terms.

2.5.1 Sample selection procedure.

1. The databases searched as part of this research included Construction Management Abstracts, Excellence in Research for Australia Journal list in Building, and eight leading construction management journals (Ibrahim et al., 2013b; Wing, 1997; Xue et al., 2010) including the ASCE (American Society of Civil Engineers) Journal of Construction Engineering and Management, the ASCE Journal of Management in Engineering, Automation in Construction, Building Research and Information, Construction Management and Economics, Engineering, Construction, and Architectural Management, the International Journal of Project Management and Supply Chain Management: An International Journal.

2. Results were limited to English academic studies with access to full texts through the database engine. All required information regarding abstracts, keywords, and citations was captured and categorised using Endnote software. In addition, NVivo software was used to conduct content analysis and also to identify the connections between publications.

3. Checking completeness is a part of comprehensive review (Thomson et al., 2001). In this case, the articles that provide insights about client values and qualities in construction domain were selected as the more relevant articles. In so doing, the findings presented in the abstract/conclusion/main body of the articles were the main criteria to determine the connectivity and relevance of the articles to the research purpose. In addition, they added 29 articles that came from their
preliminary search in the literature (shown in Figure 2.2). A summary of the search history is shown in Table 2.2.

**Figure 2.2.** Sample selection procedure.

<table>
<thead>
<tr>
<th>Database/Journal</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellence in Research for Australia (ERA)</td>
<td>101</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>Association of Researchers in Construction Management (ARCOM)</td>
<td>178</td>
<td>73</td>
<td>15</td>
</tr>
<tr>
<td>Construction Engineering and Management</td>
<td>182</td>
<td>161</td>
<td>11</td>
</tr>
<tr>
<td>Management in Engineering</td>
<td>107</td>
<td>98</td>
<td>14</td>
</tr>
<tr>
<td>Automation in Construction</td>
<td>58</td>
<td>52</td>
<td>5</td>
</tr>
<tr>
<td>Building Research &amp; Information</td>
<td>60</td>
<td>55</td>
<td>17</td>
</tr>
<tr>
<td>Construction Management and Economics</td>
<td>64</td>
<td>60</td>
<td>26</td>
</tr>
<tr>
<td>Engineering, Construction and Architectural Management.</td>
<td>22</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>International Journal of Project Management</td>
<td>77</td>
<td>72</td>
<td>28</td>
</tr>
<tr>
<td>Supply Chain Management: An International Journal</td>
<td>49</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td>Other resources</td>
<td>-</td>
<td>-</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>898</td>
<td>667</td>
<td>177</td>
</tr>
</tbody>
</table>

**2.6 Analysis of Results and Discussion**

Burt (1978) mentions the elements of value as cost and quality, whereas Best and de Valence (1999) and Best and de Valence (2013) address cost, quality, and time. This debate has been continued amongst scholars and practitioners and with each of them discussing it from a specific perspective. Value can be objective or subjective (Korsgaard, 1986; Perry, 1914), for example, due to the existence of intrinsic and extrinsic value (Moore, 1922).
However, “quality” is recognised as being an objective matter. Value has often been associated with intrinsic concepts and it has a different meaning for different people. Value also has been viewed as an extrinsic concept that defines the value that something has, by virtue of it being a means to an end (Thyssen et al., 2010). Thomson et al. (2003) indicate differences between quality and value by emphasising the objective or subjective attributes of such judgement. In one of the first attempts, Rice (1943) initiated a discussion about quality and value. As he conceives these concepts, in the context of value, quality can be confined, depending on our perspective, to one object. Rice (1943) stated that the term quality, which can be applied to values, has multiple meanings. However, “that which is commonly meant by the term quality, of an object or an act, is the ground for approving it” (Rice, 1943 cited in Thyssen et al., 2010). Hence, quality indicates the basis of valuation (Thyssen et al., 2010). Based on the above, it can be stated that client satisfaction can be assessed objectively through client-perceived quality within the final construction product. Client satisfaction can also be assessed subjectively through client-perceived value through construction services.

Analysis of the results shows that studies concerning quality have mostly been cited by other studies about quality, while studies concerning value have mostly been cited by other studies about value. Also, although some studies have indicated different criteria regarding both value and quality in the construction context, they are not considered to be research about value and quality, as they concern, rather, different subjects such as partnering (Anvuur & Kumaraswamy, 2007; Bresnen & Marshall, 2000b), performance and sustainability (Bloemer et al., 2013; Cabral de Azevedo et al., 2013; Chen et al., 2010), stakeholder management (Babatunde et al., 2016; Harrison & Wicks, 2013; Jumat et al., 2012), critical success factors (Babatunde et al., 2016; Ramly et al., 2015), and satisfaction and relationship (Ahmed & Kangari, 1995; Meng, 2012). Hence, based on this study’s findings, there is an absence of direct relationship between studies about value and quality in construction literature. This indicates that, despite the existence of similarities between the concepts of value and quality in the construction literature, these two concepts can be distinguished by construction participants. In other words, studies relating to value or values are separated from studies relating to quality or qualities, indicating that these two concepts can be understood separately.
Exploring Construction Client Values and Qualities

2.7 Categorising client values and qualities

Reviewing (scanning) the selected articles resulted in identifying keywords (values and qualities) embedded in the articles. Based on the similarities among keywords, different categories as main factors were developed. 87 unique keywords have been coded to 25 main factors (see Appendix 3). These codes, as well as the 25 main factors, were searched in the selected articles and then the frequency of each of them were counted. Their weights then were calculated by dividing their frequency by the number of the searched articles. The results can be seen in Tables 2.3 and 2.4. While Endnote software was used to manage the various collected publications, NVivo software was utilised to classify, analyse and synthesise the data from the publications. For a better understanding of quality and value attributes, they have been classified into three levels. This level of analysis is related to a variety of clients with different perspectives.

- Corporate level: in this level, a construction company has been evaluated by clients in terms of value and quality. Corporate culture plays a critical role in achieving client satisfaction and sustainable competitive advantage (Yasamis et al., 2002). “Leadership, employee empowerment, partnership development, information and analysis, continuous improvement, client focus” (Yasamis et al., 2002), and commitment factors are placed in this level.

- Project level: this level of analysis is related to those factors which examine quality and value of a product/service from the design process and materials selection, to project management activities (Woodward, 1997). Such factors as price, time, quality, and performance are included in this level.

- Team level: this is an internal level of analysis. Most clients who consider team aspects are part of the project and they are known as internal clients (Cano et al., 2008). The total performance of a project strongly depends on effective team work and this definitely affects client satisfaction (Kumaraswamy et al., 2005a). Coordination, effort, mutual support, cohesion, balance of contribution, attitude, and self-direction are part of this level.

2.8 Commonalities and Differences Between Research Studies, and Implications

The findings indicate that some major factors (including their sub-factors) such as price, time, quality, conformance, and reliability have the highest citation rate in both streams of
studies (shown in Table 2.3). Under the quality stream, performance, continuous improvement, and communication had a moderately high number of citations, as did security, partnerships development, and performance, under the value stream. At the next level down, communication, credibility, leadership, continuous improvement, client focus, and commitment have been used more than other remaining factors in value studies, while security, client focus, and commitment were similarly cited in the quality stream of research. The remaining factors are classified as the lowest level of importance, according to the literature.

Table 2.3

*Distribution of Attributes Weights From Citation Analysis*

<table>
<thead>
<tr>
<th>Codes</th>
<th>Values weights</th>
<th>Qualities weights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corporate level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership (5)</td>
<td>0.133</td>
<td>0.078</td>
</tr>
<tr>
<td>Employee empowerment (0)</td>
<td>0.062</td>
<td>0.039</td>
</tr>
<tr>
<td>Partnership development (5)</td>
<td>0.213</td>
<td>0.084</td>
</tr>
<tr>
<td>Information and analysis (0)</td>
<td>0.079</td>
<td>0.046</td>
</tr>
<tr>
<td>Continuous improvement (1)</td>
<td>0.120</td>
<td>0.253</td>
</tr>
<tr>
<td>Client focus (9)</td>
<td>0.163</td>
<td>0.127</td>
</tr>
<tr>
<td>Commitment (0)</td>
<td>0.172</td>
<td>0.127</td>
</tr>
<tr>
<td><strong>Project level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price (5)</td>
<td>0.282</td>
<td>0.211</td>
</tr>
<tr>
<td>Time (4)</td>
<td>0.265</td>
<td>0.270</td>
</tr>
<tr>
<td>Quality (10)</td>
<td>0.292</td>
<td>0.419</td>
</tr>
<tr>
<td>Performance (3)</td>
<td>0.198</td>
<td>0.253</td>
</tr>
<tr>
<td>Conformance (3)</td>
<td>0.362</td>
<td>0.281</td>
</tr>
<tr>
<td>Reliability (2)</td>
<td>0.281</td>
<td>0.352</td>
</tr>
<tr>
<td>Communication (4)</td>
<td>0.152</td>
<td>0.180</td>
</tr>
<tr>
<td>Credibility (4)</td>
<td>0.136</td>
<td>0.098</td>
</tr>
<tr>
<td>Pro-social (7)</td>
<td>0.072</td>
<td>0.010</td>
</tr>
<tr>
<td>Security (6)</td>
<td>0.325</td>
<td>0.119</td>
</tr>
<tr>
<td>Achievement (5)</td>
<td>0.059</td>
<td>0.005</td>
</tr>
<tr>
<td><strong>Team level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination (1)</td>
<td>0.088</td>
<td>0.024</td>
</tr>
<tr>
<td>Effort (4)</td>
<td>0.091</td>
<td>0.005</td>
</tr>
<tr>
<td>Mutual support (0)</td>
<td>0.073</td>
<td>0.019</td>
</tr>
<tr>
<td>Cohesion (0)</td>
<td>0.041</td>
<td>0.005</td>
</tr>
<tr>
<td>Balance of member contribution (1)</td>
<td>0.098</td>
<td>0.012</td>
</tr>
<tr>
<td>Self-direction (5)</td>
<td>0.012</td>
<td>-</td>
</tr>
<tr>
<td>Attitude (3)</td>
<td>0.005</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3.774</td>
<td>3.017</td>
</tr>
</tbody>
</table>
Table 2.4 illustrates the distribution of factors across two periods of time. This can help us to understand the evolution in the research around this matter. As clearly revealed, price, quality, conformance, and security show a high association with value in the first 10 years, while, after 2006, factors including time, reliability, client focus and partnership development have more growth in value studies. Interestingly, most factors in the team level were considered by researchers after 2006. On the other hand, in quality studies, continuous improvement has been largely ignored by scholars since 2006.

Table 2.4

Distribution of Attributes During the Different Years

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Qualities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corporate level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership (5)</td>
<td>0.041</td>
<td>0.092</td>
</tr>
<tr>
<td>Employee empowerment (0)</td>
<td>0.024</td>
<td>0.038</td>
</tr>
<tr>
<td>Partnerships development (5)</td>
<td>0.086</td>
<td>0.127</td>
</tr>
<tr>
<td>Information and analysis (0)</td>
<td>0.015</td>
<td>0.064</td>
</tr>
<tr>
<td>Continuous improvement (1)</td>
<td>0.049</td>
<td>0.071</td>
</tr>
<tr>
<td>Client focus (9)</td>
<td>0.056</td>
<td>0.107</td>
</tr>
<tr>
<td>Commitment (0)</td>
<td>0.032</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>Project level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price (5)</td>
<td>0.162</td>
<td>0.12</td>
</tr>
<tr>
<td>Time (4)</td>
<td>0.078</td>
<td>0.187</td>
</tr>
<tr>
<td>Quality (10)</td>
<td>0.154</td>
<td>0.138</td>
</tr>
<tr>
<td>Performance (3)</td>
<td>0.063</td>
<td>0.135</td>
</tr>
<tr>
<td>Conformance (3)</td>
<td>0.209</td>
<td>0.153</td>
</tr>
<tr>
<td>Reliability (2)</td>
<td>0.137</td>
<td>0.144</td>
</tr>
<tr>
<td>Communication (4)</td>
<td>0.058</td>
<td>0.094</td>
</tr>
<tr>
<td>Credibility (4)</td>
<td>0.060</td>
<td>0.076</td>
</tr>
<tr>
<td>Pro-social (7)</td>
<td>0.005</td>
<td>0.067</td>
</tr>
<tr>
<td>Security (6)</td>
<td>0.181</td>
<td>0.144</td>
</tr>
<tr>
<td>Achievement (5)</td>
<td>-</td>
<td>0.059</td>
</tr>
<tr>
<td><strong>Team level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination (1)</td>
<td>-</td>
<td>0.088</td>
</tr>
<tr>
<td>Effort (4)</td>
<td>-</td>
<td>0.091</td>
</tr>
<tr>
<td>Mutual support (0)</td>
<td>0.005</td>
<td>0.068</td>
</tr>
<tr>
<td>Cohesion (0)</td>
<td>-</td>
<td>0.041</td>
</tr>
<tr>
<td>Balance of member contribution (1)</td>
<td>0.036</td>
<td>0.062</td>
</tr>
<tr>
<td>Self-direction (5)</td>
<td>-</td>
<td>0.012</td>
</tr>
<tr>
<td>Attitude (3)</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.451</td>
<td>2.323</td>
</tr>
</tbody>
</table>
Figure 2.3 was created based on Table 2.3 and represents the relationship between the factors in both studies, according to the research findings. It provides a succinct overview of the factors associated most with quality and value. The weights assigned to strong, medium, weak lines are from 0.0 to 0.999, from 1.0 to 1.999, and above 2.0, respectively. As shown in Figure 2.3, ‘balance of member contribution’ and ‘credibility’ have weak links to ‘Values’ and ‘Qualities’ based on their weights (0.098), however they are very close to the cut-off point (0.099), for medium links. Hence, while they have been assigned weak lines, the lines have been highlighted with a green colour.

It is asserted in this study that studies regarding value theory have been more focused on processes and relationships, whereas studies regarding quality theory have addressed the service transactions resulting in a final product. This finding appears to align with the research carried out in the marketing area by Storbacka et al. (1994). They reviewed the value generation through a relationship, while defining perceived service quality as “customers’ cognitive evaluation of the service ... compared with some explicit or implicit comparison standard” (Storbacka et al., 1994). Understanding client values and qualities and getting these delivered is very important for construction delivery practice in order to achieve client satisfaction. A concerted effort is required to understand the client values within construction processes as well as final products.

Many reports and studies (Building and Construction Sector Productivity Task Force, 2008; Egan, 1998; Latham, 1994; Wolstenholme et al., 2009) have argued the need for the construction industry to improve delivery practices. In current construction delivery practice, the main emphasis is on physical product, while clients want to perceive value and quality within all dimensions of construction services (Yasamis et al., 2002). “The industry needs to deal with this in order to create satisfied clients” (Boyd & Chinyio, 2006).

This study argues for a system for managing construction delivery practice through which value is generated. This study addresses the attributes (client values and qualities) by which a service provider can manage the relationship/process and the service transaction. While attributes of quality within service transaction are required to achieve client satisfaction regarding product, understanding attributes of value within a relationship/process is critical for the generation of client-perceived value.
Figure 2.3. Conceptualisation of construction client values and qualities
2.9 Conclusion

This study investigated the commonalities and differences between value and quality constructs in the construction literature. In addition, through a lens of these two concepts, client needs and requirements reported in the literature have been examined. This study argues that there is an intermingling of varying subjective and objective preferences within the construction scholarship, rather than a broad adherence to the value theory and other related theories. This research shows that project-level factors such as price, time, quality, conformance, and reliability are strongly associated with both the quality and value constructs.

Literature focusing on the dimensions of external relationship/process values from the construction client perspective is less available. Although there is diversity in current thinking about product value(s) and internal process values amongst construction parties, most of them are descriptive reviews which are unable to prioritise and classify the embedded key client values from the client perspective. The main problem with this is that most of the research outcomes are based on service-provider perceptions rather than client perceptions, whereas client value is determined by client perceptions, not by service-provider assumptions or intentions (Anderson et al., 2009). Hence, the validity and importance of the values and qualities identified need to be investigated and modified based on the client perspective. It also is important to investigate how service providers comply with these criteria.

Many of the criteria proposed by existing studies are critical to improving client value, in order to understand how client perceptions of value can be improved. However, it was noted that there is a lack of research on actual relational attributes of the construction contractual parties (Bryde & Robinson, 2005; Meng, 2012; Yeung et al., 2012). Many of the existing studies are not purely about client values within project level, corporate level, and team level, instead they focus on developing values between different parties at the project level. This study, while focused on the commonalities and differences between client values and qualities in construction literature, attempted to conceptualise them within project level, corporate level, and team level.
Limitations of the research include the search period (1995-2016), the fact that the results were limited to English-language academic studies, and the choice of databases searched as part of the research. To analyse, the commonalities and differences between research studies, the author reviewed the selected articles’ findings and implications to understand each selected article’s perception regarding value and quality. This helped the author to distinguish between quality and value studies. Although in this study the authors’ judgement influenced the selection of the reviewed papers, using researchers’ judgement for the selection of relevant papers for a literature review has been supported by several studies (Birmingham, 2000; Fink, 2013; Holt, 2010). The next chapter in this study explores how do different client types/sectors (e.g., public sector, private sector) perceive value, and how this can be incorporated in client values discovery.
Chapter 3

Rethinking What Clients Value from Contractor Services

This chapter was extracted from the following manuscript:


This chapter was supplemented by the following manuscripts:


3.1 Introduction

Due to globalization and increasing competition in the construction industry, the way of conducting business in construction industry has changed (Ximena & Alfredo, 2013). The perception of businesses in the construction industry needs a greater emphasis on seeking ways to deliver better value for clients. In Chapter 2, it is suggested that the construction performance assessment conducted by traditional measures (e.g., time, cost and quality) should be replaced with value measures (Alzahrani & Emsley, 2013; Butcher & Sheehan, 2010; Enshassi et al., 2013; Horta et al., 2013). However, procurement of construction services still tends to be mostly driven by cost. For example, Adekunle et al. (2009) examined “different categories of building project procurement routes based on organisational, contractual, financial and technical issues”. The result of their analysis indicated that “traditional routes remain the main type of procurement route for the construction project industry sector” (Adekunle et al., 2009, p. 1). Hence, the evaluation of
construction service delivery practices focuses on a limited number of outcomes related to time, cost, and quality.

According to Holt (2010), contractor failure to provide the best value to their clients (The Times, 2008; CECA, 2008; CIOB, 2009; ASCE, 2009, as cited in Holt, 2010) has highlighted the importance of evaluation of contractor services based on criteria which value long-term gains. In addition, while the main function of the construction industry is to provide services to clients, (Vennström & Erik Eriksson, 2010), its focus is on the final product rather clients (Riley & Clare-Brown, 2001). This is because the construction industry is regarded as a project-based industry, with a narrow perspective, particularly in terms of time and scope (Dubois & Gadde, 2002), which mitigates the development and application of new ideas (Gann, 2001). Hence, in the construction industry, most existing business models are focused on short-term benefits (Wolstenholme et al., 2009). In order to help the construction industry to apply a better business-oriented approach, understanding what clients value within contracting services is essential. However, the adoption of client values within the construction process is still rudimentary, as existing contractual models focus on the final product.

The New Zealand construction industry is a small (with specific cultural influence), albeit, competitive, construction market and very important for the overall economy of the country (Construction Strategy Group, 2015). Much has been written in construction literature about the client-contractor relation and how clients perceive value. This is well acknowledged by the breadth of literature introduced in Chapter 2. However, it is not clear how the values identified in Chapter 2 contribute, reinforce, or localise to the New Zealand context, or challenge existing knowledge in the New Zealand construction industry. A clear synthesis of the existing literature, on the subject of values influencing client satisfaction in the New Zealand construction industry, is required. This has been highlighted by the Building Research Association of New Zealand (2012) which reported the need for investigating the issues related to client value within the New Zealand construction context. Also, a study of the New Zealand construction industry performance suggested lifting the emphasis from lowest price and seeking a way forward which delivers better services to clients (Allan et al., 2008). In order to address this need, the first step is to understand what New Zealand clients value and how they perceive values from contractor services. This can
help clients to determine whether they are getting value from their procured services. Contractors are more likely to reach conditions which provide better value if they understand the client values, and particularly the way by which clients perceive value.

This chapter is based on the result of the literature review conducted in Chapter 2, document analysis, and interviews with New Zealand construction client organisations. This chapter identifies a manageable set of client values and develops a basis to identify the way by which clients perceive value. This chapter contributes to the theory and practice of the relationship between clients and contractors and will help contractors to improve their relationship with clients.

3.2 Client Values Within Contracting Services

As indicated in Chapter 2, while meeting client expectations, particularly within time, cost, and quality, has been the focus of several studies (Hatush & Skitmore, 1997a; Holt et al., 1994; Jafari, 2013; Marzouk, 2008; Plebankiewicz, 2010; Shen et al., 2006; Topcu, 2004), other studies have also highlighted the role of values such as trust, commitment, communication, and other non-result-ordinated criteria in satisfying clients (Alzahrani & Emsley, 2013; Butcher & Sheehan, 2010; Enshassi et al., 2013; Horta et al., 2013; Ibrahim et al., 2013b). This is because clients are often knowledgeable about the construction delivery process and they expect a high level of attention to all of their specific needs (Egemen & Mohamed, 2006; Yasamis et al., 2002). Hence, contractors need to provide the best value within all services that clients receive.

3.3 Client Satisfaction as an Indicator of Client-Perceived Value

While construction clients make a decision to select their contractors, they build their expectations as to what they will receive as a consequence of that decision (Maloney, 2002). Their expectations are a function of what they value within their service providers. In addition, the type of clients and their needs and requirements will affect their expectations.

Client expectations are the clients’ belief about what will occur as a consequence of an action (Maloney, 2002). The type of client, as well as their needs and requirements, will affect their expectations (Cheng et al., 2006; Maloney, 2002). In addition, client expectations are a function of what they value about the contractors, particularly when they are hiring their contractors (Maloney, 2002). A review of marketing literature shows that the
client perception of the services provided by the service provider defines the client value. For example, according to Zeithaml (1988), the client’s evaluation of the utility of a service or product, based on a trade-off between “what is received and what is given”, can define client value. The client perception of the provided services can be assessed through the extent of client satisfaction, as shown in Figure 3.1.

![Diagram showing satisfaction by comparison between expectations and experiences](image)

**Figure 3.1.** Satisfaction by comparison between expectations and experiences

In the marketing literature, client-perceived value is indicated by perceived satisfaction compared with perceived sacrifice. Patterson and Spreng (1997) studied repeat purchasing behaviour and concluded that service value is completely mediated through satisfaction. Storbacka et al. (1994) supported the use of client satisfaction as a measure of relationship value. Similarly, in another study, in this case in the construction area, the value system by which a client perceives value includes an order of preference for client values (Kelly, 2007). The levels of client satisfaction within each of those values can be used in the value system which determines the client-perceived value.

By analysing the above concepts, it appears that client satisfaction is a credible indicator of client-perceived value. However, a commercial concept of value, which includes an element of price, or sacrifice, and revenue, should also be included in a client’s overall assessment of their satisfaction (Murphy, 1999). The involvement of a commercial concept is linked to profitability, which is the main purpose of the clients’ business.

A construction industry benchmarking programme (including various aspects of client satisfaction in relation to time, cost, quality, safety, profit and so on) was introduced into the New Zealand construction industry in 2004 and its results are published by the New Zealand Construction Clients’ Group (CCG). Hence, there have been a series of New Zealand National Industry Performance Reports by the New Zealand CCG since 2004 just as the
United Kingdom CCG has been doing since 1999, according to the recommendation of the Egan Report (1998).

Table 3.1 shows the available results for the New Zealand Construction Industry. The Key Performance Indicators (KPIs), as shown in Table 1, were “adapted from a suite published year on year since 1999 in the United Kingdom following an industry change movement led by the then Government as part of the ‘Rethinking Construction’ movement” (New Zealand Construction Clients’ Group, 2015).

Table 3.1
*Benchmarking programme results for the New Zealand construction industry*

<table>
<thead>
<tr>
<th>KPI Suite</th>
<th>KPI</th>
<th>Measure - % Projects</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATISFACTION</td>
<td>S1 Client Satisfaction - Consultant</td>
<td>% Scoring 8/10 or better</td>
<td>62%</td>
<td>79%</td>
<td>39%</td>
<td>65%</td>
<td>56%</td>
<td>74%</td>
</tr>
<tr>
<td></td>
<td>S2 Client Satisfaction - Contractor</td>
<td>% Scoring 8/10 or better</td>
<td>62%</td>
<td>79%</td>
<td>39%</td>
<td>66%</td>
<td>74%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>S3 Client Satisfaction - Delivery Team</td>
<td>% Scoring 8/10 or better</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>80%</td>
<td>72%</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>S4 Delivery Team Satisfaction with Client</td>
<td>% Scoring 8/10 or better</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>78%</td>
<td>57%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>S5 Use Lead Consultant Again?</td>
<td>% Scoring 8/10 or better</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>74%</td>
<td>66%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>S6 Client Satisfaction Use Contractor Again?</td>
<td>% Scoring 8/10 or better</td>
<td>-</td>
<td>-</td>
<td>79%</td>
<td>86%</td>
<td>79%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>S7 Client Satisfaction Value for Money</td>
<td>% Scoring 8/10 or better</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
<td>88%</td>
<td>77%</td>
<td>-</td>
</tr>
<tr>
<td>QUALITY</td>
<td>Q1 Client Satisfaction Product</td>
<td>% Scoring 8/10 or better</td>
<td>73%</td>
<td>82%</td>
<td>88%</td>
<td>79%</td>
<td>83%</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Q2 Impact of Defects on Handover</td>
<td>% Scoring 8/10 or better</td>
<td>40%</td>
<td>78%</td>
<td>31%</td>
<td>72%</td>
<td>80%</td>
<td>72%</td>
</tr>
<tr>
<td></td>
<td>Q3 Defects Clearance Period</td>
<td>% where defects are cleared within 14 days</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>60%</td>
<td>55%</td>
<td>75%</td>
</tr>
<tr>
<td>SAFETY</td>
<td>HSE1 Safety LTIs</td>
<td>% Projects with zero LTIs (Lost Time Incidents)</td>
<td>33%</td>
<td>41%</td>
<td>77%</td>
<td>87%</td>
<td>93%</td>
<td>-</td>
</tr>
<tr>
<td>COST</td>
<td>C1 Predictability Design Cost</td>
<td>% on target or better</td>
<td>53%</td>
<td>55%</td>
<td>55%</td>
<td>81%</td>
<td>79%</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td>C2 Predictability Construction Cost</td>
<td>% on target or better</td>
<td>42%</td>
<td>54%</td>
<td>39%</td>
<td>53%</td>
<td>61%</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>C3 Predictability Project Cost</td>
<td>% on target or better</td>
<td>33%</td>
<td>48%</td>
<td>40%</td>
<td>42%</td>
<td>68%</td>
<td>71%</td>
</tr>
<tr>
<td>TIME</td>
<td>T1 Predictability Design Time</td>
<td>% on target or better</td>
<td>38%</td>
<td>52%</td>
<td>22%</td>
<td>72%</td>
<td>67%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>T2 Predictability Construction Time</td>
<td>% on target or better</td>
<td>65%</td>
<td>73%</td>
<td>53%</td>
<td>65%</td>
<td>63%</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>T3 Predictability Project Time</td>
<td>% on target or better</td>
<td>34%</td>
<td>50%</td>
<td>23%</td>
<td>47%</td>
<td>69%</td>
<td>42%</td>
</tr>
<tr>
<td>PROFIT</td>
<td>P1 Profit (Pre-tax Profit) Company KPI</td>
<td>Median % profit before interest &amp; tax</td>
<td>10%</td>
<td>10%</td>
<td>7%</td>
<td>-</td>
<td>6.6%</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. Adapted from New Zealand Construction Clients’ Group (2015).

3.4 Research Methods

The following qualitative research methodology was used to understand how clients perceive value from their procured contractors. A qualitative research methodology suggests an in-depth approach to explore experts’ insights about a research question
Rethinking What Clients Value from Contractor Services (McNeill & Chapman, 2005b). In addition, the research method adopted in-depth interviews (Interview Survey 2) and document analysis which are suitable for qualitative studies. In the first step, a literature review was undertaken to define the main factors affecting the client expectations, as well as to develop a basis to identify the way by which clients perceive value. In the second step, by focussing on eight clients as detailed in Table 3.1, a thorough examination of what organisations value in terms of their own corporate information and documentation, and their processes, within the limitations of the Privacy Act 1993, was undertaken. The purpose of the second step was to complement the exploratory findings of the literature review rather than collecting data for a new exploratory study. To help achieve this, it was decided to conduct expert interviews by individuals who are expert in the particular field that is being researched (Sugar & Schwen, 1995). Hence, selection of the research participants ‘eight clients (10 interviewees)’ was based on their experience in procuring (and dealing with) contractor services. Initially, two public clients and two private clients were contacted by using the researcher’s connections with those clients. In addition, during the interviews, the initial research participants introduced another public client and three private clients.

Ten interviewees from the eight organisations participated in this study. In-depth interviews were conducted with senior client representatives from the eight public and private client organisations. The selection of interviewees was based on their knowledge and experience in construction management in New Zealand. The interviewees were categorised into directors who are the key leaders at organisational level, decision makers/advisors who are contributing to the organisations’ decision making, such as general managers and consultants, and senior project managers who are directly involving at the project level. Table 3.2 represents the interview participants’ details.

As Table 3.2 shows, the participants were senior within the client organisations. This helped them to understand what value meant to them as clients. In addition, they had extensive experience and clear ideas about contractor evaluation, and had played various roles in construction projects. The participants were briefed on the research objectives. They were asked to define what they value within contractor services. In addition, they were asked to provide explanations as to how they perceive value from procured construction. In other words, they defined the values influencing their satisfaction with contractor services. Each
interview lasted around 45 minutes. All interviews were audio recorded and transcribed into written dialogue, before being imported to NVivo for further analysis. The interviews helped to achieve insights into participants’ experiences and, hence, some underlying contextual information was gained regarding client values. Interviews provided detailed understanding emanating from direct observation of individuals and listening to what people say at a particular point (Zuo, 2010). Hence, general knowledge about client values and the way they perceive value was obtained.

In addition, document analysis of eight client organisations contributed to this research. Document analysis is a systematic procedure for evaluating documents and includes exploring records produced by individuals, professionals and organisations (Gibson & Brown, 2009). The main documents analysed in this study were tender documents and progress reports acquired from the archives of research participants. Selection of the tender documents and progress reports was due to the fact they include criteria by which clients value their contractors. For example, tender documents include criteria for conducting pre-qualification as well as technical and financial evaluation of contractors during a contractor selection period. Similarly, progress reports include criteria for evaluation of contractors during a contractor performance during the construction project. Reviewing these documents and reports and analysing their assessment criteria can help the researcher to develop a list of client values within contractor services. While document analysis, in this study, complemented the interview responses, it was also part of the test of the theoretical conclusions, from literature, to allow a comparison exercise to be conducted before conclusions were drawn.

Table 3.2 and Table 3.3 represent the client organisations and participants’ details, respectively. For the purposes of anonymity, the eight organisations and ten participants were coded: C1-C8, and P1-P10, respectively. Three of the organisations are large-size public clients, and five of the clients are large-size private clients. The ten-selected client organisations have more than 200 employees. The Organisation for Economic Co-operation and Development (OECD) identifies a micro-firm as having up to nine employees, a small firm as having between 10 and 49 employees, and a medium firm as having between 50 and 249 employees (OECD, 2005). This number varies across countries (Berisha & Pula, 2015). Some countries set the limit at 200 employees (OECD, 2010). In New Zealand, small and
medium-sized organisations are defined as those with fewer than 20 employees (Ministry of Economic Development, 2011). Including both public and private clients in this study, enabled the authors to obtain different perspectives, if any existed.

Table 3.2
Client Organisations’ Description

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Size</th>
<th>Projects type of analysed case</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 P1-P3</td>
<td>Public client – Government agency</td>
<td>Large</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>C2 P4</td>
<td>Public client – Local government agency</td>
<td>Large</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>C3 P5</td>
<td>Public client – Local government agency</td>
<td>Large</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>C4 P6</td>
<td>Private client – developer</td>
<td>Large</td>
<td>Land and residential building</td>
</tr>
<tr>
<td>C5 P7</td>
<td>Private client – developer</td>
<td>Large</td>
<td>Land and residential building</td>
</tr>
<tr>
<td>C6 P8</td>
<td>Private client – investor</td>
<td>Large</td>
<td>University</td>
</tr>
<tr>
<td>C7 P9</td>
<td>Private client – developer</td>
<td>Large</td>
<td>Land and residential building</td>
</tr>
<tr>
<td>C8 P10</td>
<td>Private client – developer</td>
<td>Large</td>
<td>Land and residential building</td>
</tr>
</tbody>
</table>

Table 3.3
Interview Participants’ Profiles

<table>
<thead>
<tr>
<th>Profiles</th>
<th>Categorisation</th>
<th>Number of participants (No: 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fields of expertise</td>
<td>Director</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Decision maker/advisor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Senior project manager</td>
<td>4</td>
</tr>
<tr>
<td>Construction experience</td>
<td>Less than 20 years</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>More than 20 years</td>
<td>9</td>
</tr>
</tbody>
</table>

3.5 Findings

Analysing the organisations’ documents determined the values that the clients expect from different dimensions of their procured services. All of the eight organisations value traditional performance indicators such as quality, time, and cost. In addition, the study includes evidence of the primary importance of good working relationships between contractors and client contacts during the project. For example, C1, C2, C6, and C8 have developed a non-performance evaluation framework to assess their procured services. Their developed frameworks aim to standardise contract management, support collaborative working, and determine values that are important to clients, while benchmarking cost and quality. C1, C2 are also developed an overarching relationship manual (which is a guideline) to manage relationships between client and contractor. This manual provides a framework (including criteria that need to be taking into consideration) for the continuous development of client and contractor relationship. The manual is intended to be the same
for all types of contracts in terms of structure and content, with the only exception regarding the level of importance of expectations towards each value.

The document- and interview-analysis outcomes resulted in a substantial list of criteria by which clients perceive value from contractor services. In addition, the list helped to conceptualise the process by which clients perceive value within contracting services. The following provides further explanation about the identified values and the process by which clients perceive value.

3.5.1 Presentation of the identified client values.

Analysis of the conducted interviews as well as reviewed documents from the organisations resulted in identifying 26 client values as shown in Table 3. Based on the similarities among the values three different categorises were developed.

The first category was named traditional values as it includes different values in relation with time, cost, quality that are traditional values in assessing contractors in construction industry. The second category was named service values it includes values in relation with services provided by a contractor. The third category was named personal values as it includes values in relation with personal work for a contractor.

In Chapter 2, client values within construction product and process were classified into three levels, such as corporate, project, and team. The traditional values and service values can be recognised as project values, while personal values can be divided into corporate and team values. For example, ‘commitment’ was identified and categorised under ‘corporate level’ in Chapter 2. It is now in ‘personnel values’ and there is another commitment in ‘focus on clients’ commitments’ under ‘favourable perceived values’. As it is explained further in the following sections, there are different commitments by level and party. The following provides further explanation of the values and their categories identified in this Chapter.
### Table 3.4
Client Values and Examples of Perceived Values

<table>
<thead>
<tr>
<th>Quotations from interviewees and extracts from documents</th>
<th>Client values and categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Favourable perceived values:</strong></td>
<td>Traditional values:</td>
</tr>
<tr>
<td>Positive comparison with past performance by excellent time</td>
<td>(1) In time, (2) In estimated cost,</td>
</tr>
<tr>
<td>keeping and high-quality work and no-extra cost and no-sacrifices.</td>
<td>(3) Required quality</td>
</tr>
<tr>
<td>Displaying excellent knowledge and skill.</td>
<td></td>
</tr>
<tr>
<td>Time and cost reduction due to innovative approach.</td>
<td></td>
</tr>
<tr>
<td>Providing value for money.</td>
<td></td>
</tr>
<tr>
<td>Focus on clients’ commitments.</td>
<td></td>
</tr>
<tr>
<td>Reducing clients’ business uncertainties.</td>
<td></td>
</tr>
<tr>
<td>Enhancing client understanding and client ownership of actions.</td>
<td></td>
</tr>
<tr>
<td>React to the unexpected problems.</td>
<td></td>
</tr>
<tr>
<td><strong>Unfavourable perceived values:</strong></td>
<td>Service values:</td>
</tr>
<tr>
<td>Negative comparison with past performance by bad time keeping</td>
<td>(1) Health and safety, (2) Low rate of environmental impact, (3) Necessary guarantees, (4) Creativity, (5) Knowledge and technology transfer, (6) Value for Money, (7) Reliability, (8) Tangibles</td>
</tr>
<tr>
<td>and poor quality work and extra cost and sacrifices.</td>
<td></td>
</tr>
<tr>
<td>Not addressing appropriate staff level.</td>
<td>Personnel values:</td>
</tr>
<tr>
<td>Lack of creativity.</td>
<td>(1) Competency, (2)</td>
</tr>
<tr>
<td>Lack of productivity and competency.</td>
<td>Productivity, (3) Accessibility,</td>
</tr>
<tr>
<td>Not listening to clients on what clients want.</td>
<td>(4) Responsiveness, (5)</td>
</tr>
<tr>
<td>Only thinking about his own work.</td>
<td>Courtesy, (6)</td>
</tr>
<tr>
<td>Inensitive to clients’ role and not keeping clients informed.</td>
<td>Trustworthiness, (7) Good faith, (8) Fairness, (9)</td>
</tr>
<tr>
<td>Not being adaptable in approach.</td>
<td>Commitment, (10)</td>
</tr>
<tr>
<td>Low level of integrity and trust-based relationship.</td>
<td>Understanding the client, (11) Teamwork, (12)</td>
</tr>
<tr>
<td>Poor compliance with health and safety regulation.</td>
<td>Communication, (13)</td>
</tr>
<tr>
<td></td>
<td>Flexibility, (14) Learning, (15) Improvement</td>
</tr>
</tbody>
</table>

#### 3.5.1.1 Traditional values: In time, estimated cost, and required-quality delivery are key requirements and specifications of any construction contract. All of the study participants and relevant reviewed documents, in agreement with previous studies (e.g. Hatush & Skitmore, 1997a; Jafari, 2013; Maloney, 2002; Soetanto & Proverbs, 2002), referred to in-time delivery, estimated-cost delivery, and required-quality delivery as important values.

Document analysis also revealed that clients expect their contractors to meet their expectations towards in-time, estimated-cost, and required-quality delivery. However, the contractors can add value to clients by providing those values beyond the client expectations. P1, P2, P4, P5, and P9 believe they receive better value from contractors who are able to finalise the work ahead of schedule. Their organisations reward contractors who reduce the cost of construction by introducing innovative construction plans, while
satisfying the clients’ aspiration to have no defects during the construction stage and hand-over process.

3.5.1.2 Service values: The study findings highlighted different dimensions of contracting services which can be regarded as opportunities to add value to clients which were all mentioned as service attributes

Construction works with no health and safety or environmental issues were reported by all participants as client values. Construction activities can create risk for both the contractor and client. Due to the need to consider the health and safety of individuals, health and safety regulations have gained special importance for clients. P5 and P8 said there are legal requirements for compliance as health and safety regulations are already in force for the construction industry. They added, however, that their organisations have their own policies which put stronger health and safety compliance requirements on contractors.

All the respondents, in agreement with Songer and Molenaar (1997), believe that construction projects have a negative impact on the environment. Hence, they consider contractor ability to reduce the environmental impact as an important value. This could be due to the environmental impact of construction on the health and safety of individuals. Findings from document analysis (e.g., analysing the weight assigned to different values) show that C1, C2 and C3 believe that environmental issues are equally important as issues related to health and safety. Perhaps this is because C1, C2, and C3 are public clients.

Contractor ability to provide necessary guarantees was mentioned as a client value by P1, P2, P3, P6, P7, P8, and P10. From their perspective, providing guarantees leads to client confidence about receiving desirable service outcomes. All interviewees from C1, as well as Maloney (2002), referred to the guarantees that clients receive to reduce the possible risks at completion of the works. P1 stated that reducing clients’ uncertainty will improve the clients’ feelings of security and enhance clients’ perceptions of the procured service value. He concluded that the failure to complete a project within agreed time, budget, and quality not only affects the project success but also may negatively impact the financial security of client organisations.
In line with Butcher and Sheehan (2010) and Brandon and Lu (2008), creativity, knowledge and technology transfer was viewed by the respondents as an opportunity for a service provider to create value for the clients beyond the requirements of the contract. They believe that clients perceive value in contractors’ innovative methodologies. For example, as mentioned by P10, added value can be achieved through changing the materials or building technology mentioned in the contract, through contractor innovation, leading to construction cost reduction. Another key point of P9 and P10 reported here is that the transfer of knowledge and technology to clients as a result of contractor innovation is considered as value to clients.

The procured services’ efficiency and effectiveness, and issues related to economy such as clients’ profit, was noted in reviewed documents as criteria for selection of contractors (in tender documents) as well as criteria for evolution of contractors (in progress reposts). C1, C4, C5, and C8’s documents show that while efficiency and effectiveness of the procured services are important values, it is equally important for clients to achieve value for money (VfM). The relationship between economy, efficiency and effectiveness determines VfM (Barr & Christie, 2015). Effectiveness measures the impact of what has been spent against outputs, and efficiency measures how much clients get out of what they put in, which means assessment of the productivity. Economy evaluates the cost of procuring the services. A contractor offers VfM if the benefits derived from the procured services’ performance significantly exceed the contractor procurement costs. Hence, if the contractor is not performing as the client expected, then the contractor services are not delivering VfM. Similarly, the contractor who performs to budget, but cannot satisfy the client by meeting all of the client needs, does not provide VfM.

The provided services by contractors include specific features and involve service specifications and goals. The service features involve the construction plan, progress reports, schedule, quality assurance, and so on. Reliability and tangibles of the contractor services, as viewed from the organisations’ documents, are values that clients expect from the procured services. Also, the client expectations for receiving reliable services were identifiable during the interviews. P1, P2, P5, P6 and P9 believe reliability of services involves the ability to perform the services under promised quality and timeliness. P6 stated that reliable contractors consistently provide their services in contract specifications and
requirements in a timely manner, and honour their promises. In addition, responses from P1, P2, P5, P6 and P9 show that clients expect appropriate tools and appearance from their procured services. The study findings in regard to service attributes support the view of Maloney (2002), who referred to reliability and tangibles as characteristics of quality services. For example, P1 and Maloney (2002) believe that client perception of the contractor’s tools, equipment, appearance, and site organisation has a significant influence on the client perception of the value of the services provided by the contractor.

3.5.1.3 Personnel values: Working relationships between client and service provider form the basis through which client-perceived value is generated for clients (Halinen, 1996). Document analysis and interviewees’ responses revealed that clients value the professional, behavioural and attitude attributes of their contractors’ staff, such as competency, productivity, accessibility, courtesy, credibility, commitment, good faith, fairness, understanding the client, teamwork, communication, and flexibility. In this study, the term personnel values is used to classify these identified criteria.

Competency, according to Sousa et al. (2008), has two types. The first type includes the skills and knowledge essential to achieve a competitive advantage in markets. The second type includes skills and knowledge that are essential in developing a relationship with clients. Responses analysis from P1, P2, P3, and P4 show that clients value the knowledge and skill of the workers and their supervision team, and the personnel who contact the clients and interact between the contractors and the clients. For example, P1 stated that without these contractor personnel skills, accidents occur, costs increase, work quality decreases, and productivity deteriorates. C1, C3, C4 and C7 developed their own assessment tool to evaluate contractor competency and productivity. The ratio of service output to what is required to be provided defines productivity (Odesola, 2015). However, in regard to productivity, P1, P3, P4, P6, P7, P8, and P10 put emphasis rather on contractors’ labourer productivity. They believe a lack of labourer productivity causes project delay and client dissatisfaction. Their thinking is in line with Odesola (2015), who defined contractor labourer productivity as one of the main indicators of the client construction project performance.
Accessibility and responsiveness have been mentioned by respondents as important values which help clients to maintain contact with the contractors. Accessibility and responsiveness of the provided services influence client perceptions of the contractor service quality. P5 and P6 indicated that the added value of contractor accessibility can be measured by how easily and quickly clients are able to contact the appropriate contractor personnel. Responsiveness was mentioned at the same time as accessibility by P1 and P5. Responsiveness can be regarded as the willingness of contractor personnel to provide a timely service (Maloney, 2002). P6 referred to contractor ability and willingness to respond to unexpected problems encountered during the contract in a timely manner.

Trustworthiness and courtesy form the basis on which to build a relationship (Ibrahim et al., 2014). Trust is defined as the belief that a service provider is honest, fair, and reliable (Leonidou et al., 2006). P1, P2, P4, and P9 referred to trust as a value which helps clients to receive the procured services without being worried about examination of the received services. They, in line with previous studies (e.g. Butcher & Sheehan, 2010; Cicmil & Marshall, 2005), believe that improvement in the trust area removes potentially wasteful communication steps, and examination processes, while reducing tensions and problems among the team members. It was also believed that high levels of commitment provide the context by which clients can achieve their goals, without being worried about opportunistic behaviour, which leads to successful relationships. Trustworthiness was followed by the term courtesy during the interviews. P1, P2, P4, and P9 stated that the lack of personnel courtesy in contractor service delivery will make a significant contribution to client dissatisfaction. Their descriptions of courtesy involve politeness, respect, consideration, and friendliness of contact.

Good faith and fairness have been reported as the final values related to contractor personnel attributes. Clients are increasingly looking for contractors with good faith and an attitude of fairness, as they have recognised the benefits of these (Butcher & Sheehan, 2010). P1 stated that the clients distinguish between the contractors who treat client projects as only an income source and contractors who have clients’ best interests at heart. P6, P7, P8, and P9, in line with all C1’s respondents, believe that contractor faith and fairness attributes involve having clients’ best interests at heart and doing the right thing for clients.
Commitment can be regarded as an intangible value, for example, according to P2, P4, P7, P8 and P9. They defined commitment as the key criteria to maintaining their relationship with their contractors. Commitment is often referred to as a service providers’ efforts and willingness to continue a contractual relationship (Styles et al., 2008), and to be mutually cooperative (Ibrahim et al., 2013b; Van Vuuren et al., 2012). Contractor commitment involves leadership commitment and team personnel/member commitment attributes. As mentioned here by the research participants, as well as previous studies (e.g. Butcher & Sheehan, 2010; Yeung et al., 2008) the leadership commitment is more important than team personnel commitment from a client perspective. Effective planning, and providing effective resources in a timely manner, were regarded as the main attributes of the committed contractors.

Understanding the client has been recognised as another intangible value in this study. Analysis of the interviews shows the contractor’s ability to comprehend the client’s needs and requirements is considered a value that clients expect from their contractors. P2 mentioned that it is unlikely to have a satisfied client without understanding the client. His statement supports Boyd and Chinyio (2006), who believe that the lack of contractor capacity to understand clients is a main construction industry’s issue, which leads to client dissatisfaction. A contractor’s ability to recognise a client’s needs and requirements leads to the provision of better services to the clients. P2 and P6, along similar lines to Maloney (2002), stated that understanding clients occurs by effectively learning the clients’ end goals, and also by paying attention to the clients’ specific requirements. Maloney (2002) concluded that clients who perceive that their contractors understand client needs, and make an effort to satisfy the clients, will perceive contractor efforts positively.

Effective communication has been mentioned as a client value by all in the study, as they believe that effective communication between the clients and contractors plays an important role in achieving an excellent relationship. Their thinking in relation to the value of contractors’ effective communication abilities supports the Confederation of British Industry’s (CBI (2010)) perspective on the value of effective communication. The CBI, in a recent publication, Procuring in a Downturn, referred to the good dialogue between clients and service providers, as a strategy that will help to maximise the value that clients perceive from their service providers (CBI, 2010). P2 and P5 said client uncertainty is reduced by
contractors through effective communication. For example, P5 concluded that contractors, by regular reporting of construction project issues, can inform the clients of the issues which may affect the client’s business. This needs to be in a format and language that clients can understand.

Team work has been identified by the study respondents as a factor which provides value to clients. C1 and C2 have their own evaluation criteria to assess the level of teamwork occurring within their organisations. P6 and P7, as well as Chan (2002) and Kumaraswamy et al. (2005), viewed teamwork as contributing to productivity improvement, project-delay-risk reduction, and successful relationships between service providers and clients. While previous studies (Ibrahim et al., 2013b; Kumaraswamy et al., 2005a) did not distinguish between the internal and external side of contractor teamwork ability, these two sides can be viewed individually. The internal side refers to the ways and processes that contractor staff work and interact together which lead to contractor productivity and on-time service delivery and, consequently, client satisfaction. The external side refers to contractor collaboration with the clients and other stakeholders which leads to project productivity and stakeholder satisfaction. The responses obtained in this study, emphasised both sides as opportunities by which the contractors can add value to their clients.

Flexibility of the contractors has been referred to by the respondents as a value to clients. Analyses of the interviews show that contractor flexibility adds value through responses to project changes due to changes in clients’ and other stakeholders’ interests or requirements. For example, P5 and P8 stated that contractor flexibility leads to management of the clients’ different interests and allows them to respond to each identified interest. P8 concluded that contractor flexibility minimises the effects of unplanned changes, such as changes in key members of the contractor team, or changes in project design or construction plans.

Learning and improvement attributes of the contractors have been reported here by the respondents as values that clients increasingly look for within their contractors. Contractors’ continuous improvement is related to their learning attributes. Organisational learning attributes describe the organisations’ willingness to gain new knowledge and also highlight the importance of obtaining information to help organisations’ decisions and activities.
Rethinking What Clients Value from Contractor Services

(Miller, 1996). Document analysis and interviewees’ responses show that different types of clients have different lists of values; it is thus difficult for contractors to respond to all the different values of the different types of clients. However, the interview analysis of P1, P2, P5, P6, and P10, shows that the learning and improvement attributes help contractors to enhance their abilities to capture client values and respond to them during the relationship. They believe that contractor learning and continuous improvement attributes enables the contractors to improve their competitive position throughout different innovative approaches. Hence, through appropriate learning and improvement attributes, competency is achievable. Their thinking is in agreement with Butcher and Sheehan (2010) who believe that assessment of the contractors based on their learning and improvement attributes can be viewed to be a departure from assessment based purely on competency.

Based on definitions provided for ‘value’ and ‘values’ in Chapter 2, ‘client value’ relates to a client judgment about satisfaction/achievement and sacrifice/given and can be perceived by the client objectively if it relates to products or subjectively if relates to individuals. In addition, ‘client values’ can be described as the principles, beliefs, and standards by which clients live and by which their decisions and actions are guided. After defining the client values within contracting services, this study attempted to determine the process by which construction clients understand whether they receive the value they expect. The following describes this attempt.

3.6 Determining Clients Perceived Value

Client satisfaction with procured services can be viewed as the sum of expectation and perception (Cheng et al., 2006). The main implication for clients is that the ultimate value of procured services is dependent on the value of the initial expectations. Construction clients make a decision to choose a contractor who is able to complete the client’s projects while meeting client expectations. While the clients make that selection decision, they build their expectations based on values they expect to perceive as a consequence of their decision (Maloney, 2002). Hence, understanding the client’s initial expectations is a central role for service providers in order to provide better value to clients.

The analysis of the interviews shows the influence of the contractor selection criteria on the expectations clients have for the services that should be provided by the contractors. Most
of the participants believe that contractors with better financial soundness and reputation have more chance to deliver the construction project within the agreed time and budget. Hence, they prefer to select contractors with better financial soundness and reputation, even with a higher price. However, this preference causes higher expectations. The thinking is that client perceptions of contractor abilities, at selection stage, influence client expectations of the contractors at the construction stage. Also, from the analysis of the interviews, it can be concluded that the client’s type influences client expectations. Private client participants put emphasis on performance-oriented criteria such as on-time and on-budget delivery, rather than on relationship-oriented criteria such as honesty, responsibility, and fairness. However, public clients have close to equal concern in regards to both performance and relationship-oriented criteria.

Some evidence did emerge from the findings to indicate that although meeting client expectations towards client values is what clients expect from their contractors, the contractors can add value to clients by providing those values beyond the client expectations. Discussing the ways of perceiving value, all of the participants agreed that clients perceive value when they perceive contractor performance to be above their expectations. For example, most of the participants pointed to time reduction, by completion of the project sooner than the agreed time, as client-perceived value within the procured services. Similarly, the same views were expressed about quality and cost.

As Table 3.3 shows, value can also be created through non-performance aspects of contractor services, through the relationship with clients. For example, C1 developed a framework to measure the level of integrity, which shows the importance of such intangible values for public clients. Within their framework, criteria such as communication, teamwork, honesty and trust are the top of the evaluation list.

Analysis of the developed systematic process for evaluation of the personnel aspects of contractors by C1, C2, C6, and C8, shows that perceived value by personnel attributes of contractors can be seen through clients’ emotional satisfaction with contractor personnel attributes, such as collaboration, communication, honesty, responsibility, and fairness. C1, C2, C6, and C8 used the Likert scale to value different dimensions of the procured services and assess the levels of fulfilment of their expectations within the provided services. This
means that their perceived values can be expressed through the extent of their satisfaction with the provided services. However, the commercial concept of value, which includes an element of price or sacrifice, should be included to determine the extent of client satisfaction (Murphy, 1999).

The commercial concept is typically presented as tender price by contractors at selection stage. For example, while all of the participants agreed that value can be perceived through satisfaction with contractors’ performance determinants, they point to the price of procured contracting services as an important factor which significantly influences their satisfaction. The thinking was that clients may possibly still be satisfied, even if they receive less than expected performance under the condition of reductions in price. The idea underlying this thinking is that the value is the key linkage between the perceived services and price or sacrifices. Despite the above thinking, most of the participants stated that a reduction in price should not affect the expected quality performance.

By reviewing construction literature (e.g. Kärnä, 2014; Murphy, 1999; Yasamis et al., 2002), as well as analysing what organisations value in terms of their own corporate information and documentation, their processes, and the in-depth interviews with senior client organisation representatives, the Figure 3.2 can be derived which allows the conceptualisation of the ways in which clients perceive value from the services provided by their contractors.

Figure 3.2 allows clients to follow a process by which they can extract the best value from contractors. By discussing this process with their contractors, clients would be in a better position to ensure that they receive higher than expected value, which is placed in 7C below, from their contracting services.
As shown in Figure 3.2, analysis of available documents obtained from the archives of this study’s participants reveals that service values and traditional values were perceived as below expectations by public and private clients, respectively. In contrast with public clients, private clients perceived service attributes above their expectations. Reviewing documents (such as project reports) indicates that personnel attributes can be placed in the satisfactory zone (7B in Figure 3.2) for both public and private clients. In addition, traditional values can be located in the satisfactory zone for private clients.
This study highlighted traditional values and service values within contractor services as areas of concern for improvement from public and private client perspectives, respectively. Contractors need to have an awareness of client values, and how they perceive value. Contractors need to examine their own provided services on the basis of these identified client values. This self-assessment, in a long-term approach, will help contractors to offer the best value services. Although contractors may want to display all the clients’ expected values, to some extent, they need to understand the expectations their clients have for each of those values, so they can prioritise their client values in order to provide the best service value to their clients. This can be achieved through two-way communication between client and contractors about different values and services clients receive. Developing practical measurements for values identified in this study can help in quantifying the client satisfaction levels based on each of those values. If client dissatisfaction accrues due to failure to provide any of the expected values, the contractor should identify the issue and ensure that the failure will not be repeated. In fact, perceiving client dissatisfaction can act as an opportunity for contractors to prove commitment to the relationship by changing behaviour in order to manage client expectations and provide better value to clients. The clients and the contractors need to collaborate to determine the optimum points where the satisfaction of client values can be reached.

3.7 Discussion

This research highlighted important values for the assessment of construction contractors in New Zealand. In addition, the study, using document analysis, determined how New Zealand clients perceive value from their contractor services. These findings indicate the need for rethinking what clients value and how they perceive value from their contractor services.

Several authors in previous studies (e.g. Hatush & Skitmore, 1997a; Jafari, 2013; Maloney, 2002; Soetanto & Proverbs, 2002), explained the client expectations from contractor services by referring to contractor outcomes, particularly in regard to time, cost, and quality. However, reviewing the content of this study indicates the need for a paradigm shift, from focusing on traditional result-oriented criteria to both result- and non-result-oriented criteria. This shows that construction clients think beyond the traditional values to assess contractor services. Although the study respondents are concerned about values
related to time, budget, and quality, they are also significantly concerned about issues related to the personnel and service attributes of their contractors.

The traditional values are no longer an inclusive (appropriately broad) measure of contractor services assessment, as they do not evaluate all dimensions of the procured services. Clients need to expand their assessment criteria beyond the use of traditional values. This study’s findings propose that Figure 3.3 should be considered as a new assessment concept to value construction contractor services. Figure 3.3 shows the key identified values within contractor services, from the New Zealand construction client perspective. These criteria are the opportunities for contractors to add value to their clients. The 26 values extracted from this study could provide the basis upon which clients assess their contractors, based on value.

![Figure 3.3](image)

**Figure 3.3. Contractor services evaluation criteria: client values**

As shown in Figure 3.3, two levels are proposed at which the assessment criteria should be evaluated. Traditional values are presented in the upper level. Time, estimated cost, and required quality are at the core of the traditional values. However, they are not the only values that need to be considered to evaluate contractor services. Issues related to service
values and personnel values of the contractors (which have been located in the lower level) are also considered important for the clients.

The client is not satisfied if the construction activities do not offer safe working conditions to the workers. Similarly, achieving client satisfaction is not expected if the client’s project is not accomplished with VfM or freedom from uncertainties. Client dissatisfaction can occur due to the personnel attributes of the contractors. For example, it is very common to have delays and budget overruns due to a lack of personnel competency, productivity, and other mentioned criteria in the lower level of Figure 3.3. Lack of consideration of the values located in the lower level of Figure 3.3 can cause loss of time, profit, and various intangible social benefits that the contractor can offer to the client. Hence, a conscious effort must be made by the clients to value their contractors based on those values. This can also lead to selection of the best contractor, one who works towards adding value to the client organisations.

Figure 3.3 represents the client values within two levels. For example, personnel values such as responsiveness and trustworthiness affect service reliability. Effective communication forms trust and trust can influence the level of commitment, and all of them can affect the project performance (Bloemer et al., 2013). The values in the upper level (as shown in Figure 3.3) are not achievable if there is a lack of performance of the values located in the lower level. Hence, the traditional values should be considered as evaluation criteria to value contractor services, while appropriate consideration needs to be given to other values in the lower level in Figure 3.3.

Also, in order to achieve a balance in client perception of services received, contractors should reflect on their contribution to value within each of the values. For instance, driving value in the working relationship elements, such as communication, makes no difference in client perception if the quality of the client’s project is not addressed through quality performance of contractor services.

Several authors in previous studies emphasised traditional values of time, cost, and quality (e.g. Hatush & Skitmore, 1997a; Jafari, 2013; Soetanto & Proverbs, 2002). However, one of the key recurring themes from this study was that several New Zealand client organisations place an emphasis on all values represented in Figure 3.3. This study’s findings demonstrate
that the perception of contractor assessment is changing fast and the best-performing contractors are those who create value for their clients. In other words, adding value to clients is recognised as an essential approach that contractors should use to improve their competitiveness in a world of hyper competition.

3.8 Conclusion
The research identified 26 values and categorised them into three categories. Improvement of these values will result in overall improvement in the services contractors offer.

This study’s findings shows that values associated with time, cost, and quality can be considered as important client values, while they are not exclusive values for assessing contractor service anymore. For example, the findings indicate that New Zealand construction clients are concerned about health and safety, low rate of environmental impact, guarantees, creativity, technology transfer, value for money, reliability, and tangibles of their contractors’ services. In addition, they value their contractors’ behaviour, attitude, and professionalism.

The results are useful as a guide to contractors so that they can offer the best value services. This study encourages contractors to see their role in developing relationships with their clients. This study provides initial guidance on what contractors need to consider while providing services for their clients. Nowadays, clients are more informed about the construction delivery process. Hence, contractors who are maintaining and focusing upon the opportunities that give the clients the best experience during a relationship have more chance to succeed in the competitive construction market. The next chapter explores how values and their significance differ between business-as-usual construction and post-disaster reconstruction.
Chapter 4
Comparing Client Values Between Business-As-Usual and Post-Disaster Reconstruction

This chapter was extracted from the following manuscript:


This chapter was supplemented by the following manuscripts:


4.1 Introduction

Chapters 2 and 3 helped to better understand client values in business-as-usual construction situations. However, disaster reconstruction management activities are modified from business-as-usual activities (Le Masurier et al., 2006a; Prieto & Whitaker, 2011), inducing changes to the client values and priorities within contracting services.

Post-disaster reconstruction is viewed as undertaking the business-as-usual construction process of replacing the built environment, but over a very intense timeframe (Norling, 2013). In comparison to business-as-usual, during reconstruction projects in disaster-struck areas, clients deal with greater uncertainty (Bosher et al., 2007; Hayles, 2010; Sun & Xu,
Comparing Client Values Between Business-As-Usual and Post-Disaster Reconstruction

2011), and complexity (Bello, 2006; Boano & García, 2011; Coffey & Trigunarsyah, 2012; Ye & Okada, 2002). This is due to a lack of awareness and detailed information about the reconstruction process after a disaster event, in comparison to business-as-usual construction.

Following a disaster, one of the main client requirements is to establish a comprehensive procurement framework for reconstruction (Zuo, 2010). Contractual systems include the construction client values for management of contracting services (Masterman, 2003), and service providers should comply with these values (Yang & Peng, 2008). Wilkinson et al. (2005) stated “current normal procurement mechanisms used in the construction industry need to be assessed for their suitability” for post-disaster reconstruction. They further concluded, “it appears that all procurement systems have specific attributes useful for disaster reconstruction. It is the weightings of these attributes to specific circumstances that are more critical.” Understanding how client values for post-disaster reconstruction differ from business-as-usual construction can assist in evaluating contracting services and can be the first step in developing a suitable contractual framework for disaster reconstruction.

The research on disaster reconstruction is a new topic, with potential for rapid development (Yi & Yang, 2014). There is a need for further awareness and detail in understanding client values within post-disaster reconstruction projects. There have been global and local efforts in disaster management such as a series of case studies, relevant programmes, and publications by UNISDR (2005), UNISDR (2016), Global Facility for Disaster Reduction and Recovery (2015), Australian Institute for Disaster Resilience (2013), New Zealand Ministry of Civil Defence and Emergency Management (2015). However, determination of appropriate values for assessing contractor’s services in post-disaster situation required further researches. For example, Curlee and Sterling (2008) stated that emergency management standards such as NFPA 1600 (North America Fire Protections Association), BS25599 (British Standard 25999), SS507 (Singapore Standard), AS/NZ4360 (Australian, New Zealand Standard) have a poor appreciation of interdependencies, do not consider the stakeholders’ perspective, and miss the fact that response/recovery and rebuild phases include separate challenges.
This study is based on a literature review, interviews, and a questionnaire survey with clients that aims to understand the client values within contractor services. The study also examines how the importance level for each of these values differs between business-as-usual construction and post-disaster reconstruction, from the client perspective.

4.2 Moving from terminal values to a mix of both terminal and instrumental values

In Chapter 2 it was explained that values motivate and influence decision making (Cheng & Fleischmann, 2010; Jahani & El-Gohary, 2012; Schwartz, 2006). Individuals and organisations determine their objectives and make decisions based on their values (Boyd & Chinyio, 2006). Each person could have many values with different levels of importance (Zhang & El-Gohary, 2016), while one particular value could have a different level of importance to different individuals (Schwartz, 2006). Hence, in order to understand priorities, values need to be ranked by their importance, based on each individual’s perspective (Schwartz, 2006). This is also important in construction projects which involve various stakeholders with different values and priorities.

In Chapter 2, values were classified into terminal values and instrumental values. Terminal values are the goals and purposes that individuals make for themselves, while instrumental values relate to activities or objects that individuals conceive as a means to an end (Boyd & Chinyio, 2006; Kluckhohn, 1951). Instrumental values build a basis for archiving terminal values and, therefore, individual satisfaction is based on the achievement of terminal values through a set of instrumental values.

In the construction context, the terminal values and instrumental values appear to explain the differences between result-oriented criteria, such as on-time and to-budget delivery and non-result-oriented criteria, such as communication and conflict-resolution skills (Boyd & Chinyio, 2006). In the business-as-usual literature (e.g. Hatush & Skitmore, 1997a; Jafari, 2013; Marzouk, 2008; Plebankiewicz, 2010; Shen et al., 2006; Topcu, 2004), contractor attributes and practices are assessed by various traditional terminal values in relation to cost, time, quality, health and safety. However, as a result of changes in client demands, in addition to those traditional values, various researchers (e.g. Butcher & Sheehan, 2010; Ibrahim et al., 2014; Meng, 2012) have identified different criteria such as satisfaction,
Comparing Client Values Between Business-As-Usual and Post-Disaster Reconstruction

environmental impact, trust and respect, commitment, effective communication, attitude, innovation, and occurrence of litigation, disputes and claims.

The disaster management literature shows that, similar to business-as-usual, some studies (Aliakbarlou et al., 2017b; Mannakkara & Wilkinson, 2013; Rubin, 1985) emphasise the importance of terminal values such as undertaking reconstruction work at high speed and with high quality. However, some other studies assert the importance of criteria associated with instrumental values, such as willingness to use local resources, integrity, building a trust-based relationship, coordination and communication (Aliakbarlou et al., 2017b; Ophiyandri et al., 2013; Wilkinson et al., 2006). Analysing the above concepts implies that decision making in the construction industry is departing from using existing traditional terminal values, to a mix of both terminal and instrumental values.

4.3 Methodology

The methodology and methods adopted in this study included formulating a list of client values within contracting services, based on a literature review, defining key client values using interviews (Interview Survey 3), exploring the perceived importance of client values using a survey questionnaire (Questionnaire Survey 1), comparative analysis of perceived importance of client values using gap analysis, and comparative analysis of the perceived importance of client values using quadrant analysis. These are discussed below in more detail.

4.3.1 Formulating a list of client values.

The study began with a literature review to capture background knowledge about client values and qualities within construction services. Using systematic reviews, 177 (out of 898) research studies were critically analysed. Further details, including the sample selection procedure, can be found in Chapter 2.

Through the review, a number of client values that appear to have a bearing on the success of contractual relationships were identified. In addition, conducting interviews and document analysis, as detailed in Chapter 3, helped in better understanding New Zealand construction client values.
Based on an in-depth review of the findings obtained from Chapter 2 and 3, a long list of values was developed by using the 177 articles from the literature review in Chapter 2, as well as articles identified by using keywords such as ‘post-disaster reconstruction’, ‘post-disaster recovery’.

The articles were then reviewed many times to identify the values embedded in each article. The identified values were highlighted and assigned a number as a code. The author read and re-read the highlighted values before organising them into meaningful categories. These values were then categorised according to the 9 knowledge areas in Project Management Methodology for Post Disaster Reconstruction (PMI, 2005). In other words, they were categorised based on their relevance to each of the 9 knowledge areas.

NVivo was helpful in highlighting values and sorting them into potential categories. The identified values varied in terms of their type and characteristics, hence categorising these values within the nine PMI (2005) knowledge-management areas seemed reasonable. A guide to the project management body of knowledge (PMBOK) described integration, scope, time, cost, quality, human resources, communication, risk, and procurement as nine PMI knowledge-management areas that are typical of most projects and can be used to manage client-contractor relationships. According to PMI (2005), determining a methodology for applying project management principles to address reconstruction priorities is important for managing post-disaster reconstruction projects.

In this study, thematic analysis was undertaken to categorise different values identified in the literature (Braun & Clarke, 2006), under each PMI knowledge-management area. In addition, reviewing previous studies concerning subjects such as integration (Ibrahim et al., 2014), relational contracting (Yeung et al., 2012), performance (Meng, 2012), and construction quality dimensions (Yasamis et al., 2002), was helpful in developing the categories in this study.

Although the categorisation is based on the third edition of PMBOK with 9 knowledge areas, the fifth edition (PMI, 2013) has 10 knowledge areas. The fifth edition includes stakeholder management that was not included in the third edition. In this study, the values in relation with stakeholder management such as partnerships development, jointly agreed objectives,
understanding commitment of each other, understanding of responsibilities, and cultural alignment between (client and contractor) were placed in integration category.

After an initial categorisation, the identified values were verified by conducting interviews with seven construction experts as detailed in the following section. The interviews indicted that while the identified values can be recognised (accepted) as client values, they may not have the same level of importance. Hence, it was decided to shortlist the identified values (as explained in subsequent chapters). The interviews also helped the author to re-focuses on reviewing the values and so some values were modified and some others were discarded by merging similar values.

This study focused on identifying client values and categorised them into nine categories. In addition, the nine categories (including their values) can be divided into two up-categories of terminal and instrumental (as explained in pervious Chapters). It is possible to identify potential additional up-categories and sub-categories to explain how the subjective and objective client values can be related to instrumental and terminal categories. In so doing, the values included in each category (of the nine categories) can be divided into two sub-categories of subjective and objective. Different clients may have individual perceptions of what to them is value and how they perceive value and so the client values can be assessed subjectively. However, focusing on one client and one project at a time, the client values can also be assessed objectively, for example, by determining objective measures for each of the values from the client perspective. For instance, in quality category, a client value such as ‘number of defects’ can be assessed objectively while another client value such as ‘quality of design’ can be assessed subjectively if the measurement relates to an individual’s perception rather than a determined standard. Hence, both terminal values and instrumental values can be assessed objectively and or subjectively.

In addition to the aforementioned categories, the client values can be categorised as ‘absolute measures’ and ‘relative measures’. For example, the ‘time’ category and its included values that are related to a client’s final goals can be placed in a terminal values category. At the same time, its included values such as ‘construction time’, ‘timelines’, ‘timeliness’, ‘project time constraints’, and ‘adequacy of time’ can be in the same level of
category as ‘absolute measures, while ‘on time’, and ‘overrun duration’ may be as ‘relative measures’ in the sub-category.

4.3.2 Defining key client values.
While (as mentioned above) the identified values were verified by conducting interviews with seven expert practitioners working in the New Zealand construction industry, the main purpose of interviews was to identify two most important values for each of the nine categories. Table 4.1 represents the interview participants’ details. The participants were chosen based on experience in both disaster reconstruction and business-as-usual. Although subsequent chapters involve both public and private clients’ perspective in exploring the client values, the study participants (in this chapter) were mainly form public clients. This is because the chapter aims to verify if there are any differences between post-disaster reconstruction projects and business-as-usual construction projects in prioritising client values. If so, then the study could move towards enhancing the understanding of client values within reconstruction projects from both public and private clients’ perspective.

The rebuild of major infrastructure is managed and funded by government agencies (Christchurch City Council, 2016). In addition, government agencies have significant vertical assets such as commercial buildings that require rebuilding and strengthening. To help achieve this, partnerships can be developed. For example, there is a partnership between central government through Christchurch Central Development Unit (CCDU) with CERA, CCC, and other groups.

<table>
<thead>
<tr>
<th>Participant profiles</th>
<th>Categorisation</th>
<th>Number of participants (No: 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fields of expertise</td>
<td>Director</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Decision maker/advisor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Senior project manager</td>
<td>1</td>
</tr>
<tr>
<td>Construction experience</td>
<td>Less than 20 years</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>More than 20 years</td>
<td>6</td>
</tr>
<tr>
<td>Reconstruction experience</td>
<td>Less than 5 years</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>More than 5 years</td>
<td>6</td>
</tr>
</tbody>
</table>

Interviews were initiated by clarifying the research domain. The long list of identified values was provided to the participants. The interviews involved two steps. First, the interviewees
were asked to verify the identified values, and to recommend any additional values not included in the list. While the interviews confirmed the importance of identified values, the different importance levels for the values were recognised during the interviews. Hence, it was decided to select the most significant values. This resulted in shortlisting the identified values in Chapter 5 by conducting interviews with 16 experts.

Second, the 7 interviewees were asked to select two key values for each of the nine areas. The selected values (two for each category) can help in achieving this chapter’s aim to verify the differences between reconstruction projects and business as usual construction projects. As the interviewees had a similar view in selection of the most two important values, the numbers of conducted interviews was considered adequate. For example, as shown in Table 4.2 all of the values were selected by the majority of the participants. The frequencies in Table 4.2 show how many times the values were selected by the interviewees.

Table 4.2
Client values within contactors’ services

<table>
<thead>
<tr>
<th>Categories</th>
<th>Values</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Shorter contract time</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Timeliness</td>
<td>7</td>
</tr>
<tr>
<td>Cost</td>
<td>Lower contract price</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>To-budget delivery</td>
<td>6</td>
</tr>
<tr>
<td>Quality</td>
<td>Higher standard of quality</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Reduced defect &amp; rework</td>
<td>3</td>
</tr>
<tr>
<td>Integration</td>
<td>Corporate commitment</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Trust-based relationship</td>
<td>5</td>
</tr>
<tr>
<td>Scope</td>
<td>Competency</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Understanding client</td>
<td>3</td>
</tr>
<tr>
<td>Human resource</td>
<td>Teamwork</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Productivity</td>
<td>5</td>
</tr>
<tr>
<td>Communication</td>
<td>Free-flow communication</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Accessibility &amp; responsiveness</td>
<td>3</td>
</tr>
<tr>
<td>Risk</td>
<td>Security, health &amp; safety</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Environmental protection</td>
<td>3</td>
</tr>
<tr>
<td>Procurement</td>
<td>Availability of resources</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Capability of sourcing</td>
<td>6</td>
</tr>
</tbody>
</table>

4.4 Exploring the Perceived Importance of Client Values

Table 4.3 represents respondents’ details and the distribution of responses. The importance level for each of the identified values was investigated from the client perspective. The survey was limited to construction expert respondents who were affiliated with
organisations dealing with disaster reconstruction such as central government/local government agencies in New Zealand. In so doing, about 30 individuals were contacted from three local government agencies and two central government agencies. A total of 19 responses were received, either through meetings and interview or by e-mail. As the total number of possible respondents who have disaster reconstruction project experience is limited, the number of responses is considered acceptable. Although the researcher contacted with public clients, there were 4 respondents introduced themselves as private clients, perhaps because they are working as client representatives or consultants within their client organisations. However, it was decided to include them in the survey analysis.

The Likert scale was adopted to conduct the survey, to determine the significance of the client values identified in this study. This method is be used for rating the relative importance of factors based on experts’ opinions (Chan & Kumaraswamy, 1996; Park, 2009). A questionnaire survey of clients was conducted, in which the values, as shown in Figure 4.1, were presented.

The respondents were asked to assess the importance of each value for both post-disaster reconstruction and business-as-usual. The assessment was based on a scale of 1 to 5, where 1 = least significant, 2 = slightly significant, 3 = significant 4 = very significant, 5 = most significant. This revealed the comparative importance of the values, as perceived by different clients. It also enabled the authors to examine how the relationship values within reconstruction situations, following a disaster, differ from business-as-usual.

<table>
<thead>
<tr>
<th>Table 4.3</th>
<th>Survey Respondent Profiles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondent profiles</strong></td>
<td><strong>Categorisation</strong></td>
</tr>
<tr>
<td>Type of client</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>Private</td>
</tr>
<tr>
<td>Fields of expertise</td>
<td>Director</td>
</tr>
<tr>
<td></td>
<td>Decision maker/advisor</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
</tr>
<tr>
<td></td>
<td>Quantity surveyor</td>
</tr>
<tr>
<td></td>
<td>Engineer</td>
</tr>
<tr>
<td>Construction experiences</td>
<td>Less than 10 years</td>
</tr>
<tr>
<td></td>
<td>More than 10 years</td>
</tr>
<tr>
<td>Reconstruction experiences</td>
<td>Less than 5 years</td>
</tr>
<tr>
<td></td>
<td>More than 5 years</td>
</tr>
</tbody>
</table>
Table 4.4 represents Means, Relative Importance Indices (RII), Ranks, Gap, Gap Rank (GR), and Average Level. These terms are described in this section and the following sections in this chapter.

The values were ranked as a result of their mean scores (Table 4.4). The higher the mean score, the higher the rank. Evaluation of each criterion’s relative significance value is a common method for defining the key criteria among a number of criteria. Park (2009), for example, used the mean score method, using a five-point scale, to identify key whole life performance factors in construction. The mean score for each criterion is computed by the following formula:

\[
\text{Mean score} = \frac{\sum f(S)}{N} \quad (1 \leq \text{mean score} \leq 5)
\]  
(Equation 1)

Where

- \( S \) is the score attached to each criterion by the respondents.
- \( f \) is frequency of responses to each rating (1–5)
- \( N \) shows the total number of respondents for that criterion.

In order to verify the evaluation by the mean score, the survey results were transformed into relative importance indices (Chan & Au, 2009; Park, 2009). The relative importance indices were calculated using the following formula:

\[
\text{Relative Importance Indices (RII)} = \frac{\text{Total Point Score}}{S \times N} \quad (0 \leq \text{RII} \leq 1)
\]  
(Equation 2)

Total point score is calculated based on the sum of all the ratings for an assigned criterion

5 is the maximum rating

\( N \) represents the number of criteria
Table 4.4
Means, RII, Ranks, Gap, GR, and Average Level

<table>
<thead>
<tr>
<th>Categories</th>
<th>Descriptions</th>
<th>Post-disaster</th>
<th>Usual</th>
<th>Difference</th>
<th>Post-disaster</th>
<th>Usual</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Higher standard of quality</td>
<td>4.32</td>
<td>0.86</td>
<td>2</td>
<td>4.35</td>
<td>0.87</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Reduced defect &amp; rework</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal Cost</td>
<td>Shorter contract time</td>
<td>4.66</td>
<td>0.93</td>
<td>1</td>
<td>4.42</td>
<td>0.88</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Timeliness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower contract price</td>
<td>4.26</td>
<td>0.85</td>
<td>3</td>
<td>4.45</td>
<td>0.89</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>To-budget delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>Corporate commitment</td>
<td>4.45</td>
<td>0.89</td>
<td>2</td>
<td>4.05</td>
<td>0.81</td>
<td>3</td>
</tr>
<tr>
<td>Instrumental</td>
<td>Understanding client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td>Trust-based relationship</td>
<td>4.45</td>
<td>0.89</td>
<td>2</td>
<td>4.05</td>
<td>0.81</td>
<td>3</td>
</tr>
<tr>
<td>Scope</td>
<td>Competency</td>
<td>4.19</td>
<td>0.84</td>
<td>4</td>
<td>4.03</td>
<td>0.80</td>
<td>5</td>
</tr>
<tr>
<td>Human resource</td>
<td>Understanding client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teamwork</td>
<td>4.16</td>
<td>0.83</td>
<td>5</td>
<td>3.82</td>
<td>0.76</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Productivity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Free-flow communication</td>
<td>4.29</td>
<td>0.85</td>
<td>3</td>
<td>3.97</td>
<td>0.79</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Accessibility &amp; responsiveness</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>Security, health &amp; safety</td>
<td>4.05</td>
<td>0.81</td>
<td>6</td>
<td>4.24</td>
<td>0.84</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Environmental protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement</td>
<td>Availability of resources</td>
<td>4.58</td>
<td>0.96</td>
<td>1</td>
<td>4.26</td>
<td>0.85</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Capability of sourcing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Level</td>
<td>Mean of Means</td>
<td>4.33</td>
<td>4.18</td>
<td></td>
<td>4.33</td>
<td>4.18</td>
<td></td>
</tr>
</tbody>
</table>
4.5 Comparative Analysis of Perceived Importance of Client Values

Table 4.4 consists of three main columns: descriptions, categories and values. The descriptions column lists the values and their assigned categories. The categories and values columns show the mean score and ranking for perceived importance of the categories and values. In addition, they include the difference (gap) between perceived importance of the values and their categories for reconstruction programme and business-as-usual, as well as a gap rank (GR) allocated to each value and category. In line with Park (2009), the mathematical difference between perceived importance of the values can be used to compare the importance of values among different individuals or organisations. Average level as shown in Table 4.4, is a mean including all categories or values. In other words, it is a mean of means.

The data (survey responses) were analysed using mean of means’ scores for values. For example, the gap analysis and quadrant analysis were based on the mean scores obtained from the values as explained in the following sections. The categories were then developed in order to organise the study findings and discussions. The mean scores of values in the category level were calculated based on the mean scores obtained from two values included in each category.

4.5.1 Gap Analysis

The gap between average importance of values (and their categories) for reconstruction projects and average importance of values (and their categories) for business-as-usual was used as the main indicator for comparison of these two situations. The gap represents the extent of differences in term of importance of values (and their categories) between them. For example, a positive gap indicates the greater importance that a value has in the reconstruction context, in comparison to business-as-usual. Also, according to the magnitude of the computed difference between the mean ratings, a GR was allocated for each value and category. The greater the positive gap, the greater the GR. Clients have higher expectations for the values with higher GR in post-disaster reconstruction, in comparison to business-as-usual. Figure 4.1 graphically represents the size of gaps among the mean ratings of importance for reconstruction context and business-as-usual for categories and values.
Figure 4.1. Difference between importance mean ratings.
In Figure 4.1, the horizontal line, labelled *Line of equality*, represents the line at which the perceived importance is the same for both situations. The area above the line, labelled *Area 1*, includes values and categories (with a positive gap) which are more important for reconstruction, while the area below the line, labelled *Area 2*, includes values and categories (with a negative gap) which are more important for business-as-usual.

As shown in Figure 4.1, categories such as time, integration, human resources, procurement, communication, and scope are included in area 1. Values such as shorter contact time, timeliness, reduced defect and rework, productivity, free-flow communication, commitment, trust, capability of sourcing, availability of resources, teamwork, competency, accessibility and responsiveness, and understanding the client are also included in area 1. Quality category and values such as to-budget delivery, and security, health and safety, are almost located on the line of equality. Cost and risk categories, as well as values such as a higher standard of quality, lower contract price, and environmental protection, are included in area 2.

### 4.5.2 Quadrants Analysis

Figure 4.2 presents the importance level of the categories and values, as perceived by clients for both disaster reconstruction and business-as-usual. The importance levels for disaster reconstruction are represented on the y-axis, while the importance levels for business-as-usual are represented on the x-axis. Quadrant analysis was employed to graphically categorise and compare the identified values. Quadrant analysis has been used as a managerial tool to recognise the weaknesses and the strengths of services and products in various industries (e.g. Abeka & Ochieng’Abeka, 2012; Chapman, 1993; Chéron et al., 1989; Sohn et al., 2014).

The analysis includes two measurements: the perceived importance for disaster reconstruction, and the perceived importance for business-as-usual. This results in four quadrants, as shown in Figure 4.2. Quadrant 1 includes values whose importance levels are higher than the average level (4.33), as perceived by clients for reconstruction, while their importance levels are perceived as lower than the average level (4.18) by clients for business-as-usual.
Quadrant 2 includes values whose importance levels are perceived as higher than average levels by clients for both situations. Quadrant 3 includes values whose importance levels are perceived as lower than average levels by clients for both situations. Quadrant 4 includes values whose importance levels are perceived as higher than average levels by clients for business-as-usual, while their importance levels are perceived as lower than average levels by clients for reconstructing.

Figure 4.2. Importance analysis grid for categories and values.

Referring to Figure 4.2, the integration category is the only category that fall into quadrant 1. Free-flow communication, competency, and capability of sourcing are the values that fall into quadrant 1. The categories that fall into quadrant 2 are procurement and time, while the values included in quadrant 2 are timeliness, trust-based relationships, availability of
resources, shorter contract time, to budget delivery, and higher standard of quality. The categories located in quadrant 3 are communication, human resources, and scope. The values located in quadrant 3 are productivity, corporate commitment, reduced defect and rework, accessibility and responsiveness, teamwork, and understanding of client. Finally, the categories such as cost, risk, and quality as well as the values such as lower contact price, health and safety, and environmental protection, are included in quadrant 4.

4.6 Discussion
The identified values in this research were split into two groups: terminal values and instrumental values. They were also categorised under the nine PMI knowledge-management areas. Issues related to time and cost form the most important categories of the terminal values in post-disaster situations and business-as-usual, respectively. In comparison, issues related to procurement and risk categories are at the core of the instrumental values. As the research findings indicate, clients have higher expectations regarding most of the identified values, and their categories for reconstruction, in comparison with the business-as-usual situation.

There is a tendency, in business-as-usual situations, to award contracts to the lowest bidders (Cheng et al., 2010). This study’s findings indicate that in comparison with business-as-usual, where clients have a deep-rooted cost-driven agenda (Taylor, 1998), contract price is not considered to be the core of client values in post-disaster situations. In the business-as-usual construction literature, client expectations from contractor services are assessed by referring to contractor outcomes, particularly in regard to terminal values. However, this study highlights a paradigm shift, from focusing on traditional terminal values, to both terminal and instrumental values, particularly for post-disaster situations.

Figure 4.4 conceptualises the comparison. Figure 4.3 includes the identified values, their categories, quadrant analysis results, and gap analysis results.
Figure 4.3. Key differences between disaster reconstruction and business-as-usual.
One of the key recurring themes from this study is that clients put the emphasis on instrumental values for disaster reconstruction projects. This study’s findings strengthen the viewpoint presented an earlier work, by Le Masurier et al. (2006a), which advocates that criteria associated with integration, human resources, and procurement should be considered as critical success factors for reconstruction situations. These viewpoints also show that the perception of contractor assessment for post-disaster reconstruction differs from business-as-usual. In other words, improving instrumental values within a contractual relationship is increasingly viewed as a powerful approach that contractors use to improve their competitiveness, particularly for reconstruction projects.

Achieving terminal values largely depends on the successful achievement of instrumental values. For example, it is very common to have delays and budget overruns due to a lack of personnel competency and productivity. Lack of consideration of instrumental values causes loss of time, profit, and various intangible social values that the contractor can offer to the client. To achieve a balance in client perception of perceived services, contractors should reflect on their contribution to value within each of the values. For instance, driving value in the working relationship, for example by providing good communication, makes no difference to client perceptions if the quality of the client’s project is not addressed through quality performance of contractor services. Similarly, the client is not satisfied if the construction activities do not offer safe working conditions to the workers. Likewise, achieving client satisfaction is not expected if the client’s project is not completed with VfM or freedom from uncertainties. The following sections will discuss the identified client values.

4.6.1 Terminal values.

In terms of importance at the category level, time is recognised as the first and second most important categories for disaster reconstruction and business-as-usual, respectively. The key difference between business-as-usual and reconstruction is found within the time category. The importance of time in reconstruction is due to undertaking reconstruction activities over a very intense timeframe. Also, this result places time as being one of the key output delivery factors in business-as-usual, time is one of the key output delivery factors, as clients perceive the value of reducing time in the construction process. While shorter contract time is an important value (ranked second for reconstruction and fifth for business-
Comparing Client Values Between Business-As-Usual and Post-Disaster Reconstruction

as-usual), the research findings suggest that the key deliverable of value in the time category is timeliness. Public pressure on the redevelopment is one the key characteristics of reconstruction programmes (Barenstein, 2006; Chang et al., 2013). Delays not only affect the construction industry and economics, but are reflected in the day-to-day living situation of communities affected by the disaster.

Cost category is considered another key difference between business-as-usual and reconstruction. It is ranked first and third for business-as-usual and post-disaster situations, respectively. At the values level, despite the existence of different perspectives about the importance of contact price between business-as-usual and reconstruction, to-budget delivery is recognised as the key value deliverable for both situations. In contrast to business-as-usual, to-budget delivery gains higher importance than lower contract price for reconstruction. If costs exceed clients’ planned targets, client satisfaction is compromised, as the available funding no longer matches their budget (Kaliba et al., 2009). This issue is more significant for reconstruction programmes, due to limited available funding and unstable economic conditions following disaster events.

As the research findings indicate, the quality category has the same importance for business-as-usual and post-disaster situations. At the values level, reduced defects and rework is ranked fifth and sixth for reconstruction and business-as-usual, respectively. A higher standard of quality is regarded as the most important value for business-as-usual, while it is ranked as the fourth most important value for reconstruction. This is because post-disaster reconstruction is viewed as an opportunity to improve better living conditions through building new, better housing units and infrastructure (Mannakkara & Wilkinson, 2015). Although post-disaster reconstruction needs to be completed within an agreed time, investing in quality is a worthy strategy which should not be compromised for speed (Clinton, 2006; Grewal, 2006). As a result, while achieving a higher standard of quality gains less importance for reconstruction in comparison with business-as-usual, clients in reconstruction still give more importance to standard of quality, over price.
4.6.2 Instrumental values.

Issues in relation to integration, procurement, communication, human resources, and scope are more important for reconstruction in comparison with business-as-usual, based on the study’s findings. Values associated with risk are more important for business-as-usual.

Integration is ranked third and second for reconstruction and business-as-usual, respectively. Similarly, at the values level, commitment and trust were recognised to be more important for reconstruction. Integration management acts as a strategy that has the potential to positively influence reconstruction outcomes by creating a cooperative and collaborative teamwork environment. It can be seen as a means of enhancing project team performance and effectiveness of teamwork (Ibrahim et al., 2013b). Trust and commitment are critical values that determine the development of integrated teams (Rahman et al., 2007). These values gain more importance when the possibility of opportunistic behaviour can be raised due to complexity (Coffey & Trigunarsyah, 2012), uncertainties (Hayles, 2010), and the intense timeframe (Sun & Xu, 2011) within reconstruction following a disaster. Lack of trust and commitment among team members can cause tensions and problems, which decrease the teamwork effectiveness and project performance. Building trust-based contractual relationships can be seen as an important instrumental value which has a key role in achieving reconstruction success in a post-disaster situation.

At the category level, procurement is considered to be the most important category for both reconstruction and business-as-usual construction. The research findings show that, at the values level, capability of sourcing and availability of resources gained more importance for reconstruction. These values have been widely accepted as important success factors of disaster reconstruction (Chang et al., 2012; Mannakkara & Wilkinson, 2015; Sankaran et al., 2014; Singh & Wilkinson, 2008). Singh and Wilkinson (2008) stated that the availability of resources is as essential as the availability of finance. This is due to the fact that reconstruction programmes can be beyond the capacity of local contractors (Ade Bilau & Witt, 2016). The importance of these values is in the capability of meeting the sudden surge of demand for technical staff and materials, both critical for reconstruction. After a disaster, the demand for delivery of supplies and logistics expertise increases; this raises the price and can also cause local shortages. Hence, contractors can be incapacitated in terms of delivery of supplies, to the point of need.
The human resource category was recognised as more important for reconstruction. While teamwork is ranked closely for both situations, staff and labour productivity is found to be more important for reconstruction. Local shortages of human resources after a disaster can be dealt with by improving personnel productivity and teamwork, as well as importing expertise and resources from other regions (Ade Bilau & Witt, 2016). Human resource management can assist service providers to achieve project objectives by creating better working relationships and making maximum use of resources. One suggestion could be developing appropriate human resource practices for post-disaster situations.

The communication category is ranked third and fourth for reconstruction and for business-as-usual, respectively. Accessibility and responsiveness have almost the same ranking for both situations. Free-flow communication is recognised as more important for reconstruction. Coordination and integration of the contractual relationships could be enhanced by good communication (Ibrahim et al., 2013b). Effective communication, on the basis of trust and commitment, can ensure that needed information flows appropriately between various contracting parties involved in disaster reconstruction (Ade Bilau & Witt, 2016; Jha, 2010). This removes potentially wasteful examination processes, while reducing tensions and problems among the parties (Butcher & Sheehan, 2010). This gains more importance for post-disaster situations where free-flow communication is required to integrate various contractual parties. In addition, transferring information through the project life cycle is more important in post-disaster environments, due to existing short lead-times between different project phases such as design, and construction.

The scope category is ranked fourth for post-disaster situations and fifth for business-as-usual. In the scope category, understanding clients has the same ranking for both situations, while competency is more important for reconstruction. During disaster reconstruction programmes, clients deal with unstable environments, greater uncertainty, and complexities (Rahman, 2012). Hence, it is understandable that the client priorities (for example between time, cost and quality) can change during the contractual relationship, depending upon the needs of the client. To effectively perform in such an environment, the capabilities of service providers should be diverse, flexible and adaptive (Von Meding et al., 2009). Through a high level of competence, contractors can quickly align themselves with the message coming from their client.
The risk category is ranked second and sixth, respectively, for business-as-usual and reconstruction. The respondents attached more significance to environmental protection in the risk category for business-as-usual. However, they have the same view about the importance of security, health and safety. It should be mentioned that disaster reconstruction can face different safety hazards and environmental issues, in comparison with business-as-usual (Grosskopf, 2010; Rapp, 2011). In reconstruction programmes, effectiveness of safety training can be compromised by the high number of workers, literacy skills of workers, and lack of resources for adequate training duration and frequency (Grosskopf, 2010). Hence, it can be stated that implementing effective risk management is essential for both business-as-usual and reconstruction situations. It is important to identify and prioritise the values within the risk category for both situations, as there are differences in the importance levels of the values.

4.7 Conclusion
The comprehensive literature review in this study shows that the available studies about post-disaster reconstruction have paid less attention to exploring the values of clients, in comparison with business-as-usual construction. Understating client values within contracting services is an important issue for contractors, who need to improve their performance to satisfy their clients, in order to survive in the marketplace. This study identified client values within contractor services for business-as-usual and post-disaster reconstruction. The main purpose of this research was to understand the perceived importance of client values for reconstruction, in comparison to business-as-usual.

The research findings suggest that time is a key value of any contractual relationship. These results also indicate that reconstruction programmes, compared to business-as-usual, need more emphasis on values related to integration, procurement, time, human resources, communication, and scope management. Finally, clients in post-disaster reconstruction have fewer concerns regarding values related to cost, compared to business-as-usual.

Achieving success in contractual systems requires a concerted effort to understand the client values. This study’s results assist in understanding the perceived importance of client values within contracting services for disaster reconstruction situations. While this research adds a new dimension to the assessment of contractor performance, it helps contractors to
recognise the client values and expectations during a relationship. The results could help to improve contractor performance and address client-satisfaction problems in reconstruction projects. The research findings can assist in improving decision making and developing better contractual relationships for post-disaster reconstruction projects.

Next chapter identify and prioritise a set of values for post-disaster reconstruction projects and define whether key client values within post-disaster reconstruction differ from the public and private client perspective. In addition, next chapter based on a series of weighted values suggests a conceptual CVI.
Chapter 5

Exploring Client Values in Post-Disaster Reconstruction

This chapter was extracted from the following manuscripts:


This chapter was supplemented by the following manuscripts:


5.1 Introduction

Chapter 4 investigated how client priorities differ between business-as-usual and post-disaster reconstruction situations. Chapter 4 highlighted that there are differences in the
prioritisation of client values between the two situations, prompting the need to identify and prioritise what clients value in post-disaster situations. Hence, this chapter contributes to enhancing the understanding of client values within reconstruction services in post-disaster situations.

Procurement methods include the client values for management of design and construction services (Masterman, 2003). An entity which provides any construction services should comply with these client values (Yang & Peng, 2008). Different methodologies of contracting propose different values to formulise relationships between contracting parties in business-as-usual construction. For example, the recent forms of relationship contracting tend to improve the contracting services using values such as trust, teamwork, communication and performance. However, the importance of these values depends on the project context (Kumaraswamy & Dissanayaka, 1998). The project conditions and management of post-disaster reconstruction is modified from business-as-usual construction (Le Masurier et al., 2006b). Hence, there is a need to determine the values influencing the contracting services within the post-disaster reconstruction context, and adopt them for defining suitable procurement options for reconstruction programmes, following a disaster. Only a few studies (Davidson et al., 2007; Wilkinson et al., 2005; Zuo, 2010) have attempted to identify procurement options suitable for post-disaster reconstruction. For example, Zuo (2010) proposed that relationship contracting types, such as those found in integrated procurement systems, are the most suitable contractual model for post-disaster reconstruction. Although these methodologies appear to have specific values useful for post-disaster reconstruction, in order apply them to projects it is the weightings of these values to specific circumstances that are more critical (Wilkinson et al., 2005). These prioritisations also need to be based on client perspectives, as the success of any form of contractual relationship largely depends on the fulfilment of the client values. In other words, service providers need to adopt strategies to meet the values that are important to clients during the relationship. The study of client values enables special attention to be paid to these values, thus improving contracting services, which results in success of the post-disaster reconstruction.

Similar to business-as-usual, reconstruction activities, including rebuilding houses, commercial buildings, and infrastructure, can be pursued by the public and private sector in
competition (Labadie, 2008). Typically, the private sector/owner undertakes the disaster reconstruction with financial assistance and technical guidance provided by the government (Chang et al., 2011b; Powell, 2011). The public sector can also undertake reconstruction by employing a non-government agency which enlists the services of a contractor (Chang et al., 2011b; Powell, 2011). Exploring how client values differ between the public and private sectors is helpful in achieving client satisfaction by fulfilment of their different values.

The construction management literature is concentrated on the key values that affect business-as-usual rather than reconstruction. Key values can also be determined based on expert opinions (Yu et al., 2006). The impact of experience possessed by expert opinions on project outcomes has been widely accepted (Jaselskis & Ashley, 1991; Sanvido et al., 1992; Yu et al., 2006). Experienced practitioners can compose a set of values after testing against their experience (Chua et al., 1999; Yu et al., 2006). The aim of this study is to investigate the key client values for post-disaster reconstruction contracting services, from both public and private client perspectives. The specific objectives are to identify and prioritise a set of values which could be used by reconstruction practitioners during the contractual relationships, to ensure successful reconstruction projects. In addition, a series of weighted values were combined into a conceptual CVI.

5.2 Client Values Perception in Post-Disaster Reconstruction

Many studies have argued the need to identify the key values for improving delivery practices, to provide better value to clients. The reconstruction process needs new systems and methods (Sun & Xu, 2011), as well as updated management processes and skill sets (Prieto & Whitaker, 2011; Rapp, 2011). Reconstruction programmes need a better contribution from the project management discipline (Bingunath Ingridge et al., 2013; Steinfort, 2016; Von Meding et al., 2009) in order to maintain standards in terms of time, cost, and quality (Sankaran et al., 2014). The PMI has developed a project management methodology for post-disaster reconstruction, aimed at those key values needed for clients to improve relationships, consistency, and quality of reconstruction projects in a disaster rebuild environment (PMI, 2005). However, the methodology was developed for global application and, hence, lacks sufficient details to be applicable in practise. Reconstruction programmes also need to avoid disintegration among parties (Ismail et al., 2014), comply with health and safety rules (EPC et al., 2004), and improve coordination of reconstruction
programs (Hayles, 2010; Soelaksono, 2009). Little time for planning, faster use of budget, greater significance of industry consensus, standardised restoration, increased indirect cost as a result of the significance of interaction between stakeholders, and safety neglect as result of the sense of urgency, have all been indicated by Rapp (2011) as areas of concern for rethinking in post-disaster reconstruction. Wilkinson et al. (2006) emphasised using local resources, such as local engineering and construction services, in order to improve the predictability and efficiency of reconstruction projects. Le Masurier et al. (2006a) stated that a contractual framework for reconstruction programmes needs to take account of the extensive damage, multiple stakeholders, limited budgets and timelines, urgent construction project, lack of skilled managers, participation of small-scale local construction and engineering enterprises, and sudden needs owing to civil complaints. However, the above-mentioned studies do not prioritise the relative importance of the identified values, from the client perspective, within a reconstruction situation.

The issue of the lack of detailed information regarding client values in post-disaster reconstructions is further highlighted, as the construction management literature is focused on business-as-usual contracting services, and its relative values, rather than reconstruction. Exploring construction client values has been the subject matter of various studies in business-as-usual construction (Aliakbarlou et al., 2017a). However, understanding the applicability of client values for business-as-usual situations, to post-disaster reconstruction, has not been investigated. This is due to the fact that “research on Post-disaster reconstruction is a relatively new topic with rapid development potential” (Yi & Yang, 2014). Ahmed (2011) argued that there are a number of guidelines for reconstruction programmes, “but hardly any which are widely endorsed and can be followed by humanitarian agencies” (Ahmed, 2011). A few studies (e.g. Belassi & Tukel, 1996; Ophiyandri et al., 2013) were conducted focusing on the critical success factors in post-disaster reconstructions. Coffey and Trigunarsyah (2012) emphasised the need to conduct research to develop critical factors for success in post-disaster reconstruction projects. Hence, determining the priorities that clients have for organising the reconstruction projects is an important subject for post-disaster situations.
To describe the need, based on an in-depth review of the findings as detailed in Chapter 2 and the findings obtained from interviews and documents analysis as detailed in Chapter 3, a long list of values for assessing the construction client values was developed.

The focus of this study is to identify and prioritise key client values within contracting services for post-disaster reconstruction projects, from the public and private client perspective. Selection of the different types of client enables the authors to obtain different perspectives, if any exist.

5.3 Towards Development of a Client Value Index (CVI)

To evaluate and improve client value within contractual relationships, it is important to explore what different clients value and what clients’ systems of value priorities are. Sirkin and Stalk (1990) and Ahmed and Kangari (1995) highlighted the benefits of understanding what clients value and to concentrate on those values. They stated that having knowledge of what clients value, service providers were able to understand the causes of their service problems, and provide changes to address these problems. Ahmed and Kangari (1995) highlighted time, cost, quality, client orientation, communication skills, and response to complaints as the values that clients perceive as being most important within contracting services. Murphy (1999) introduced a model to assess client-perceived value within consultancy relationships. The study explored that contracting parties need to have awareness of client perceptions with three aspects of provided services (such as technical, personnel, and ultimate project outputs) in order to satisfy their clients. Mbachu and Nkado (2006) developed a conceptual framework for assessing client needs in the building development process. They analysed the levels of importance of client values, and performances of service providers in fulfilling those values. The results of their study indicated that services delivery within agreed time, cost and quality targets are clients’ utmost expectation for contracting services, while “accommodating clients’ changes in good faith is the most critical area for improvement” (Mbachu & Nkado, 2006). Boyd and Chinyio (2006) classified client values in two groups: terminal values and instrumental values. In construction, the terminal values are realised by criteria related to time, cost, and quality, while criteria such as communication, relationships, and coordination are at the core of the instrumental values (Boyd & Chinyio, 2006). Terminal values are the final goals that individuals make for themselves, while instrumental values can be considered as a means to
Exploring Client Values in Post-Disaster Reconstruction

an end (Boyd & Chinyio, 2006; Kluckhohn, 1951). Satisfaction can be perceived by achievement of terminal values through instrumental values. By analysing the effect of relationship management on construction project performance Meng (2012) indicated that satisfactory delivery of construction services with respect to time, cost, and quality is highly associated with instrumental values such as collaborative work, open communication, and effective problem solving, respectively.

Despite the availability of various studies to explore client values for evaluation of contracting services, they were focused on business-as-usual construction situations. The available studies can be customised, with several shortcomings, for applicability of their findings to post-disaster situations. For example, while they defined values which can be useful for post-disaster reconstruction, it is the weightings of these values to specific circumstances of reconstruction programmes that are more essential. Hence, exploring client priorities within contracting services in post-disaster situations can be of great importance in overcoming these shortcomings.

Achievement of client satisfaction within provided reconstruction services requires some balance and trade-off among the most significant values. For example, while ‘quick schedule’, ‘a low budget’, and ‘high quality’ are important for a client, they may not be satisfactorily achievable together for the same project (Rapp, 2011). Achieving a project with ‘higher quality’ and ‘quicker schedule’ is possible, perhaps with a ‘higher contract price’. Hence, it is important to understand the most significant client values. The current chapter (after prioritising client values) aims to develop a CVI based on the most significant client values.

5.4 Research Methodology and Method

A mixed qualitative and quantitative methodology, through interviews and a questionnaire survey, has been designed and implemented for this study. For Stage 1, expert interviews (Interview Survey 4), with a total of 16 expert reconstruction practitioners in New Zealand were carried out with the aim of exploring client values within contractual relationships for post-disaster reconstructions. For Stage 2, a questionnaire survey (Questionnaire Survey 2) was conducted to explore the relative importance of the values. The identified values were then prioritised, based on their importance for public and private clients, to gain insight into
how the importance of these values differs between public and private clients. The descriptions of the two stages are as follows.

5.4.1 Stage 1: Interview.

Interviews were designed based on semi-structured and open-ended questions. This qualitative method can uncover rich descriptive data by offering balance between the degree of freedom of conducting an open-ended interview and the focus of a structured interview (Kvale, 2008). It can also lead to identification of insights into issues from an expert’s perspective and provides practical solutions for managing the issues (Flick, 2009; Silverman, 2016). In addition, semi-structured interviews can be used to validate and modify the findings of parallel studies (Gubrium & Holstein, 2002; Wong et al., 2012). Hence, this kind of interview assesses ideas and relationships (Wong et al., 2012), and can help create a preliminary hypothesis as a foundation for further research.

Interview practitioners were chosen based on their knowledge, and experience in post-disaster reconstruction projects. In the selection process, their different competencies and seniority were considered (Patton, 2014). In particular, the Christchurch earthquake in 2011, and lessons learned from the on-going reconstruction process in Canterbury, were considered in assessing the adequacy of the interview practitioners’ experience. Table 5.2 shows the interviewee details.

In total, 20 experts including senior managers, chief executives, and key decision makers in the field of post-disaster reconstruction, were contacted to participate in the research interviews. These were selected, with 10 from each sector selected. Of these, only 16 experts (as shown in Table 5.1) were able to participate, the remainder citing availability and work commitments as reasons for not being able to participate. The sample of participants represents a wide range of experts with considerable expertise in reconstruction projects. The number of participants is dictated by the study characteristics, such as geographic representation and, in particular, the number of available experts (Hallowell & Gambatese, 2009). Finally, the study sample size of participants depends on the interviewees’ expertise and the collective consensus results, rather than statistical power (Ibrahim et al., 2013a; Okoli & Pawlowski, 2004). Each interview was started by clarifying the research domain. The long list of identified client values within contracting services was provided to the
The practitioners were then asked to select the most significant values for reconstruction from the list. In so doing, they simply highlighted their choices (the values they perceive as significant in each category).

Table 5.1
Interview Participants’ Profiles

<table>
<thead>
<tr>
<th>Participants profiles</th>
<th>Categorisation</th>
<th>Public (No: 9)</th>
<th>Private (No: 7)</th>
<th>Total (No: 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fields of expertise</td>
<td>Director</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Decision maker/advisor</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Construction experiences</td>
<td>Less than 15 years</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>More than 15 years</td>
<td>9</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Reconstruction experiences</td>
<td>Less than 5 years</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>More than 5 years</td>
<td>9</td>
<td>5</td>
<td>14</td>
</tr>
</tbody>
</table>

Initially, the values were shortlisted using the rule ‘use only values selected by two or more respondents’. However, in order to reduce the number for the final list it was decided to shortlist the values if they were selected by three or more respondents. In addition, values such as friendly environment, no-blame culture, respect, fairness, good faith and attitude were combined. This resulted in a substantial list of 39 values.

As a final check, the researcher reviewed the values and their categories. This resulted in an update for long list of the values. For example, it was decided to remove ‘improved organisational culture’ and ‘continuous learning & improvement’ from integration category and include them in human resource category. Appendix 4 and Table 5.2 represent the last version of the long list of values and short list of values identified in this study, respectively.
Table 5.2  
Values and their categories and description

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>T1</td>
<td>Shorter total time: duration (of a contract) to complete a construction project</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>Timeliness: Ability to achieve a promised/agreed time schedule</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>Delivery speed in construction process &amp; lead-time: Amount of time/period between the initiation and start of execution</td>
</tr>
<tr>
<td>Cost</td>
<td>C1</td>
<td>Lower initial contract price: Lower proposed price to complete a construction project</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>To-budget delivery: Ability to achieve a promised/agreed price</td>
</tr>
<tr>
<td></td>
<td>C3</td>
<td>Whole life cost: Total acquisition and ownership costs of an asset (physical, economic, functional, service, and design)</td>
</tr>
<tr>
<td>Quality</td>
<td>Q1</td>
<td>Higher standard of quality: Providing high level of standard in terms of quality in service and product delivery</td>
</tr>
<tr>
<td></td>
<td>Q2</td>
<td>Information system adequacy: Adequacy of mechanism that collect and distribute data or information during a contractual relationship</td>
</tr>
<tr>
<td></td>
<td>Q3</td>
<td>Accuracy of decision making and process: Providing accurate decision and process for planning, program implementation, control</td>
</tr>
<tr>
<td>Integration</td>
<td>I1</td>
<td>Corporate commitment: Commitment at organisational level towards satisfactory delivery of contracting services</td>
</tr>
<tr>
<td></td>
<td>I2</td>
<td>Partnerships with all parties: Ability of developing partnerships (&amp; true friendships) with all parties</td>
</tr>
<tr>
<td></td>
<td>I3</td>
<td>Flexibility in relationship: Being flexible (for example to changes) during a contractual relationship</td>
</tr>
<tr>
<td></td>
<td>I4</td>
<td>Building a trust-based relationship: Developing a contractual relationship that is based on trust</td>
</tr>
<tr>
<td></td>
<td>I5</td>
<td>Long-term business relationship: Providing value to clients on a consistent and ongoing basis that goes beyond a task/one-time project (due to attitude) of maintaining a relationship for a long term</td>
</tr>
<tr>
<td></td>
<td>I6</td>
<td>Minimised aggravation &amp; litigation: Ability of reducing aggravation &amp; litigation over a relationship</td>
</tr>
<tr>
<td></td>
<td>I7</td>
<td>Efficient problem-resolution procedure: Providing an efficient problem-resolution procedure for possible issues occurring over a relationship</td>
</tr>
<tr>
<td>Scope</td>
<td>S1</td>
<td>Efficiency of construction methods &amp; techniques: Ability of providing efficient construction methods and techniques in reconstruction projects</td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>Appropriate tangibles: Providing appropriate tangibles such as physical site facilities, equipment, documents, claims, and reports</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>Competency: Developing core competence based on functional skills and knowledge that are required for planning and implementing reconstruction programmes</td>
</tr>
<tr>
<td></td>
<td>S4</td>
<td>Understanding client: Recognising clients in terms of their needs and requirements</td>
</tr>
<tr>
<td></td>
<td>S5</td>
<td>Accuracy of variations/invoices &amp; claims: Providing variations/invoices and claims first time with appropriate level of accuracy (minimum amount of error)</td>
</tr>
<tr>
<td></td>
<td>S6</td>
<td>Potential for innovation &amp; creativity: Ability of providing creativity and innovation in reconstruction projects</td>
</tr>
<tr>
<td>Human resource</td>
<td>H1</td>
<td>Internal teamwork development: Providing the ways and processes in which all members can collaboratively work and interact together</td>
</tr>
<tr>
<td></td>
<td>H2</td>
<td>Productivity: The reconstruction service produced by a unit of study as a proportion of the resources required to produce it</td>
</tr>
<tr>
<td></td>
<td>H3</td>
<td>Efficiency of leadership &amp; coordination: Ability to lead and coordinate team members</td>
</tr>
<tr>
<td></td>
<td>H4</td>
<td>Employee empowerment: Implementation of employee involvement and recognition</td>
</tr>
<tr>
<td></td>
<td>H5</td>
<td>Continuous learning &amp; improvement: Willingness to gain new knowledge and skills to enhance competitive position and provide improved services</td>
</tr>
<tr>
<td></td>
<td>H6</td>
<td>Improved organisational culture: Improving culture at organisational level, for example, to achieve client values</td>
</tr>
<tr>
<td></td>
<td>H7</td>
<td>Perceived pro-social behaviour: Perceiving pro-social behaviour at team level (such as friendly environment, no-blame approach, respect, fairness, good faith &amp; attitude)</td>
</tr>
<tr>
<td>Communication</td>
<td>CO1</td>
<td>Communication technique &amp; documentation: Ability of effectively communicate (using appropriate techniques) document for example contractual issues, variations, etc.</td>
</tr>
<tr>
<td></td>
<td>CO2</td>
<td>Accessibility &amp; responsiveness: The ease with which the service is obtained and willingness to provide prompt service</td>
</tr>
<tr>
<td>Risk</td>
<td>R1</td>
<td>Security, health &amp; safety: Minimising issues regarding security, health &amp; safety</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>Environmental protection: Minimising (negative) impact of contracting services on the environment</td>
</tr>
<tr>
<td></td>
<td>R3</td>
<td>Providing necessary guarantees/assurance: Providing services with appropriate guarantees/assurance</td>
</tr>
<tr>
<td></td>
<td>R4</td>
<td>Financial stability &amp; strength: Ability of effectively managing the finances to constantly meet the contract requirements</td>
</tr>
<tr>
<td></td>
<td>R5</td>
<td>Risk management skills &amp; techniques: Employing required skills &amp; techniques for managing risks over a contractual relationship</td>
</tr>
<tr>
<td>Procurement</td>
<td>P1</td>
<td>Availability of resources: Ability of providing all required resources such as material, labour, plant...</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>Capability of sourcing: Ability of procuring (hiring, etc...) of the required resources</td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td>Willingness to use local resources: Readiness of using the resources that are available locally (around the location of construction project)</td>
</tr>
</tbody>
</table>
5.4.2 Stage 2: Questionnaire survey.

Once the proposed values were finalised by conducting interviews, a questionnaire survey was designed to rate and prioritise the values. In designing the survey questionnaire, a pilot survey was conducted with five participants who are construction industry experts. In so doing, the questionnaire was sent out to the participants and they were requested to complete the questionnaire. The numbers of participants was considered adequate, as the purpose of the pilot survey was to determine the required time to complete the questionnaire. It also helped to understand how easy it would be for respondents to interpret and answer the questionnaire. No adverse feedback was obtained from the pilot survey, and the pilot study questionnaire was used as the final empirical questionnaire.

The questionnaire considered the levels of importance and performance of the identified values, from the perspective of the respondents. The five-point Likert scale was used to assess the importance and performance of each value (on a scale of 1 to 5 where 1 = least significant, 2 = slightly significant, 3 = significant 4 = very significant, 5 = most significant), as suggested in Yeung et al. (2008). The five-point Likert scale can be used for rating the relative significance of values, based on assessing experts’ opinion (Chan & Kumaraswamy, 1996; Park, 2009). Using this method helped in assessing the contractor performance in post-disaster situations, as perceived by different clients, as discussed in Chapter 6. The results of the analysis are helpful to improve understanding of client expectations of post-disaster reconstruction projects, and how well contractors comply with these expectations. In this Chapter, only the obtained importance levels are used for the purpose of the data analysis and discussion.

Having work experience in construction management, and knowledge and understanding of post-disaster reconstruction concepts, were the main criteria for selection of the survey participants. To help achieve this, individuals from central government and local government agencies (involved in post-disaster reconstruction as public clients) as well as private organisations/property owners (engaged in post-disaster reconstruction as private clients) were targeted. The obtained responses show that the respondents had, on average, five years of experience with managing post-disaster reconstruction projects. The survey targets were senior managers from client organisations and they could act as their organisation’s representative. The participants were sufficiently senior within the client
organisations to understand what value meant to clients. In addition, they had clear ideas about contractor evaluation, and played various roles in construction projects. Table 5.3 summarises the respondents’ details.

Out of 180 distributed questionnaires, a total of 59 responses were received, either through meetings and interviews, or by e-mail. In this survey, participants from public and private client organisations were engaged. Out of the 59 experts, as shown in Table 5.3, 25 of the respondents were public client participants, and 34 respondents were from private client participants. This enabled the authors to obtain different perspectives.

Table 5.3
Survey Respondent Profiles

<table>
<thead>
<tr>
<th>Respondent profiles</th>
<th>Categorisation</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of client</td>
<td>Public</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>34</td>
</tr>
<tr>
<td>Fields of expertise</td>
<td>Director</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Decision maker/advisor</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Quantity surveyor</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engineer</td>
<td>8</td>
</tr>
<tr>
<td>Construction experience</td>
<td>Less than 10 years</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>More than 10 years</td>
<td>53</td>
</tr>
<tr>
<td>Reconstruction experience</td>
<td>Less than 5 years</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>More than 5 years</td>
<td>33</td>
</tr>
</tbody>
</table>

5.5 Analysis of the Results

The values were ranked according to their mean scores (computed using Equation 1 in Chapter 4) and relative importance indices (computed using Equation 2 in Chapter 4). Higher mean scores result in a higher rank.

Table 5.4 consists of three main columns. The first main column represents the values and their assigned categories. The second and third main columns show the mean score, RII and ranking of the values as perceived by public and private clients, respectively. The main reason for categorising the identified values is to organise the findings for presentation and discussion.
Table 5.4

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Client values</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>RII</td>
<td>Rank</td>
</tr>
<tr>
<td>Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>4.520</td>
<td>0.904</td>
<td>2</td>
</tr>
<tr>
<td>T2</td>
<td>4.560</td>
<td>0.912</td>
<td>1</td>
</tr>
<tr>
<td>T3</td>
<td>4.440</td>
<td>0.888</td>
<td>4</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>4.042</td>
<td>0.808</td>
<td>26</td>
</tr>
<tr>
<td>C2</td>
<td>4.280</td>
<td>0.856</td>
<td>12</td>
</tr>
<tr>
<td>C3</td>
<td>3.960</td>
<td>0.792</td>
<td>29</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>4.304</td>
<td>0.861</td>
<td>10</td>
</tr>
<tr>
<td>Q2</td>
<td>3.840</td>
<td>0.768</td>
<td>33</td>
</tr>
<tr>
<td>Q3</td>
<td>4.083</td>
<td>0.817</td>
<td>24</td>
</tr>
<tr>
<td>Integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1</td>
<td>4.261</td>
<td>0.852</td>
<td>14</td>
</tr>
<tr>
<td>I2</td>
<td>4.240</td>
<td>0.848</td>
<td>16</td>
</tr>
<tr>
<td>I3</td>
<td>4.167</td>
<td>0.833</td>
<td>20</td>
</tr>
<tr>
<td>I4</td>
<td>4.333</td>
<td>0.867</td>
<td>7</td>
</tr>
<tr>
<td>I5</td>
<td>3.680</td>
<td>0.736</td>
<td>35</td>
</tr>
<tr>
<td>I6</td>
<td>4.240</td>
<td>0.848</td>
<td>17</td>
</tr>
<tr>
<td>I7</td>
<td>4.040</td>
<td>0.808</td>
<td>27</td>
</tr>
<tr>
<td>Scope</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>4.208</td>
<td>0.842</td>
<td>18</td>
</tr>
<tr>
<td>S2</td>
<td>3.400</td>
<td>0.680</td>
<td>39</td>
</tr>
<tr>
<td>S3</td>
<td>4.400</td>
<td>0.880</td>
<td>5</td>
</tr>
<tr>
<td>S4</td>
<td>3.920</td>
<td>0.784</td>
<td>31</td>
</tr>
<tr>
<td>S5</td>
<td>3.875</td>
<td>0.775</td>
<td>32</td>
</tr>
<tr>
<td>S6</td>
<td>3.600</td>
<td>0.720</td>
<td>36</td>
</tr>
<tr>
<td>Human resource</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>4.200</td>
<td>0.840</td>
<td>19</td>
</tr>
<tr>
<td>H2</td>
<td>4.320</td>
<td>0.864</td>
<td>9</td>
</tr>
<tr>
<td>H3</td>
<td>4.160</td>
<td>0.832</td>
<td>21</td>
</tr>
<tr>
<td>H4</td>
<td>3.542</td>
<td>0.708</td>
<td>37</td>
</tr>
<tr>
<td>H5</td>
<td>3.800</td>
<td>0.760</td>
<td>34</td>
</tr>
<tr>
<td>H6</td>
<td>3.520</td>
<td>0.704</td>
<td>38</td>
</tr>
<tr>
<td>H7</td>
<td>4.000</td>
<td>0.800</td>
<td>28</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO1</td>
<td>4.250</td>
<td>0.850</td>
<td>15</td>
</tr>
<tr>
<td>CO2</td>
<td>4.083</td>
<td>0.817</td>
<td>23</td>
</tr>
<tr>
<td>Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>4.292</td>
<td>0.858</td>
<td>11</td>
</tr>
<tr>
<td>R2</td>
<td>3.920</td>
<td>0.784</td>
<td>30</td>
</tr>
<tr>
<td>R3</td>
<td>4.080</td>
<td>0.816</td>
<td>25</td>
</tr>
<tr>
<td>R4</td>
<td>4.280</td>
<td>0.856</td>
<td>13</td>
</tr>
<tr>
<td>R5</td>
<td>4.320</td>
<td>0.864</td>
<td>8</td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>4.480</td>
<td>0.896</td>
<td>3</td>
</tr>
<tr>
<td>P2</td>
<td>4.360</td>
<td>0.872</td>
<td>6</td>
</tr>
<tr>
<td>P3</td>
<td>4.120</td>
<td>0.824</td>
<td>22</td>
</tr>
</tbody>
</table>

5.5.1 A comparative analysis of public and private client perspective.

The review of top-ranked values shows that six values were ranked among the top 10 values by both public and private clients. In order to examine the extent of agreement between the opinions of public and private respondents, Spearman’s rank correlation coefficient was applied. It assesses monotonic relationships as a nonparametric measure of correlation and
it does not matter whether the relationship is linear or not. The Spearman rank correlation coefficient for any two sets of rankings is computed by the following formula:

$$r_s = 1 - \frac{6 \sum_{i=1}^{n} d_i^2}{n(n^2 - 1)}$$

(Equation 3)

Where

- $r_s$ represents the correlation coefficient
- $d_i$ represents the difference between ranks
- $n$ represents the number of pairs of values in the data

Obtaining a value of 1 for the correlation coefficient shows that all the respondents rank the values identically (Hinkle et al., 2003). If the correlation coefficient is equal to 0, all the respondents rank the values totally differently (Hinkle et al., 2003). In this study, the correlation analysis was computed using the Statistical Package for Social Sciences. The obtained correlation coefficient between public and private client responses is 0.780. This indicates a moderate correlation between all respondents regarding relevance and importance of values (Hinkle et al., 2003).

Figure 5.1 represents the importance level as perceived by clients. The importance of values for public clients is represented on the y-axis, while the importance of values for private clients is represented on the x-axis. The quadrant analysis, as a managerial tool (Abeka & Ochieng’Abeka, 2012; Chapman, 1993; Chéron et al., 1989; Sohn et al., 2014), was employed in this study to graphically compare the identified values. The analysis included two measurements, mean value scores from public client perspectives, and mean value scores from private client perspectives, which provides four quadrants as shown in Figure 5.1.

Quadrant 1 includes values whose importance levels are higher than average, as perceived by public clients, while their importance levels are lower than average, as perceived by private clients. Quadrant 2 includes values whose importance levels are higher than average, as perceived by both public and private clients. Quadrant 3 includes values whose importance levels are lower than average, as perceived by both public and private clients. Quadrant 4 includes values whose importance levels are higher than average, as perceived by private clients, while their importance levels are lower than average, as perceived by public clients.
The values that fall into quadrant 1 are true friendship/partnerships with all parties, efficiency of construction methods and techniques, security, health and safety, and willingness to use local resources. Quadrant 2 includes corporate commitment, flexibility in relationships, building trust-based relationships, minimised aggravation and litigation, competency (functional skill and knowledge for planning and implementing reconstruction programmes), shorter contract time, timelines (progress schedule), delivery speed in construction process and lead-time, to-budget delivery/appropriate to budget, higher standard of quality/exceed quality standards, teamwork development, productivity of resources, efficiency of leadership and coordination, communication technique and documentation, financial stability during a relationship, risk management skills and techniques, availability of resources (material, labour, and plant), and capability of sourcing. Quadrant 3 includes long-term business relationship, continuous learning and improvement,
appropriate tangibles (site facilities, documentations, claims and reports), understanding the client, accuracy of variations/invoices and claims, potential for innovation and creativity, whole life cost and VfM, information system adequacy, accuracy of decision making, improved organisational culture, employee empowerment, perceived pro-social behaviour (friendly environment, no-blame culture, respect, fairness, good faith and attitude), and environmental protection. Finally, values such as efficient problem-resolution procedures, lower contract price, accessibility and responsiveness, and providing necessary guarantees/assurance, were located in quadrant 4.

In addition, the line of equality determines the points that have the same value from both public and private client perspectives. As shown in Figure 5.1, the diagonal line (red line) indicates two areas. The area above the diagonal line includes values that are more important for public clients. The area below the diagonal line includes values which are more important for private clients. Distance from the line indicates the extent to which the importance level of each value is different, based on public and private client perspectives.

Analysing the four quadrants, as well as the two areas determined by the line of equality, indicates there is strong agreement between all public and private respondents. For example, 80% of the values (31 out of 39) fell into quadrant 2 (includes values whose importance levels are higher than average) and quadrant 3 (includes values whose importance levels are lower than average), as perceived by both public and private clients, which shows these values are highly important for both types of respondent. Also, it appears from Figure 5.1 that most of the values are located close to the line of equality.

The 39 items derived from the interviews provided a comprehensive set of client values within contracting services for post-disaster reconstruction. Categorising these values within the nine PMI knowledge-management areas provided an acceptable fit under the titles used. The analyses showed a moderate correlation between public clients' and private clients' ranks. However, further analysis was undertaken to assist reconstruction contractual parties to better understand the client values from different perspectives. The following section discusses the 10 values regarded as having the highest priority (see Table 5.5).

5.5.1.1 **Distinguishing between public and private clients.** Reviewing the ranking of the 39 values (shown in Table 5.4), as well as the comparison conducted between the 10 most
important values (shown in Table 5.5), shows how public and private clients’ instrumental and terminal values can differ.

In terms of terminal values, time related values are almost equally important for both types of clients. This is because post-disaster reconstruction projects are conducted over a very intense timeframe. Cost related values are more important for private clients, while a higher of standard of quality is more important for public clients. This is due to the historical view of the public sector having a lowest capital cost mentality, with evidence of a transition towards a whole life cost paradigm, which is different from private clients, such as developers, who may value profit above other issues.

In terms of instrumental values, reviewing the top 10 most important values shows that values such as building a trust-based relationship, competency, and availability of resources are among the top 10 values for both types of clients indicating the significance of these instrumental values for post-disaster reconstruction projects. Financial stability during a relationship, as well as and communication technique & documentation, are more important for private clients, while capability of sourcing, productivity of resources, and risk management skills & techniques are more important for public clients.

Table 5.5
**Highest Priority Values (10 Most Important, According to Clients)**

<table>
<thead>
<tr>
<th>Value</th>
<th>Public clients’ Rank</th>
<th>Private clients’ Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeliness</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shorter contract time</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Availability of resources</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Construction speed &amp; lead-time</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Competency</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Capability of sourcing</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Building trust-based relationship</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Risk management skills &amp; techniques</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Productivity of resources</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Higher standard of quality</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Financial stability during a relationship</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Communication technique &amp; documentation</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>To-budget delivery</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

5.5.1.1.1 **Criteria ranked high by both public and private clients.** All values within the time category were considered as high importance by both public and private clients. After disaster events, every hour is important when many families are homeless and business is lost. The importance analysis reveals that public and private clients have similar perceptions.
of the need for improvement in respect to timeliness and delivery speed. Timeliness was, overall, ranked first by public clients and second by private clients. Shorter contract time, as proposed by contractors at tender stage, was ranked second by public clients, while it was ranked sixth by private clients. Perhaps total construction time generally has more impact on public than private clients. Reconstruction projects need a short lead-time prior to the implementation of the construction, also the construction activities need to proceed quickly. Construction speed and lead-time was, overall, ranked fourth by public clients and eighth by private clients.

Availability of resources was ranked high by both sets of respondents: third and second by public and private clients, respectively. Disaster events can underscore the importance of resource availability throughout the recovery process, as resource shortages will be likely (Chang et al., 2013; Chang et al., 2012; Mannakkara & Wilkinson, 2015). The contractor organisations can also be affected by the disaster. For, example a disaster event can affect the availability of resources to the contractors, for instance, by limiting their access to their own material. Hence, clients will benefit from contractors who have been prepared in advance to deal with resource shortage in a post-disaster situation.

In terms of scope management aspects, competency was regarded as important by both public and private clients, since it was ranked fifth and third by public and private clients, respectively. Post-disaster reconstruction programmes need to be planned and implemented through different stages (Roosli et al., 2012). Knowledge, skills and experience are required to effectively plan and implement reconstruction programmes. The reconstruction scale could be significant, and the contracting parties need to have the skill sets to plan and coordinate such extensive works. Wilkinson et al. (2016) highlighted the importance of improvements in the training-for-disasters situations for the construction sector, particularly in relation to their role in reconstruction. They also concluded that construction organisations are not trained in management of post-disaster situations, although they are expected to take on these roles.

Private clients regarded building a trust-based relationship as their fifth most important value. Building a trust-based relationship leads to mutual satisfaction, as it minimises construction aggravation, disputes and conflict (Park, 2009). Trust is acknowledged as a
fundamental value in building better integration (Cicmil & Marshall, 2005; Ibrahim et al., 2013b; Rahman & Kumaraswamy, 2008), while it also prevents adversarial relationships which cause inferior levels of performance (Park, 2009). Contractors may use different techniques to encourage trust during their relationships with clients. The contractor’s ability to develop a trust-based relationship is essential in a post-disaster situation, where the construction process needs to be conducted within an intense timeframe.

5.5.1.1.2 Criteria ranked high by public clients. Public clients put high priority on capability of sourcing of labour, material and equipment. High demand for material and machinery following disaster events can cause high costs of transportation (Limoncu & Celebioglu, 2006) and lack of delivery options (Zuo & Wilkinson, 2008). These issues are greater in large-scale projects which public clients tend to deal with (Da Silva et al., 2010). It is interesting to note that private clients did not consider this to be of high priority. Perhaps private clients prefer to rely on their contractor resource availability rather than on the contractor capability of sourcing.

Similarly, risk management skills and techniques were highly prioritised by public clients. Disaster situations can place great pressure on the capacity of the contracting industry, which can cause many different unexpected problems during reconstruction (Ade Bilau & Witt, 2016; Chang et al., 2013; Haigh & Amaratunga, 2010). The clients need to rely on the contractor’s ability to manage the risks arising from unexpected issues during reconstruction.

Productivity in the human resource category was ranked ninth by public clients. It is one of the essential determinants of contractor performance in the construction industry (Ofori-Kuragu et al., 2016). Contractors who can draw better productivity from less-skilled human resources will have better performance (Chang et al., 2013). Due to the strong demand for skilled human resources after a disaster, the shortages of skilled workers can be one of the key contractor issues. This can affect reconstruction project schedules and budgets. Productivity gains significance, particularly after a large-scale disaster event where public clients deal with complex working relationships.

A higher standard of quality was highly prioritised by public clients, since they bear the costs of poor standards of quality. According to Mannakkara and Wilkinson (2013), although
clients require high-quality standards for post-disaster reconstruction, a lack of awareness about local guidelines and regulations can lead to inappropriate rebuilt structures. In addition, in current construction delivery practices, the focus on quality management is given only to the product quality rather than the whole project life cycle, such as planning and design.

**5.5.1.1.3 Criteria ranked high by private clients.** Private clients put high priority on financial strength and stability during a relationship. Reconstruction projects can be greatly affected by the consequences of poor financial stability (Ade Bilau & Witt, 2016). Several problems, such as delay and low quality, can be developed due to the poor financial stability of contracting parties. It is interesting to note that public clients did not highly prioritise financial stability as a criterion in need of improvement.

Communication techniques and documentation were highly prioritised by private clients. During communication, information is shared in oral, written or symbolic form. Due to the time sensitivity and complexity of reconstruction projects, appropriate communication skills, techniques and documentation are important during the reconstruction projects. (Ade Bilau & Witt, 2016; Ismail et al., 2014; Rapp, 2011). Although good communication is important for any contractual relationships, it gains more importance for private clients (e.g., seventh), as they may have more contact with their contractors in comparison with public clients (e.g., fifteenth).

Private clients regarded to-budget delivery as their tenth most important value. To-budget delivery refers to accuracy of provided cost estimation and the contractual parties’ commitment regarding delivery of the project, from inception to completion, under an estimated price. Reconstruction programmes can experience significant cost overrun (Sun & Xu, 2011). The importance of to-budget delivery comes from the complexity and difficulties of post-disaster reconstruction management (Haigh & Amaratunga, 2010), which highlights, for example, the significance of cost management as one of the critical areas of project management. As Table 5.4 shows, both public and private clients value to-budget delivery over lower contract price for post-disaster reconstruction. Also, it is interesting to note that contract cost was not among the 10 most important values for either public or private clients.
5.5.2 Formulating a conceptual CVI

After prioritising the client values, the study attempts to develop a conceptual CVI (based on client priorities), as a first step towards judging the client-perceived value within contractor services. There are a few options available for the selection of values when developing a CVI. For example, one option is using all 39 values and another option is using the top 10 values discussed in the previous section. Using all 39 values can lead to a complicated CVI, and using the 10 top values can lead to a CVI including similar values. To avoid these issues, it was decided to use one value from each category to make the CVI. Hence, using the ranking provided in Table 5.4, the values that obtained a higher rank (lower number in each category) were selected. The selection of the top value in each of the 9 categories was based on the ranking obtained from Table 5.4. The selection of those values can be confirmed by the fact that all of them were selected by all of the interviewees (16 interviewees) in their categories during the interviews detailed in section 5.4.1. Table 5.6 shows these selected values along with their categories.

In order to develop a simple CVI, it was decided to use a linear additive weighting model. The composition of the linear model is justified by the fact that the nine selected values, all from different categories, have different characteristics and, hence, a multiplier effect between them is unlikely. Although there can be interrelationships between some of the identified values, it is appropriate to consider them independently, as each of them represents a key client value within contacting services. For instance, effective communication needs mutual trust, while trust cannot be replaced by communication. Communication skills are still required, even if a high level of trust exists between the contracting parties (Meng, 2012). This is similar to time, cost, and quality being regarded as different construction performance indicators, while they are highly connected each other (Yeung et al., 2007).

To formulate the CVI, the identified values were ranked based on their overall mean scores provided by the questionnaire survey respondents. The weightings of the respective values were then calculated based on the defined rankings for the nine values. The weighting for each of the values was computed using the rank sum approach. The rank sum method provides an excellent compromise that yields good quality, while it is a simple method to use (Jia, 1997). This leads to the development of the linear additive weighting model. To use
the rank sum method, the criteria need to be ranked based on their relative importance, and then each criterion is weighted in relation to its ranked order position. The following equation was used to compute the rank sum weight (Buede, 2009; Buede & Miller, 2016).

\[ w_i = \frac{K - r_i + 1}{\sum_{j=1}^{K} K - r_j + 1} \]  

(Equation 4)

Where:

- \( W_i \) defines the weighting of the \( i^{th} \) value
- \( K \) defines the total number of ranked values
- \( r_i \) defines the rank position of the \( i^{th} \) value
- \( \sum_{j=1}^{K} (K - r_j + 1) \) defines the summation of rankings of the values.

Based on the determined weightings, as shown in Table 5.6, the CVI is computed by the following formulas for terminal and instrumental values:

\[
\text{CVI (Public client)} = 0.2 \times \text{Timeliness} + 0.044 \times \text{To-budget delivery} + 0.065 \times \text{Higher standard of quality} + 0.133 \times \text{Building a trust-based relationship} + 0.156 \times \text{Competency} + 0.111 \times \text{Productivity} + 0.022 \times \text{Communication Technique & documentation} + 0.089 \times \text{Risk management skills & techniques} + 0.178 \times \text{Availability of resources}
\]

\[
\text{CVI (Private client)} = 0.2 \times \text{Timeliness} + 0.067 \times \text{To-budget delivery} + 0.022 \times \text{Higher standard of quality} + 0.133 \times \text{Building a trust-based relationship} + 0.156 \times \text{Competency} + 0.044 \times \text{Productivity} + 0.089 \times \text{Communication Technique & documentation} + 0.111 \times \text{Risk management skills & techniques} + 0.178 \times \text{Availability of resources}
\]

Table 5.6

<table>
<thead>
<tr>
<th>Categories and Values</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>RRI</td>
<td>Rank</td>
</tr>
<tr>
<td>Time: Timeliness</td>
<td>4.560</td>
<td>0.912</td>
</tr>
<tr>
<td>Cost: To-budget delivery</td>
<td>4.280</td>
<td>0.856</td>
</tr>
<tr>
<td>Quality: Higher standard of quality</td>
<td>4.304</td>
<td>0.8608</td>
</tr>
<tr>
<td>Integration: Building a trust-based relationship</td>
<td>4.333</td>
<td>0.8666</td>
</tr>
<tr>
<td>Scope: Competency</td>
<td>4.400</td>
<td>0.88</td>
</tr>
<tr>
<td>Human resources: Productivity</td>
<td>4.320</td>
<td>0.864</td>
</tr>
<tr>
<td>Communication: Technique &amp; documentation</td>
<td>4.250</td>
<td>0.85</td>
</tr>
<tr>
<td>Risk: Financial strength and stability</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Risk: Risk management skills &amp; techniques</td>
<td>4.320</td>
<td>0.864</td>
</tr>
<tr>
<td>Procurement: Availability of resources</td>
<td>4.480</td>
<td>0.896</td>
</tr>
</tbody>
</table>
In developing the conceptual CVI, nine out of the 39 client values were identified as the most significant indicators for the nine PMI knowledge-management areas. Eight of these values are the same from both the public and private clients’ perspective such as timeliness, to-budget delivery, higher standard of quality, availability of resources, competency, building a trust-based relationship, financial strength and stability, communication technique and documentation, and productivity. The ninth value for public and private clients is risk management skills & techniques, and financial strength and stability, respectively. The following describe these values.

5.5.2.1 Time: Timeliness. Timeliness refers to the in-time delivery of any service during the relationship. Being timely in meeting client expectations is what clients expect from any contractual relationship. While in-time delivery is a key requirement of any construction contract (Maloney, 2002; Plebankiewicz, 2010), it obviously gains more importance in reconstruction projects which need to be done in an emergency situation (Steinberg, 2007). The research findings indicate that clients consider the time spent on their project more significant than other terminal values such as price and quality. Timeliness of a post-disaster reconstruction project is vitally important for the affected community (Iwai & Tabuchi, 2013; Moloney, 2014; Steinberg, 2007), as its schedule outlines restoration dates; hence, any deviation from the stated schedule causes a quick response from the public. Development of an accurate construction time schedule, and allocating appropriate resources and efforts to achieve the agreed time for reconstruction programmes, need to be the contracting party’s priorities.

5.5.2.2 Cost: To-budget delivery. To-budget delivery refers to the contractual parties’ commitment regarding delivery of the project, from inception to completion, under an estimated price. The study shows that clients value to-budget delivery over lower contract price for post-disaster reconstruction. However, lowest contract price is one of the main client values within contractor services in business-as-usual situations and, hence, clients regularly use the lowest price as the award criterion for contracts (Waara & Bröchner, 2006). Clients’ estimation policies require the preparation of “unlikely to be exceeded but not excessively conservative” estimates (Creedy, 2005). For example, the cost estimation at any stage of a construction project needs to have a 90% confidence level that the project budget will not be exceeded at project completion (Creedy, 2005). The importance of to-
budget delivery comes from the complexity and difficulties of reconstruction management, which highlights, for example, the significance of cost management as one of the critical areas of project management. Post-disaster reconstruction projects can experience significant construction cost overrun. Hence, a contractor’s ability to complete the reconstruction project within agreed budget is essential for clients.

5.5.2.3 Quality: Higher standard of quality. Although reconstruction after a disaster needs to be completed within the required schedule, investing in quality is a worthy strategy which should not be compromised for speed (Clinton, 2006; Grewal, 2006). For example, a number of studies have argued for “build back better” after disasters (e.g. Lamond et al., 2013; Mannakkara & Wilkinson, 2015; Sankaran et al., 2014). Higher standard of quality is about quality of workmanship, material quality, and technical quality. Poor quality of workmanship contributes to poor structural integrity and low levels of safety (Mannakkara & Wilkinson, 2013). Material quality affects the constructed asset quality and also, in line with quality of workmanship, influences labour productivity (Dai et al., 2007). Constructed asset quality and material quality are determined by technical quality (Ling et al., 2006). While achieving a higher standard of quality can improve the reconstruction project quality, it can also mitigate the effect of future disaster events. To help achieve this, development of procedures and guidelines to obtain higher standards of quality for reconstruction projects is regarded as one of the important client values in post-disaster situations.

5.5.2.4 Integration: Building a trust-based relationship. Trust was identified as a key value for integration within the reconstruction process. The ranking highlights that building a trust-based relationship between parties should not be neglected in post-disaster reconstruction projects. Trusting relationships lead to mutual satisfaction and benefits for all parties (Park, 2009). Trust is acknowledged as a fundamental value in building better integration (Rahman & Kumaraswamy, 2008), in terms of empowering the parties to take responsibility for, and commit to, building a successful relationship. Building a trust-based relationship between client and contractor prevents adversarial relationships, which cause inferior levels of performance (Park, 2009). It would also minimise construction aggravation, disputes and conflict, which may occur due to the ambiguous nature of post-disaster reconstruction projects.
5.5.2.5 **Scope: Competency.** Competence of the contractor, which is a combination of skills, knowledge and experience to deal with post-disaster reconstruction complexity and situations, is important for achieving client objectives. Contractor competency was highlighted as an important value contributing to standard of quality success. Competency can be defined based on two theories (Lu et al., 2008; Porter, 1985). The first theory includes the required strategies that are needed to deal with organisational strengths, weaknesses, opportunities, and risks in the market. The second theory includes skills, knowledge and resources that are required to achieve and maintain a competitive advantage in a contractual relationship. Understanding contractors’ existing levels of these values can be regarded as key success factors in evaluation of the contractors.

5.5.2.6 **Human resources: Productivity.** The ratio of service output to what is required to be provided is used to define productivity (Odesola, 2015). Based on this study, it is the main indicator of the human resources category. Human resources are deemed important for contractors (Lu et al., 2008), as it is the main source of competitive advantage in construction firms (Sha & Jiang, 2003). This study’s findings highlighted contractor productivity as a value that clients perceive as a most important aspect of the human resources category in post-disaster situations. This is because contractor productivity can mitigate the negative impact of a shortage of technical staff on the success of the reconstruction projects, after a disaster event.

5.5.2.7 **Communication: Communication technique and documentation.** Due to the time sensitivity and complexity of post-disaster reconstruction projects, appropriate communication skills, techniques and documentation are important (Rapp, 2011). Effective communication has been mentioned as a critical value for developing excellent relationships in any construction contractual relationship (Baiden & Price, 2011; Love et al., 1998; Strategic Forum for Construction, 2013). Communication is linked to team and organisational effectiveness, coordination of tasks and interactions across organisational levels, effective leadership, and job satisfaction (Love et al., 1998). It also plays a critical role in construction project management (Evbuomwan & Anumba, 1998). The respondents’ ratings seem to support CBI (2010) perspectives about the value of effective communication. The CBI (2010) highlighted the importance of effective client/service-providers communication, as a strategy to provide better value to clients during a
contractual relationship. Hence, the communication technique and documentation method, in this study, is regarded as an important client value for assessing a contractor’s ability in informing clients and sharing information with other contracting parties.

5.5.2.8 Financial strength and stability and risk management skills & techniques. Several studies (Hatush & Skitmore, 1997a, 2010; Plebankiewicz, 2010) concerning different subjects such as contractor selection, contractor performance and client satisfaction, indicated financial stability as an important factor for project success. Similarly, risk management skills and techniques can be prioritised for success of reconstruction projects. This is due to occurring unexpected issues after a disaster event (Ade Bilau & Witt, 2016; Chang et al., 2013). In the risk category in this survey, the central role of financial stability during a relationship as well as risk management skills & techniques was stressed by respondents. These risk factors gain a high level of importance in reconstruction programmes where any deviation from the stated programme has a significant impact on the public. They can reduce client uncertainty and enhance the client feelings of security as well as their perceptions of the procured service value.

5.5.2.9 Procurement: Availability of resources. Resource availability has been widely highlighted as a value that greatly affects the success of disaster reconstruction (Chang et al., 2012; Mannakkara & Wilkinson, 2015; Sankaran et al., 2014; Singh & Wilkinson, 2008). For example, Singh and Wilkinson (2008) argued that the availability of resources is as important as the availability of finance. Similarly, this study’s findings demonstrated the importance of the availability of resources for reconstruction projects in rebuild environments. Evaluation of contractor resources need to be conducted in advance (of disaster events), so that, in an emergency situation, selection of the service providers can be facilitated by such available information.

5.6 Conclusion

Clients deal with difficult and complex processes in reconstruction programmes following a disaster. Achieving success in reconstruction programmes requires better understanding of client values within contracting services. However, in exploring client values, previous research focused on business-as-usual construction rather than post-disaster reconstruction. This study identified 39 client values, within contracting services for post-
disaster reconstruction, and categorised them under nine management categories as suggested by PMI (2005). Understanding these values can help to develop guidelines for good contractual practice for how to fully achieve client values and satisfaction in reconstruction programmes. By adopting the identified values, contractors can provide better value to their client, while clients will be in a better position to assess their post-disaster reconstruction contractual relationships.

The assumption that client values within contracting services are only about providing satisfactory services with respect to schedule, quality and price have been changed. Contracting parties in a post-disaster reconstruction project should not perform solely on the basis of the value of the final product, as there are other values in the contractual relationship (intangibles) that make one service provider more valuable than another. The study analysis suggested there is a moderate correlation between public and private clients’ perspectives regarding the importance of the identified values. Finally, the study recommended a conceptual CVI for public and private clients. The next chapter attempts to understand how contracting parties comply with these values in order to define client satisfaction levels and to identify the values that require improvement.
Chapter 6

Achieving Effective Post-Disaster Reconstruction

This chapter was extracted from the following manuscript:


This chapter was supplemented by the following manuscript:


6.1 Introduction

Previous chapters contribute to an improved understanding of the values essential for success of disaster reconstruction and achieving client satisfaction. As a last step, this chapter aims to determine the client satisfaction levels within contractor services in post-disaster situations, in order to identify critical values that require improvement. It is suggested that studying such concepts can contribute to knowledge in the satisfaction and performance domains, which have received little attention in disaster reconstruction literature.

The increasing rate of natural disasters in recent years, caused by extreme weather events and earthquakes, has led to loss of human life and considerable socioeconomic costs (Kim & Choi, 2013; Wilkinson et al., 2016). This highlights the need for effective disaster management. Post-disaster reconstruction plays an important role in disaster management, as it helps restore the livelihoods of affected communities. Reconstruction following a disaster can be viewed as an opportunity to re-plan the community to result in better living
conditions, for example, through building new, better housing units and infrastructure (Sankaran et al., 2014). In addition, vulnerability to the next disaster can be mitigated as a result of applying quality post-disaster reconstruction. However, in the construction literature, it has been widely accepted that the reconstruction stage is poorly managed and requires improvement in disaster management practice (Barakat, 2003; Barenstein & Pittet, 2007; Meding et al., 2011; Pelling et al., 2004; Von Meding, 2008; Zhang et al., 2015). Poor performance in post-disaster reconstruction has been attributed to different issues in relation to delay (Matsumaru et al., 2012; Moloney, 2014), cost overrun (Sun & Xu, 2011), integration (Ye & Okada, 2002), communication and coordination (Ade Bilau & Witt, 2016), inadequacies of resource procurement (Chang et al., 2011a), uncertainties (Bosher et al., 2007; Hayles, 2010; Sun & Xu, 2011), complexities (Boano & García, 2011; Coffey & Trigunarsyah, 2012; Haigh & Amaratunga, 2010), finance (Freeman, 2004), ineffective design (Ika et al., 2012), inappropriate assessment (Kennedy et al., 2008), transportation (Matsumaru et al., 2012), and corruption (Gitay et al., 2013). Considering these issues in the reconstruction programmes, “there is a clear need to significantly improve the reconstruction process and performance in which the construction industry has a major role to play” (Zhang, 2012). In general, the reconstruction process can be considered within three parts, nearby planning, design, and construction (Da Silva et al., 2010). The planning part deals with any considerations required for developing a response that indicates whether, and how, to contribute to reconstruction. The design part is about the detailed design of a reconstruction project. The construction part is about the implementation of reconstruction programmes. The success of the reconstruction process depends on the achievement of factors that can be considered differently across different countries. For example, the planning part deals with local governance structures and regulatory frameworks (Da Silva et al., 2010) that can be conducted differently across countries. The design and construction parts depend, for example, on availability of resources that can be different among different countries. This study focused on the construction part of the reconstruction process.

Post-disaster reconstruction is procured and managed in an ad hoc manner (Le Masurier et al., 2006b). Hence, having appropriate systems in place, in advance, is imperative, in order to accelerate the process of recovery after disaster events, through effective reconstruction
Achieving Effective Post-Disaster Reconstruction

delivery (Rotimi et al., 2009). One essential ingredient is the presence of good practice within contractual systems in order to fully achieve client values and satisfaction during a contractual relationship. In the construction domain, several studies have attempted to improve the delivery of projects based on analysing client satisfaction levels within different dimensions of provided services (Cheng et al., 2006; Soetanto et al., 2001). Project success, as well as construction quality, can be regarded as the fulfilment of expectations of those participants, and, in particular, clients as major stakeholders, involved in the contractual relationship (Barrett, 2000; Sanvido et al., 1992). This can be achieved if the service providers adopt strategies to address client values, with a particular emphasis on continuous improvement (Barrett, 2000). In order to achieve this, it is important to understand how well the contractor is meeting client expectations. To provide better value to clients, contractors should recognise client expectations (Ahmed & Kangari, 1995). In this context, the satisfactory delivery of client values with contractor services can be recognised as a prerequisite to maintaining a contractual relationship and project success.

The review of the available literature shows that the subject of understanding client values and satisfaction within contracting services is not well developed and implemented for post-disaster reconstruction. Von Meding (2008) argued that service providers “have not been able to deliver satisfactory reconstruction projects and this is something that must be remedied as a matter of urgency.” Opportunities can be found for improving reconstruction programmes by understanding how the construction sector performs in a post-disaster situation (Wilkinson et al., 2016).

6.2 Satisfaction Analysis as a Means of Prompting Service Delivery

In construction, client satisfaction determines the bottom line of successful project implementation (Cheng et al., 2006; Soetanto et al., 2001). Analysing client satisfaction will enable service providers to identify the areas that require improvement and, consequently, better satisfy the clients (Oliver, 2014). Hence, satisfaction assessments can be used as a tool to promote perceived value within construction services by identifying the strengths and weaknesses of the services. Analysing the results of such an assessment helps contractors to understand what level of performance they need to target to achieve client satisfaction.
The concept of client satisfaction assessment has been applied in the construction and marketing domain, and can be modified and applied to reconstruction projects. In the marketing literature, Patterson and Spreng (1997) studied repeat purchasing behaviour and concluded that service value is completely mediated through satisfaction. Storbacka et al. (1994) supported the use of client satisfaction as a measure of relationship value. In the construction literature, some studies examined construction in terms of client satisfaction (Ahmed & Kangari, 1995; Kärnä, 2014), and some studies applied the satisfaction concept to monitor and improve services quality (Cheng et al., 2006; Forsythe, 2015; Soetanto et al., 2001).

Satisfaction can be determined as a trade-off between an individual’s perception of an outcome and his/her expectation of that outcome, as suggested by Locke (1970). Similarly, Churchill Jr and Surprenant (1982) described client satisfaction with services as a comparison between pre-purchase expectations and post-purchase service performance. The existence of a relationship between satisfaction and performance has been supported by previous studies in the context of performance assessment (Oliver, 2010, 2014). A study by Cheng et al. (2006) showed that in satisfaction judgement, performance outcomes can be regarded as the input, and levels of satisfaction can be regarded as the output.

6.3 Research Steps and Methods
In the context of this study, client values are defined as those used to assess the satisfaction levels of client within client-contractor relationships, and critical client values are values that require immediate action for improvement. Data used in this Chapter is based on questionnaire surveys (Questionnaire Survey 2) conducted and discussed in Chapter 5. In other words, the same survey in Chapter 5 is analysed in a different manner for Chapter 6.

6.4 Data Analysis and Findings Presentation
The data analysis was undertaken through the following methods: ranking of the level of importance and perceived performance using the mean score, defining the average satisfaction (AS) and priority rank (PR) for the values using satisfaction analysis, and identifying the critical values using importance-performance analysis (IPA). The values were ranked based on their mean scores (computed using Equation 1 in Chapter 4) and relative importance indices (computed using Equation 2 in Chapter 4). Higher mean scores result in
a higher rank. Table 6.1 consists of three main headings. The first heading includes the values and their assigned ID and categories. The second and third columns show the mean score (MS) and ranking for perceived importance and performance of value (R), as well as the AS and the allocated PR), according to the average satisfaction gaps, based on public and private client perspectives, respectively.

Table 6.1
Importance, Performance, and Satisfaction Levels of Client Values

<table>
<thead>
<tr>
<th>Description</th>
<th>Public client</th>
<th></th>
<th>Private client</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Importance</td>
<td>Performance</td>
<td>Satisfaction</td>
<td>Importance</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>MS</td>
<td>AS</td>
<td>PR</td>
</tr>
<tr>
<td>Categories</td>
<td>Values</td>
<td></td>
<td>Private client</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>4.520</td>
<td>3.480</td>
<td>1.040</td>
<td>4</td>
</tr>
<tr>
<td>T2</td>
<td>4.560</td>
<td>3.240</td>
<td>1.320</td>
<td>1</td>
</tr>
<tr>
<td>T3</td>
<td>4.440</td>
<td>3.400</td>
<td>1.040</td>
<td>5</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>4.042</td>
<td>3.560</td>
<td>0.482</td>
<td>26</td>
</tr>
<tr>
<td>C2</td>
<td>4.280</td>
<td>3.560</td>
<td>0.720</td>
<td>18</td>
</tr>
<tr>
<td>C3</td>
<td>3.960</td>
<td>3.480</td>
<td>0.480</td>
<td>27</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>4.304</td>
<td>3.440</td>
<td>0.864</td>
<td>8</td>
</tr>
<tr>
<td>Q2</td>
<td>3.840</td>
<td>3.640</td>
<td>0.200</td>
<td>37</td>
</tr>
<tr>
<td>Q3</td>
<td>4.083</td>
<td>3.625</td>
<td>0.458</td>
<td>28</td>
</tr>
<tr>
<td>Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1</td>
<td>4.261</td>
<td>3.480</td>
<td>0.781</td>
<td>12</td>
</tr>
<tr>
<td>I2</td>
<td>4.240</td>
<td>3.478</td>
<td>0.762</td>
<td>14</td>
</tr>
<tr>
<td>I3</td>
<td>4.167</td>
<td>3.440</td>
<td>0.727</td>
<td>16</td>
</tr>
<tr>
<td>Scope</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>4.208</td>
<td>3.458</td>
<td>0.750</td>
<td>15</td>
</tr>
<tr>
<td>S2</td>
<td>3.400</td>
<td>3.880</td>
<td>-0.480</td>
<td>39</td>
</tr>
<tr>
<td>S3</td>
<td>4.400</td>
<td>3.320</td>
<td>1.080</td>
<td>3</td>
</tr>
<tr>
<td>S4</td>
<td>3.920</td>
<td>3.333</td>
<td>0.587</td>
<td>24</td>
</tr>
<tr>
<td>S5</td>
<td>3.875</td>
<td>3.542</td>
<td>0.333</td>
<td>30</td>
</tr>
<tr>
<td>S6</td>
<td>3.600</td>
<td>3.280</td>
<td>0.320</td>
<td>31</td>
</tr>
<tr>
<td>Human resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>4.200</td>
<td>3.478</td>
<td>0.722</td>
<td>17</td>
</tr>
<tr>
<td>H2</td>
<td>4.320</td>
<td>3.200</td>
<td>1.120</td>
<td>2</td>
</tr>
<tr>
<td>H3</td>
<td>4.160</td>
<td>3.600</td>
<td>0.560</td>
<td>25</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO1</td>
<td>4.250</td>
<td>3.440</td>
<td>0.810</td>
<td>10</td>
</tr>
<tr>
<td>CO2</td>
<td>4.083</td>
<td>3.840</td>
<td>0.243</td>
<td>35</td>
</tr>
<tr>
<td>Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>4.292</td>
<td>3.520</td>
<td>0.772</td>
<td>13</td>
</tr>
<tr>
<td>R2</td>
<td>3.920</td>
<td>3.640</td>
<td>0.280</td>
<td>34</td>
</tr>
<tr>
<td>R3</td>
<td>4.080</td>
<td>3.720</td>
<td>0.360</td>
<td>29</td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>4.480</td>
<td>3.480</td>
<td>1.000</td>
<td>6</td>
</tr>
<tr>
<td>P2</td>
<td>4.360</td>
<td>3.360</td>
<td>1.000</td>
<td>7</td>
</tr>
<tr>
<td>P3</td>
<td>4.120</td>
<td>3.458</td>
<td>0.662</td>
<td>20</td>
</tr>
<tr>
<td>Grand average</td>
<td>4.106</td>
<td>3.490</td>
<td>0.615</td>
<td>4.066</td>
</tr>
</tbody>
</table>
In Table 6.1, T1 and T3 were ranked the fourth and fifth, respectively, although they have the same AS of 1.040. Similarly, P1 and P2 were ranked the sixth and seventh, respectively, while they have the same AS of 1.000. This can be due to the reason that they were rounded to the three decimals. However, if two values obtained a same satisfaction level, the one that obtained higher importance level can receive higher PR.

6.4.1 Average satisfaction, priority rank, and grand average.

Average satisfaction (AS) shows the average discrepancy between levels of importance and performance, as perceived by respondents for the values. The difference between average importance and average performance equates to the perceived average satisfaction by the respondents. For each of the values, average satisfaction is presented on a scale of −4 to +4. A positive result indicates the need for improvement, and the greater the value the more improvement is required. This computed difference can be used to prioritise the areas requiring improvement, as explained in the following sections. Figure 6.1 graphically represents the AS of the values, as perceived by respondents in this study. The other horizontal line, labelled optimum line, represents the case where the importance and perceived performance are the same. Figure 6.1 can be used for practical assessment purposes, which represent the perceived levels of client satisfaction within the contracting progresses.

The priority rank (PR) ranks the average satisfaction of the values. This ranking represents those values which exhibit the greatest discrepancy. Hence, they can be prioritised for corrective action, with the contractors required to give more attention to values with higher PR. The grand average values for average importance, average performance, and average satisfaction show the overall assessment. They are calculated using Equation 1 discussed in Chapter 4. The grand average levels of performance for all 39 clients values are 3.49 by public clients and 3.698 by private client from the survey where 59 clients were asked to assess the level of contractors’ actual performance on a scale of 1 to 5. This means that their levels are relatively high because they lie between ‘significant’ and ‘very significant’ on a scale of 1 to 5. However, based on the obtained AS for most of the values, there are positive discrepancies between importance and performance. This indicates the need for improvement for most of the values. The grand average of AS values can be used for the regular assessment of the improvements in practice.
Figure 6.1. Average satisfaction as perceived by respondents.
6.4.2 Identifying critical values: Importance-performance analysis (IPA).

As this study’s findings shows, clients are dissatisfied with contractors’ performance against most of the values. However, in reality, it might be extremely difficult to improve the performance to achieve client satisfaction within all the values. In a post-disaster reconstruction situation, with limited time and resources, the contracting parties need to allocate their efforts and resources wisely and prioritise those aspects which are considered most important. Determining the expectations for an important attribute, and making a judgement regarding the perceived performance of that attribute’s performance, is critical in attempting to improve under-performance. In this study, in addition to PR, IPA is used to determine the critical areas for improvement. The IPA method has underlain multi-attribute models since the 1970s (Abeka & Ochieng’Abeka, 2012; Martilla & James, 1977), and has been used as a managerial tool, in various industries, to identify the strengths and weaknesses of services and products (Abeka & Ochieng’Abeka, 2012; Chapman, 1993; Chéron et al., 1989; Sohn et al., 2014). IPA is based on the level of satisfaction of a customer which is are derived from the customer’s expectations and judgement regarding a service or product’s performance.

As shown in Figure 6.2, the result of the IPA is graphically presented on a grid and includes two measurements: perceived importance and perceived performance, which identify four areas (quadrants) for discussion (Martilla & James, 1977). Quadrant 1 includes criteria whose level of importance is higher than the average level of importance, while their perceived performance is lower than average performance. Hence, improvement efforts need to be concentrated in quadrant 1. Quadrant 2 includes criteria whose importance and performance are above the average level. The service provider needs to keep up the good work regarding the criteria within quadrant 2. Quadrant 3 is the area of low priority. In quadrant 3, both perceived importance and performance are below the average level. While the client is not satisfied with the performance, the service provider may not be overly concerned due to the level of importance. Limited resources need to be expended in quadrant 3. Quadrant 4 includes criteria whose level of importance is lower than the average level of importance, while their perceived performance is higher than average performance. Hence, the service provider may consider the criteria in quadrant 4 as being over-delivered. These values can provide competitive advantage for the service provider.
Figure 6.2. Importance and performance of values as perceived by respondents.
In addition, the diagonal line in Figure 6.2 is the line of optimum and determines the points that have the same value with respect to importance and performance. The line of optimum separates Figure 7.3 into two areas. The area below the line is the satisfied zone, where the perceived performance is higher than perceived importance. The area above the line is the unsatisfied zone, where the perceived level of importance is higher than perceived level of performance.

The IPA is a simple and effective tool, however it has drawbacks in conceptual and methodological foundations, selection of the optimal cut-off points, its reliability and validity (Lai & Hitchcock, 2015). Conceptual issues can be in relation to definition of the term ‘importance’, interpretation of levels near to the thresholds, and determination of a reference criterion’. Methodological foundation issues can be in relation to location of the discriminating thresholds, as misplacing the thresholds could produce misleading and conflicting interpretation. For example, using a scale-centred approach can be transparent in explaining research outcomes, however, it has a tendency to record high importance ratings for all values as a drawback. Direct measures or self-stated ratings of importance (usually rated on a Likert scale) can be subject to self-report bias, social desirability bias and fatigue bias. Lack of reliability and validity criteria such as statistical criteria can weaken the predictive power of the IPA technique. Scale construction and comparability can influence IPA technique outcomes, however, different studies have used different approaches (scales). For example, an analysis of previous IPA studies in hospitality and tourism by Lai and Hitchcock (2015) shows that while most researchers adopted a 5-point Likert-type scale (for example 45 studies out of 59 studies), 7-point or above Likert-type scales have become the trend for IPA studies. Also, while they stated that 7-point Likert-type scale show more “reliable results in measuring the gaps between importance and performance of the attributes”, they stated that the results of their study “do not indicate that there are large differences in using 5-point and 7-point Likert-type scales”.

To distinguish between the terms importance and performance, this study defined importance as how important are the values to clients, which defines levels of importance as levels of expectation. The study then defined performance as client perception of the contractors’ performance regarding the values. In addition, conducting a pilot study (as
explained in Chapter 5) was helpful in understanding the appropriateness of the terms used.

However, because of the aforementioned issues, this study used IPA as a second method (not a primary method) in addition to (or in parallel with) the main data analysis method which is the satisfaction analysis. The combination of data collection techniques can help in achieving valid outcomes. For example, while based on IPA results, many values requiring urgent improvement near to the average (i.e., T1, P1, I4, I1, I2, H1, & P3 by public clients and P1, R4, C1, R3, H3, & I8 by private clients), were prioritised for improvement based on satisfaction analysis. For example, the level of importance (4.261) for ‘I1’ by public clients is higher than the average (4.106) and the level of performance (3.480) is just a little lower than the average (3.490), so ‘I1’ was classified into Q2 because of the ‘0.01’ difference. Similarly, the level of importance (4.273) for ‘R3’ by private clients is higher than the average (4.006) and the level of performance (3.697) is just a little lower than the average (3.700), so ‘R3’ was classified into Q2 for urgent improvement because of the ‘0.003’ difference. While ‘I1’ and ‘R3’ still require urgent improvement, based on satisfaction analysis their priority ranks for improvement are 12 and 14, respectively. In other words, the combination of IPA and PR, as shown in Table 6.2, can be helpful in reviewing and shortlisting the values in different ways.

Table 6.2 shows the values requiring urgent improvement (quadrant 1). Both public and private client respondents considered shorter contract time, timeliness, delivery speed in construction process and lead-time, corporate commitment, closer relationship/flexibility in relationships, building trust-based relationships, competency, internal teamwork development, productivity of resources, communication technique and documentation, maintaining reliability through risk management, availability of resources (material, labour, and plant), as values requiring urgent improvement.

Analysis of public client responses indicates that values such as higher standard of quality, true friendship/partnerships with all parties, efficiency of construction methods and techniques, capability of sourcing, and willingness to use local resources need immediate improvements. Also, analysis of private client responses shows that values such as lower contract price, to-budget delivery/appropriate to budget, efficiency of leadership and
coordination, providing necessary guarantees/assurance, and financial stability during a relationship need improvement.

Table 6.2
Values Requiring Urgent Improvement

<table>
<thead>
<tr>
<th>ID</th>
<th>Values</th>
<th>PR (public)</th>
<th>PR (private)</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Shorter contract time</td>
<td>4</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>T2</td>
<td>Timeliness</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>T3</td>
<td>Delivery speed in construction process &amp; lead-time</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C1</td>
<td>Lower contract price</td>
<td>13</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>C2</td>
<td>To-budget delivery / appropriate to budget</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>Higher standard of quality</td>
<td>8</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>I1</td>
<td>Corporate commitment</td>
<td>12</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>I2</td>
<td>True friendship / partnerships with all parties</td>
<td>14</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>I3</td>
<td>Closer relationship/ flexibility in relationship</td>
<td>16</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>I4</td>
<td>Building a trust-based relationships</td>
<td>9</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>S1</td>
<td>Efficiency of construction methods &amp; techniques</td>
<td>15</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>S3</td>
<td>Competency</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>H1</td>
<td>Internal teamwork development</td>
<td>17</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>H2</td>
<td>Productivity of resources</td>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>H3</td>
<td>Efficiency of leadership &amp; coordination</td>
<td>15</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CO1</td>
<td>Communication technique and documentation</td>
<td>10</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>R3</td>
<td>Providing necessary guarantees /assurance</td>
<td>14</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>R4</td>
<td>Financial strength &amp; stability during a relationship</td>
<td>10</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>R5</td>
<td>Risk management skills &amp; techniques</td>
<td>11</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>P1</td>
<td>Availability of resources</td>
<td>6</td>
<td>8</td>
<td>5</td>
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<tr>
<td>P2</td>
<td>Capability of sourcing</td>
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</tr>
<tr>
<td>P3</td>
<td>Willingness of use of local resources</td>
<td>20</td>
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<td>3</td>
</tr>
</tbody>
</table>

The validity of values identified as areas of concern, for improvement, was confirmed through interviews (Interview Survey 5) conducted with five post-disaster reconstruction experts. The participants were selected based on their experience in post-disaster reconstruction projects. The participants had knowledge and experience about post-disaster reconstruction. In addition, they had clear ideas about the research aim. Table 6.3 represents the interview participants' details. The interviews attempted to understand if the identified values are significant in terms of requiring improvement. To help achieve this, the list of values (shown in Table 6.2) was presented to the interviewees. They were asked to review the values and confirm if they require improvement. In so doing, they were requested to select the values they believe as significant for improvement. The frequencies in Table 6.2 shows how many times the values were selected by the interviewees. The number of interviews seems to be reasonable, as all of the values were selected by the majority of the interviewees.
Table 6.3
*Interview Participants’ Profiles*

<table>
<thead>
<tr>
<th>Participant profiles</th>
<th>Categorisation</th>
<th>Number of participants (No: 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of client</td>
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<td>3</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>2</td>
</tr>
<tr>
<td>Construction experience</td>
<td>Director</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Project manager</td>
<td>4</td>
</tr>
<tr>
<td>Construction experience</td>
<td>More than 10 years</td>
<td>5</td>
</tr>
<tr>
<td>Reconstruction experience</td>
<td>More than 5 years</td>
<td>5</td>
</tr>
</tbody>
</table>

6.5 Discussion

Developing a management strategy that effectively determines the client values and ensures that the procured services will satisfy the client is important for success of construction projects (Jang et al., 2003; Rahman & Alzubi, 2015). Figure 6.3 shows the client values prioritised for improvement in quadrant 1. Identifying these values can help service providers to identify strategies to improve reconstruction project quality. The identified client values can be divided into terminal values and instrumental values (Boyd & Chinyio, 2006). Issues related to time, cost and quality can be regarded as terminal values, while instrumental values are associated with the delivery team’s participants, relationships, coordination and so on (Boyd & Chinyio, 2006). Clients have the same objectives, such as procuring a service or product within a reasonable cost, quality, time (Hatush & Skitmore, 1997a; Plebankiewicz, 2010; Soetanto & Proverbs, 2002). However, clients can still be dissatisfied if explicit time, cost and quality criteria have been met (Torbica & Stroh, 2001). This is because for a project success is far more than the terminal values (Westerveld, 2003).

Failure to achieve terminal values (e.g., time and cost overrun) has been attributed to a lack of performance within instrumental values (e.g., lack of productivity, poor communication, equipment unavailability, shortage of materials) by several researchers (e.g. Amandin & Kule, 2016; Kaliba et al., 2009; Kaming et al., 1997). This can be highlighted in post-disaster reconstruction projects where achieving client terminal values, such as on time delivery, requires adequate attention to client instrumental values, such as competency or building a trust based-relationship. Satisfactory delivery of terminal values “no longer represents excellent performance. Rather, such compliance tends to be viewed as the minimum performance requirement on construction programmes” (Butcher & Sheehan, 2010).
Figure 6.3. Client values prioritised for improvement as perceived by respondents.
There are various instrumental values within client-contractor relationships which can determine the success or failure of projects, depending on the nature of the project (Isik et al., 2009). These values are the competencies essential for managing the contractual relationships in post-disaster reconstruction projects, and they should be treated as intangible assets in construction organisations. Hence, it is essential to understand how the contracting parties comply with them. This will help both client and service providers be better prepared to satisfy those values and achieve effective reconstruction projects.

One of the important recurring themes from this research is that clients put the emphasis on instrumental values for contracting services in reconstruction following a disaster event. This supports the viewpoint represented in an earlier study (Le Masurier et al., 2006a), which states that factors associated with human resources, integration, and procurement should be considered as critical success factors for post-disaster reconstruction projects. In reconstruction contracts, satisfactory delivery of instrumental values within a contractual relationship is increasingly recognised as a powerful strategic approach that service providers use to improve their competitiveness. This study’s findings show a paradigm shift, from focusing on traditional terminal values, to both terminal and instrumental values in post-disaster reconstruction projects. The following sections will discuss the top ten critical client values.

6.5.1 Critical terminal values.

“A common adage for conventional construction is that the owner can have a quick schedule, a low budget, and high quality—just not all three for the same project” (Rapp, 2011). These challenges can be more significant in a post-disaster situation. According to McKim et al. (2000), in reconstruction projects, time, cost, and quality are highly interrelated and, hence, achievement of efficient project performance requires some balance and trade-off among them. Rapp (2011) stated that only two of the three can be satisfactorily achieved. For example, shorter contract time and higher quality are achievable, but at a higher cost. Lower contract price and high quality is possible; however, with a slower schedule. This study identified six values in relation to client terminal values, which require immediate improvement. Achieving success in post-disaster reconstruction projects requires a clear understanding of these values, their prioritisation, and particularly their perceived levels of fulfilment in past projects.
6.5.1.1 Terminal values prioritised for improvement by both public and private clients. As far as business-as-usual construction is concerned, contract price is regarded as the most important parameter in procurement and project success (Amandin & Kule, 2016; Hatush & Skitmore, 1997a). However, this study’s results explicitly highlighted the significance of values in time categories such as contract time, timeliness of the provided services, and delivery speed in construction process, rather than values in relation to cost and quality. The need for delivery within an agreed time in reconstruction projects is widely acknowledged as a challenge, by several other studies (e.g. Iwai & Tabuchi, 2013; Kulatunga, 2011; Lloyd-Jones, 2006; Moloney, 2014; Olshansky et al., 2012; Scribner & Herzer, 2011; Walker & Westley, 2011). Following a disaster, there is an urgent need for rebuilding infrastructure and houses, and restoring the social and economic life of the community, within the shortest possible time (Baird, 2010). Hence, post-disaster reconstruction can be viewed as undertaking business-as-usual construction activities over a very intense timeframe (Norling, 2013). “While recovery is inevitably a complex and time-consuming process, there are strong humanitarian reasons for exploring ways for it to be speeded up” (Lloyd-Jones, 2006). However, this study’s findings indicate those values have the highest levels of influence for both public and private client dissatisfaction in post-disaster reconstruction situations. Olshansky et al. (2012) stated that, in the environment of rebuilding after a disaster, “there is strong pressure to act quickly,” while they also noted that “speed is difficult to resist.”

6.5.1.2 Terminal values prioritised for improvement by public clients. Standard of quality was the only value within the quality category that was identified for improvement by public clients. In reconstruction projects, achieving a high standard of quality can be difficult (Mannakkara & Wilkinson, 2013), due to quick-response requirements. For example, a “contractor might discover that some technical specifications for post-disaster construction are relaxed” (Rapp, 2011), resulting in the main focus being on timely delivery of reconstruction projects, rather than quality. This issue is highlighted in the reconstruction situation where there is a lack of time for planning, following a disaster. Hence, some preparation needs to be done in advance which helps in the attainment of better quality during the project life cycle. For example, quality assurance and control are essential in reconstruction situations (Rapp, 2011). All parties are required to assess their quality of
work (including material, machinery and equipment, human resources) on a regular basis during a contractual relationship. The development and implementation of an appropriate procedure to assess quality processes and criteria is important. In addition, the significance of the establishment of the quality assessment of reconstruction programs need to be perceived by all contracting parties.

6.5.1.3 Terminal values prioritised for improvement by private clients. To-budget delivery and contract price were identified for improvement by private clients. Post-disaster reconstruction projects can experience significant construction cost overrun (Sun & Xu, 2011). The reconstruction programmes can be plagued with cost overruns, due to limited available funding and unstable economic conditions following a disaster (Ade Bilau & Witt, 2016; Da Silva et al., 2010). If project costs exceed the client budget, client satisfaction would be compromised (Kaliba et al., 2009), as the funding profile no longer meets the planned targets. The study shows that delivery of the project within the estimated price has higher priority for improvement in comparison with contract price. It is also interesting to note that values within the cost category were not among the 10 most critical values for public clients.

6.5.2 Critical instrumental values
While the focus, in current practice, is to provide satisfactory services with respect to client terminal values (e.g., time, price, and quality), there are various instrumental values that have a significant impact on client satisfaction and can determine the success or failure of projects (Isik et al., 2009). This study identified sixteen values in relation to client instrumental values, which require immediate improvement. These values are intangible competencies required for achieving client terminal values.

6.5.2.1 Instrumental values prioritised for improvement by both public and private clients. Building a trust-based relationship was considered to require improvement by both sets of respondents. Trust has been widely accepted to have a significant influence on developing and sustaining integration practice (Ibrahim et al., 2014). It can improve the collaborative culture needed to promote reconstruction project performance. Project performance is improved when better team integration occurs due to building a trust-based relationship (Fellows & Liu, 2012). For example, the different types of organisations, and individuals with
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different work practices and cultures, involved in reconstruction programmes make it difficult for clients to manage the delivery of a project in the chaotic conditions following a disaster (Hidayat, 2014). In the Aceh reconstruction after the 2004 tsunami almost 500 organisations were involved in the recovery process (Hidayat, 2014). This study’s findings demonstrated that the development of the industrial environment to support the integration of reconstruction processes should be one of the main strategies to enhance the existing contractual relationships in reconstruction projects. One approach to achieving this can be the development of an appropriate contracting mechanism for post-disaster situations.

Competency includes the skills, knowledge and experience required for the effective planning and implementing of reconstruction programmes following a disaster. Reconstruction projects need to be planned and implemented through various stages (Roosli et al., 2012). Planning reduces uncertainty and complexity and, conversely, a lack of planning can guarantee project failure (Dvir et al., 2003). Post-disaster reconstruction often fails to achieve its objectives (Ika et al., 2012; Lyons, 2009) due to a lack of appropriate competency in terms of coordination and management (Koria, 2009). In a disaster situation, the reconstruction scale could be significant, and contractors may deal with shortages of the skills and experience required to manage reconstruction programmes. This issue can be exacerbated when the impact of the disaster is underestimated, particularly in the initial stages of reconstruction process. Da Silva et al. (2010) emphasised the necessity of service providers having previous experience of delivering reconstruction programmes of a similar scale for successful delivery of projects. Wilkinson et al. (2016) stated that improvements in training for disasters are required for the construction service providers, in relation to their role in reconstruction; however, they are not trained in management of post-disaster situations. Without appropriate competency requirements, accidents occur, costs increase, work quality decreases, and productivity deteriorates. It is important for clients to investigate and identify the contractor’s competency in advance. This can result in providing required training, in advance of disaster events, for the construction sector, to improve its competency to perform effectively in a disaster situation.

Productivity is one of the most important issues in the construction industry, and has a significant impact on the overall construction industry performance (Odesola, 2015).
Substitute materials and techniques can sometimes be applied in reconstruction situations, to provide acceptable work despite minimally skilled human resources (Chang et al., 2013). Training, hiring skilled people from overseas, using local people, enhancing project management, paying higher wages for skills, and developing material and technology innovations, are recognised as important strategies to improve productivity in post-disaster reconstruction situations (Boiser et al., 2011). However, this study's findings revealed that low productivity is one of the main construction client concerns in post-disaster reconstruction situations. Low levels of staff and labour productivity can make it difficult for contractors to maintain and improve their competitiveness and achieve project objectives.

Communication technique and documentation are important values for successful outcomes in reconstruction programmes. “Relationships with clients rely on the communication and negotiating skills of company executives” (Isik et al., 2009). Good communication is a foundation for mutual understanding, promoting collaboration, and building trust and credibility, and also ensures that the messages are reaching all contracting parties (Jha, 2010). However, communication was considered as one of the main issues for reconstruction programmes (Ade Bilau & Witt, 2016). While contracting parties should have the skills to communicate effectively during a relationship, they need to understand crisis communications (Jha, 2010). In other words, communication in post-disaster reconstruction projects needs personnel to show a high degree of flexibility, and to adapt different techniques and documentation methods to demanding circumstances. This is because the contractual relationships in reconstruction programmes involve a complex system in which clients and contractors communicate through various networks. Hence, implementation of an appropriate communication technique and documentation method is essential for post-disaster situations.

Availability of resources (material, labour, and plant) can be an issue for post-disaster reconstruction (Chang et al., 2013; Mannakkara & Wilkinson, 2015; Sankaran et al., 2014) due to the possibility of a sudden surge in demand for technical staff and local materials after a disaster. Inadequate resources have been highlighted by as a main construction industry concern after disasters. This may result in termination or suspension of contractual relationships (Lin Moe & Pathranararakul, 2006). Reconstruction programmes can be beyond the capacity of local contractors (Ade Bilau & Witt, 2016). For instance, after a disaster, the
scale of demand for delivery of supplies and logistics expertise, while raising the price, can also cause local shortages. Hence, contractors can be incapacitated in terms of delivery of supplies at the point of need.

6.5.2.2 Instrumental values prioritised for improvement by public clients. Capability of sourcing was recognised as one of the key reconstruction issues and a key determinant of public client satisfaction. This result is not unexpected, as the success of reconstruction projects depends on the ability to procure and deliver supplies at the point of need (Bilau et al., 2015; Chang et al., 2012). Following a large-scale disaster the local construction market can be in disarray due to unpredictably high demand for human resources, materials, plant, and equipment (Ophiyandri et al., 2013), as well as the loss of infrastructure, access and services which reduce local supply systems and industry capabilities (Bilau et al., 2015; Chang et al., 2012). Contractor recruiting capability has been highlighted as an important strategy to boost productivity for rebuild work when workload increases (Boiser et al., 2011). Hence, a contractor’s poor capability of sourcing can negatively affect the project success. The contracting parties predominantly need to seek the procurement of these resources. Hence, contractor ability to recruit skilled individuals and sub-contract out activities in the post-disaster situation is very important.

6.5.2.3 Instrumental values prioritised for improvement by private clients. In this survey, the central role of financial strength and stability during a relationship was stressed by private clients. Poor financial stability is a critical risk factor and can result in severe contractual issues, as it can have a serious impact on contractor performance, project schedule, required standard of quality, and so on, throughout the life of a relationship. A study by Hidayat (2014) showed that avoiding corruption (due to lack of financial security) is a significant challenge in the rebuild environments. Poor financial stability of the contractor not only affects the project success, but also can decrease the financial security of the client organisation. Financial stability during a relationship reduces client uncertainty, improves client feelings of security and enhances client perceptions of the procured service value.

6.6 Conclusion
Fundamental to improving client satisfaction in a post-disaster reconstruction project is the recognition that contracting parties should not perform solely on the basis of the value of
the final product, as there are other values of the relationship (intangibles) that make one service provider more valuable than another.

This study identified client values requiring urgent improvement in contractor services for post-disaster reconstruction. This study suggests that shorter lead time and speed of construction, timeliness, shorter contract time, and higher standard of quality are the critical terminal values. In addition, competency, productivity, delivery speed, commitment, availability of resource, trust, free-flow communication, flexibility, maintaining reliability, teamwork, leadership and coordination, partnership development, and problem solving were identified as critical instrumental values for reconstruction after a disaster. These findings indicate that, due to the post-disaster reconstruction situation and requirements, as well as the changing demands of clients, time, cost and quality can no longer be the sole and main determinants of contractor service performance.

The study contributed to the existing body of knowledge about post-disaster reconstruction project management in different ways. It focused on client values for improvement, that are not well developed in the literature in the context of reconstruction. This will contribute to knowledge and post-disaster reconstruction literature in the satisfaction and performance domains.

Also, it employed an assessment instrument by the application of satisfaction analysis, priority rank and importance-performance analysis to identify and prioritise areas needing urgent improvement. The aim of this assessment instrument is to provide a means by which contracting parties’ performance can be assessed throughout the contractual relationships based on perspectives of the client. This assessment method will be of interest to reconstruction programme participants dealing with clients, as well as clients encountering issues in rebuild practice after disaster. Employing such an assessment mechanism helps contractors and clients to recognise and address problems at any stage of the relationship. Hence, the contracting services can be monitored in order to seek continuous improvements. This also enables service providers to monitor and improve their client satisfaction levels.

Finally, the study provided a basis to develop guidelines for good practice and success in post-disaster reconstruction projects. For example, to improve the critical identified values,
preparations need to be carried out in advance, by agencies that are responsible for reconstruction management after a disaster. As well as service providers, improving the identified values should also be a client priority. Some suggestions for the preparations are:

- Training for rebuild environment situations for construction professions, regarding planning reconstruction programmes, managing project budget and schedule, staff (labour) productivity, and implementing effective communication techniques and documentation.

- Developing trust-based flexible networks and partnerships in advance by, for example, scenario planning and disseminating the information about issues, such as business risks, changes in building codes and regulations, consent processes, workforce conditions and so on in post-disaster situations.

- Pre-planning to provide logistics and procurement frameworks for post-disaster situations.

- Implementing the identified values in the procurement system for selection of contracting parties
Chapter 7

Conclusion

7.1 Research Overview

The purpose of this study was to understand client values, and the levels of fulfilment of those values, within contractor services in post-disaster situations, where limited research information exists that could assist in improving reconstruction projects. This is significant because the success of any construction project largely depends on fulfilment of client values within contracting services. Client values and satisfaction have been used as a guideline for evaluating procured services in marketing studies and, recently, in business-as-usual construction. Client satisfaction is viewed as an important indication of how contracting services are perceived and judged within construction projects.

Opportunities can be found for improving reconstruction programmes by providing awareness of how construction service providers perform in post-disaster situations. However, the tendency of available studies is to focus on business-as-usual construction. Little time and attention has been invested in understanding client values and satisfaction in post-disaster reconstruction. Therefore, the specific environment and scarcity of mature research on the topic requires a systematic framework and in-depth research to be in place to facilitate post-disaster reconstruction success. The current study contributes to this body of knowledge in the construction management area. It reveals the areas of concern for pre-planning and rethinking in post-disaster situations, in order to improve the services provided in disaster reconstruction projects.

This chapter represents the conclusions of the study and recommendations for future research. The chapter discusses the achievement of the research objectives, thereby highlighting the contribution of the research to the field of post-disaster reconstruction. This is followed by a statement of the limitations of the research. The chapter concludes with some recommendations for future research.
7.2 Achievement of Research Objectives

In the first chapter of this thesis, the research aim was to understand client values and satisfaction within contracting services in post-disaster situations. To help achieve this, the following six objectives were established:

- Explore construction client values in the construction literature
- Understand what New Zealand clients value from business-as-usual contracting services
- Investigate how client values for reconstruction differ from business-as-usual
- Identify construction client values within contracting services for post-disaster reconstruction projects
- Determine a conceptual client value index for post-disaster reconstruction contracting services
- Understand the satisfaction levels of client values within procured contracting services for post-disaster reconstruction projects

7.2.1 Explore construction client values in construction literature.

In construction literature, the term *construction* “refers to a process of delivering value to the client through a temporary production system” and the term *client* “is a representative for a number of – often conflicting – values, interests and time perspectives” (Bertelsen & Emmitt, 2005). Continuous improvement of construction services requires concerted efforts to deliver on client values (Ahmed & Kangari, 1995; Egan, 1998). Thus, client values should be the key point of reference for key project participants throughout the project life cycle (British Standard Institute, 2014). Objective 1 in this research was an attempt to address this need.

In achieving objective 1 (addressed in Chapter 2), a comprehensive review of relevant literature on client values and qualities was conducted. Using systematic reviews, 177 research studies were critically analysed. Further details, including the sample-selection procedure, can be found in Chapter 2. Through a lens of client values and qualities, client needs and requirements, reported in the literature, have been identified.

Chapter 2 addressed the client values and qualities by which a service provider can manage the relationships and the service transaction in order to develop a system for managing construction delivery practice. The findings of Chapter 2 provide a basis for the empirical
study to achieve the research aim. Further details can be found later in this section, under
details provided for objective 3.

7.2.2 Understand what New Zealand clients value from business-as-usual contracting
services.
As a result of globalisation and increasing competition in the construction industry, the way
of conducting business in construction industry has changed (Ximena & Alfredo, 2013). The
perception of businesses in the construction industry needs a greater emphasis on seeking
ways to deliver better value for clients (Allan et al., 2008). To help achieve this, as detailed
in Chapter 2, much has been written in construction literature about the client-contractor
relationships and client values within contractor services. However, it is not clear how the
values identified in Chapter 2 contribute, reinforce, or localise to the New Zealand context,
or challenge existing knowledge in the New Zealand construction industry.

This study in Chapter 3, using document analysis and interviews with New Zealand
construction client organisations, determined a manageable set of client values within
contractor services suitable for the New Zealand construction context (see Chapter 3). In
addition, the findings helped in better understanding New Zealand construction client
values and conceptualising a basis upon which clients perceive value.

The findings indicate that while values associated with time, cost, and quality can be
regarded as important client values in business-as-usual construction, they are not exclusive
measures of contractor service assessment anymore, as they don’t evaluate all dimensions
of the procured services. Clients need to expand their assessment criteria beyond the use of
traditional measures.

The findings show that while New Zealand construction clients are concerned about issues
related to time, cost, and quality, they are also concerned about other values of service
delivery such as health and safety, low rate of environmental impact, guarantees, creativity,
technology transfer, value for money, reliability, and tangibles. In addition, New Zealand
clients highly value their contractor personnel values in terms of behaviour, attitude, and
professionalism.
7.2.3 Investigate how client values for reconstruction differ from business-as-usual.

The project conditions and management of post-disaster reconstruction are modified from business-as-usual construction (Le Masurier et al., 2006a; Prieto & Whitaker, 2011), inducing changes to the client values and priorities within contracting services. Hence, this study in Chapter 3 investigated how client values for reconstruction differ from business-as-usual.

Based on an in-depth review of the findings as detailed in Chapter 2 as well as the findings obtained from analysis of the documents and interview responses as detailed in Chapter 3, a list of client values was developed to provide a basis for conducting the study interviews and questionnaire survey. As the identified values varied in terms of their type and characteristics, categorising these values within the nine PMI areas (integration, scope, time, cost, quality, human resources, communication, risk, and procurement) seemed reasonable. Thematic analysis was used to categorise the identified values, under each PMI knowledge management area.

Also, reviewing previous studies concerning subjects, such as integration, relational contracting, performance, and quality, was helpful in developing the categories. Finally, the identified values (under the nine PMI areas) were classified as either terminal values or instrumental values. Terminal values can be considered as client final goals, or values in relation to a final goal, and instrumental values are the means by which terminal values are achieved. The identified values were also validated by conducting interviews with seven expert practitioners from the New Zealand construction industry. The interviews confirmed that all identified values are important to ensure the success of construction services delivery. The explanations above for developing a list of client values resulted in developing a framework (as shown in Appendix 4) for the research study, and to prepare for the interviews and questionnaire survey.

After developing the list of client values and their validation, achieving objective 3 (detailed in Chapter 4) was based on a two-step method, including interviews and a questionnaire survey. It was understood that while clients can share the same values for both situations, client priorities in post-disaster situations are arguably different to business-as-usual. For example, there is more emphasis on instrumental values, such as integration, procurement and communication in post-disaster reconstruction. This is due to the characteristics of
post-disaster reconstruction, such as complexity, public pressure, limited resource availability, and unstable economic and chaotic conditions. In addition, in terms of terminal values, the results revealed that in disaster reconstruction situations, clients have less concern regarding cost and more concern about time, compared to business-as-usual, while they have similar views regarding quality for both situations.

7.2.4 Identify construction client values within contracting services for post-disaster reconstruction projects.

Due to the specific environment and scarcity of mature research on the topic of client values and priorities for post-disaster situations, limited research information exists that could assist the construction industry. There are a number of guidelines for post-disaster reconstruction, “but hardly any which are widely endorsed and can be followed by humanitarian agencies” (Ahmed, 2011). For example, there is need to conduct researches to develop critical factors for success in post-disaster reconstructions projects (Coffey & Trigunarsyah, 2012). To describe the need, in achieving objective 4, a concerted effort was required to identify the most important and suitable values for post-disaster situations.

In-depth interviews with construction experts from leading reconstruction-related organisations were included in this study. Based on the interviews, a list of client values (39 in total) within reconstruction contracting services, for post-disaster situations, was developed. The findings provide insight into the rebuild environment, and highlight the values that can lead to, or hinder, reconstruction project success.

In addition, the importance levels of the 39 values were investigated by conducting a survey questionnaire detailed in the following section. The 39 identified client values were incorporated into a survey questionnaire. 59 post-disaster reconstruction experts participated in this survey. While the survey considered the importance of the identified client values, it also assessed the levels of performance of those values within contracting services, as perceived by clients. In order to fulfil objective 5, the importance levels obtained from the survey questionnaire were analysed. This resulted in understanding the prioritisation of client values within post-disaster reconstruction contracting services. The findings revealed that [while] public and private clients have slightly different views
regarding the importance of the identified values, these are not statistically significant for the most important values (as detailed in Chapter 5).

7.2.5 Determine a conceptual client value index for post-disaster reconstruction contracting services.

Following a disaster event, there is an urgent need for clients to develop an effective contractual system for rebuilding (Zuo, 2010), as contractors are called upon by clients to assist with reconstruction programmes (Wilkinson et al., 2016). Assessing the contracting services in the rebuild environment requires a specific approach and concept.

The development and application of practical assessment tools for the evaluation of procured services, is essential for clients who hiring construction service providers. However, in the development of such evaluation tools, previous research focused on business-as-usual construction rather than post-disaster reconstruction. The application of the available assessment tool in post-disaster reconstruction situations can be customised, with different shortcomings. To address this gap, a number of values for assessing the construction client perceived value within contracting services was identified. To identify these values the study (as detailed in Chapter 6) benefited from the survey questionnaire as explained in the above section.

An analysis of the survey results determined the most important value under each of the nine PMI knowledge-management areas. Eight of these values are the same from both public and private clients’ perspective, such as timeliness, to-budget delivery, higher standard of quality, availability of resources, competency, building a trust-based relationship, financial strength and stability, communication technique and documentation, and productivity. The ninth values for public and private clients are risk management skills & techniques, and financial strength and stability, respectively.

Finally, a client value index was then developed, based on those nine important values that can be used to assess the constructing services. Further details and explanations can be found in Chapter 5.
7.2.6 Understand the satisfaction levels of client values within procured contracting services for post-disaster reconstruction projects.

Despite the increasing experience of construction organisations with post-disaster reconstruction projects, the rebuild programmes are still poorly managed and the industry needs to seek better performance (Halvorson & Parker Hamilton, 2010; Lloyd-Jones, 2006; Sankaran et al., 2014; Sawyer et al., 2010). In construction, client satisfaction determines the bottom line of successful project implementation (Cheng et al., 2006; Soetanto et al., 2001). Analysing client satisfaction will enable service providers to identify the areas that require improvement and, consequently, better satisfy the clients (Oliver, 2014). Hence, satisfaction assessments can be used as a tool to promote perceived value within construction services by identifying the strengths and weaknesses of the services. Analysing the results of such an assessment helps contractors to understand what level of performance they need to target, to achieve client satisfaction.

While the survey questionnaire (with 59 post-disaster reconstruction experts) helped in achieving objective 5 as well as complementing the context of Chapter 4, it also provided data required for addressing objective 6. In order to fulfil objective 6 (detailed in Chapter 6), satisfaction analysis, priority ranking, and importance-performance analysis were applied. The findings explored and prioritised the areas (within reconstruction contracting services) that required improvement from public and private client sectors. This study revealed that critical terminal values are: shorter lead time and speed of construction, timeliness, shorter contract time, and higher standard of quality. In terms of terminal values, timeliness makes the largest contribution to client dissatisfaction from both public and private client perspectives.

Also, the findings indicate that critical instrumental values for reconstruction after a disaster are: competency, productivity, delivery speed, commitment, availability of resources, trust, free-flow communication, flexibility, maintaining reliability, teamwork, leadership and coordination, partnership development, and problem solving. In terms of instrumental values, competency and productivity make up the largest contribution in terms of private and public client dissatisfaction, respectively.
7 Conclusion

7.3 Research Contribution and Recommendations

This study provides theoretical and practical contributions in the post-disaster reconstruction domain. In terms of theoretical contributions, this study explored construction client values and qualities and it determined the client values and satisfaction in post-disaster reconstruction. In terms of practical contributions, the study provides a guideline that helps reconstruction participants in understanding the areas (values) important for post-disaster reconstruction projects. In addition, the study recommended a conceptual CVI and developed a client satisfaction assessment mechanism. The practicality of the CVI and the assessment mechanism can be strengthened based on further investigations suggested below as areas for future studies. The different methodologies in this study, such as literature review, interview and questionnaire surveys, have provided a basis for investigation and validation of the new concepts. The following illustrates the theoretical and practical contributions of the study.

7.3.1 Theoretical contribution and recommendations.

A literature review of different disciplines can help in understanding and importing new knowledge and concepts. For example, reviewing The Cochrane Handbook (Higgins & Green, 2010), for systematic reviews, was helpful to understand and conduct a repeatable systematic literature review to answer the research questions (Geraldi et al., 2011). Employing such a methodology in construction studies could assist in reviewing the available literature and providing better solutions.

The study has made a contribution to identifying client values in construction through a comprehensive literature review extensively and attempted to understand the identified client values in various analytical manners: ‘qualities’ and ‘value attributes’ in terms of corporate, project, and team levels through literature review. In so doing, the trends of value and quality related researches for the past 20 years through the relevant literature review. In so doing, the commonalities and differences between value and quality constructs were thoroughly investigated in the construction literature.

Another example of importing a new concept to reconstruction literature is the inclusion of the satisfaction concept in this study. In business-as-usual construction literature, the concept of client value and satisfaction is generally adapted from customer satisfaction
principles in the business domain (Cheng et al., 2006); however, it has rarely been discussed or applied in the context of reconstruction. This study attempted to address this gap in the disaster reconstruction literature. Also, different classifications in this study have been produced to represent the research findings (see Chapter 2 and 3). As a result of this study, such classifications can be provided to help in developing new constructs within the construction management domain, particularly in managing client-contractor contractual relationships.

This research also contributed to the existing body of knowledge related to the post-disaster reconstruction in terms of determining of client values and satisfaction within contractor services. Post-disaster reconstruction is becoming an important topic and the successful delivery of reconstruction projects is on national and international importance. Despite available guidelines and studies in relation to the success and failure of post-disaster reconstruction projects, values influencing client satisfaction within reconstruction services have received less attention. This research contributes to improved understanding of the values essential for success of disaster reconstruction and achieving client satisfaction.

The research first investigated how client priorities differ between business-as-usual and post-disaster reconstruction situations. The study then highlighted that there are differences in prioritisation of client values between the two situations, prompting the need to identify and prioritise what clients value in post-disaster situations. Hence, the study moved towards enhancing the understanding of client values within reconstruction services in post-disaster situations. It was then realised that assessing the contracting services in the rebuild environment requires a specific approach and concept. For example, one of the key recurring themes from this study is that contract price is not the dominant value for clients when assessing their contractors. The findings indicate that time, cost and quality can no longer be the sole and main determinants of construction contractor services performance, particularly in post-disaster situations. It is important to emphasise such values as integration, human resources, communication, and procurement, that are essential for achieving success and client satisfaction. Achievement of client satisfaction within provided reconstruction services requires some balance and trade-off among the most significant values. To help achieve this, a client value index, based on the most significant client values within contracting services, under the nine PMI knowledge management areas, was
proposed in this study. As a last step, this study determined the client satisfaction levels within contracting services in post-disaster situations. It is suggested that studying such concepts can contribute to knowledge in the satisfaction and performance domains, which have received little attention in disaster reconstruction literature. Ultimately, it will benefit clients and service providers involved in construction projects, particularly in post-disaster situations.

7.3.2 Practical contribution and recommendations.
Using post-disaster reconstruction expert opinion in this study contributed to the validity and practicality of the findings. It is suggested that the successful implementation of this study concept in the New Zealand construction industry can effectively contribute to improving reconstruction project execution and, thereby, contribute towards post-disaster recovery in New Zealand. The following discusses three main areas of awareness and recommendations for practical implication.

7.3.2.1 Emphasise client values in development of contractual relationships. The study has disseminated different values (essential for reconstruction projects), through classified outcomes, to make the knowledge area more available to disaster reconstruction service providers. Focusing the attention of the reconstruction professions on these values is believed to have the greatest impact on achieving client satisfaction and reconstruction programme success. The study’s results will lead to better-informed decisions and reconstruction efforts in post-disaster situations. Construction organisations will be better prepared for disaster reconstruction and provide better services to clients. Having improved awareness of client expectations can help in preparing good-practice guidelines for reconstruction programmes, in particular for developing a contractual system for post-disaster reconstruction. One suggestion could be the implementation of the identified values in the procurement mechanism for assessment of contractors.

7.3.2.2 Develop a suitable assessment mechanism. Assessing performance of service providers, in the form of monitoring and controlling, is essential to effective project management (PMI, 2005). The development and application of assessment tools for the evaluation of procured services, to provide better service, are becoming increasingly popular in the construction industry. However, in the development of such assessment
tools, previous research focused on business-as-usual construction rather than post-disaster reconstruction. In this research, based on the determined weightings for these values, a conceptual CVI was recommended as a starting point for developing a contracting services assessment tool. In addition, this research proposed an assessment instrument by the application of satisfaction analysis, priority rank and importance-performance analysis. The purpose of this assessment instrument is to determine a means by which service providers’ performance can be evaluated with measures that indicate the perspectives of clients. Eventually, the results of the evaluation could identify and prioritise areas needing improvement. This method can be of interest to post-disaster reconstruction professions, as well as clients dealing with contracting services after a disaster. The research outcomes can help equip client organisations with an invaluable performance assessment mechanism. Employing such an assessment system helps in monitoring and controlling the procured services. Hence, issues can be identified and addressed during a contractual relationship. As well as clients, it enables service providers to seek continuous improvements and improve their client satisfaction levels proactively, and better develop their reputation in the reconstruction market place.

7.3.2.3 Concentrate on areas of concern for improvement. The study has highlighted the areas of concern in contracting services in post-disaster reconstruction situations. It provides more awareness of how service providers perform in post-disaster situations; hence, “opportunities can be found for improving and increasing the speed of the overall recovery, including community recovery” (Wilkinson et al., 2016). By concentrating on those areas, service providers can enhance their performance (Oliver, 2014). As well as service providers, improving the identified values should be a client priority too. Preparations should be carried out, to enhance the critical identified values in advance, by client organisations as well as construction service providers that are responsible for rebuild programmes in post-disaster situations. In other words, the reconstruction practitioners can use the study’s results in developing appropriate strategies for post-disaster reconstruction success. For example, this study reveals that they need to put more emphasis on instrumental values than cost. It shows that while terminal values remain as clients’ core values within contractor services, assessing instrumental values as intangible aspects of client-contractor relationships is essential for post-disaster reconstruction projects. Hence,
there is a need for reconstruction participants to make a decision based on a mix of both terminal and instrumental values.

7.4 Research Limitations and future research
A study of client values and satisfaction within procured services can be challenging research, as it includes individuals’ expectations and perceptions within provided services, which can be different from one individual to another. This challenge becomes more complex when the study concerns post-disaster situations, where limited research information exists that could assist the study.

An important limitation is related to the scope of the study. The identification of the key client values in this study is limited, based on the findings of literature and expert interviews. Although the literature review drew on recognised international sources, further interviews and surveys may find that other values should be added to the list of client values developed in this study. This is due to the fact that the interview findings, in this study, reflected the views of construction client practitioners in New Zealand, in particular those involved in post-disaster reconstruction projects. It would be interesting to see how replicable the findings are in a non-New Zealand context. Hence, conducting a similar study in other countries is recommended, to determine the adaptability and replicability of the research results in other contexts. In so doing, the possibility of validating this study’s findings using a case study method (e.g. case study of different post-disaster reconstruction projects in non-New Zealand context) can be considered.

This study categorised the client values to present its findings and organise its discussion, however, future studies can include these categories in their data collection. Future studies may identify measurements and benchmarks for the client values (such as those values used in the CVI). In so doing, the identified values (and their measurements) can be categorised under ‘absolute measures’ and ‘relative measures’ or ‘objective measures’ and ‘subjective’.

The proposed CVI in this study is a conceptual index and, hence, requires further development. For example, this study used one value from each category to make the CVI, while future studies may include more values or all of the identified values in the CVI. Determinations of practical measurements for the included values in the CVI can help to quantify the CVI. Future studies may also consider indirect weight elicitation techniques,
such as the analytical hierarchy process, for weighting the values to capture the value trade-offs across the levels.

Future studies may distinguish between the sector where the client is involved in such as ‘infrastructure’, and ‘residential and commercial sectors’. The client organisations and interview participants have various profiles by client and project type, as well as different roles and experience. These criteria can also be considered in a future study for analysing client values. This study’s practitioners were chosen based on their knowledge and experience. Future research may compare and analyse the results from the different levels of experience (for example, between two groups such as ‘less than and more than 15 years in construction experience’, and ‘less than and more than 5 years in reconstruction experience’).

This study asked respondents to rate both levels of importance and performance on client values at the same time using a 5-point scale. Further studies may ask respondents to rate importance and performance in separate sequences in order to reduce any stereotypical effects. In so doing, it can also include a 7-point or above scale to provide a wider spread of ratings and a middle position constitutes a meaningful division for quadrant analysis. The results can then be compared with this study’s results.

The research findings are based on client perspectives, as the main purpose was to determine client values and satisfaction in post-disaster reconstruction projects. This improves awareness as to how contractors comply with the values that client place on contracting services for a reconstruction project. Further value can be added, in future researches, by developing further thoughts on how the identified values can be enhanced by the contracting parties involved in reconstruction projects. In addition, including service providers’ perceptions within future studies, in developing a practical satisfaction assessment model, is suggested. This would assist clients to understand their service providers’ expectations and perceptions, and develop harmonious working relationships.
Appendices

Appendix 1: Ethics approval, questionnaires, and interviews documentations

Appendix 2: Pilot/Scoping study

Appendix 3: Keywords and codes for Chapter 2

Appendix 4: Client values, categories and references for Chapter 4
Appendix 1: Ethics approval, questionnaires, and interviews documentations

UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE (UAHPEC)

17-Oct-2014

MEMORANDUM TO:

Prof Suzanne Wilkinson
Civil & Environmental Engineer

Re: Application for Ethics Approval (Our Ref. 010690): Approved

The Committee considered your application for ethics approval for your project entitled Client Decision-making Tool: Service provider assessment.

We are pleased to inform you that ethics approval is granted for a period of three years.

The expiry date for this approval is 17-Oct-2017.

If the project changes significantly, you are required to submit a new application to UAHPEC for further consideration.

If you have obtained funding other than from UniServices, send a copy of this approval letter to the Research Office, at ro-awards@auckland.ac.nz. For UniServices contracts, send a copy of the approval letter to the Contract Manager, UniServices.

In order that an up-to-date record can be maintained, you are requested to notify UAHPEC once your project is completed.

The Chair and the members of UAHPEC would be happy to discuss general matters relating to ethics approvals. If you wish to do so, please contact the UAHPEC Ethics Administrators at ro-ethics@auckland.ac.nz in the first instance.

Please quote reference number: 010690 on all communication with the UAHPEC regarding this application.

(This is a computer generated letter. No signature required.)

UAHPEC Administrators
University of Auckland Human Participants Ethics Committee

c.c. Head of Department / School, Civil & Environmental Engineer
Mr Sadegh Alakbari
Dr Seosamh Costello
Appendix 1 | Ethics approval, questionnaires, and interviews documentations

Assoc Prof Ashvin Thambiah
Prof Pierre Quenneville

Additional information:
1. Do not forget to fill in the 'approval wording' on the Participant Information Sheets and Consent Forms, giving the dates of approval and the reference number, before you send them out to your participants.

2. Should you need to make any changes to the project, please complete the online proposed changes and include any revised documentation.

3. At the end of three years, or if the project is completed before the expiry, please advise UAHPEC of its completion.

4. Should you require an extension, please complete the online Amendment Request form associated with this approval number giving full details along with revised documentation. An extension can be granted for up to three years, after which a new application must be submitted.

5. Please note that UAHPEC may from time to time conduct audits of approved projects to ensure that the research has been carried out according to the approval that was given.
<table>
<thead>
<tr>
<th>PARTICIPANT INFORMATION SHEET (IS)</th>
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<tbody>
<tr>
<td>(Participant)</td>
</tr>
<tr>
<td>Project title:</td>
</tr>
<tr>
<td>CLIENT DECISION MAKING TOOL: SERVICE PROVIDER ASSESSMENT</td>
</tr>
<tr>
<td>Name of Researcher:</td>
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<tr>
<td>SADEGH ALI AKBARLOU</td>
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<tr>
<td>Degree:</td>
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<td>PhD in Civil Engineering</td>
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<td>Department:</td>
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<tr>
<td>Civil and Environmental Engineering</td>
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<tr>
<td>Research Supervisors:</td>
</tr>
<tr>
<td>Dr. Suzanne Wilkinson and Dr. Seosamh B. Costello</td>
</tr>
</tbody>
</table>

**Researcher introduction**

This research is conducted by Sadeh Aliakbarlo, a doctoral student of Department of Civil and Environmental Engineering, Faculty of Engineering, The University of Auckland. Currently, enrolled in a degree of PhD in Civil Engineering and under supervision of Dr. Suzanne Wilkinson and Dr. Seosamh B. Costello.

**Purpose of this Participant Information Sheet**

The purpose of this Participant Information Sheet (IS) is to invite you to participate in the research questionnaire survey. The objective of the survey will be to inform research into developing a basis that can assist clients to assess their service providers based on New Zealand construction client values.

**Project description**

In the construction industry, the client values forms the provision of construction services and the final constructed facility. The competence, commitment, and attitudes of service providers strongly influence client value. Consequently, choosing the appropriate service provider and monitoring the overall service delivery performance during the project is crucial tasks for clients.

Many clients nowadays evaluate service providers before determining which company should be awarded the assignment as well as after completion of the work. However, evaluating the service providers is seldom conducted in a systematic manner, as every assessor has his/her own value judgment to distinguish what is a 'good' or 'bad'. As a result, the clients may not select the best option when purchasing the services. This issue is highlighted in post-disaster situations where the concept of construction client values has not been well developed. Consequently, the construction clients are dissatisfied with the services they purchase. The failure of the industry to deliver for the clients has been the subject of many government reports.

In construction, there is a growing awareness of the need to change the service assessment process to one based on value and quality and it is high on the New Zealand construction industry. What has been lacking is an evaluation process that can evaluate the service provider based on client values rather than piece. Hence, the research proposal, which provides an outline of the doctoral study being undertaken at The University of Auckland, aims to develop evaluation criteria that can assess the service provider based on client values. As a result, developing a basis that can assist construction industry clients in New Zealand to assess their service providers is the main outcome for the current research. The study will first identify the client values within constructing services and then it will determine the values require improvements. Consequently, the study's findings will assist in evaluation of service providers based on New Zealand construction client values. A systematic research methodology will follow to achieve the proposed research objectives.

**Data collection**

A questionnaire survey will be used as a data collection instrument in this study. Statistical analysis techniques will be used in the data analysing process. The result of the questionnaire survey will help in better understanding of the client values within contracting services. Questionnaire will take about 20 to 30 minutes to be completed.
Participation
Your invitation to participate is based on your knowledge about construction client values within contracting services, which is important for the achievement of the current study's aim. Your experience and knowledge in construction projects will provide the necessary data for the current research questionnaire in order to develop a basis that can assist clients to assess their service providers based on New Zealand construction client value. Participation in this study is totally voluntary. Participation requires going through this PIIS. The current PIIS is about the research description, process and the rights of the research's participants during the data collection process. The PIIS needs to be read thoroughly by the participants. As the research uses anonymous questionnaire, there is no need for separate consent form, and participation in the questionnaire survey is regarded as the consent to get involved in the study.

Data Storage/Future Use
Personal details of the research's participants are not required. The collected data will be kept totally confidential. The hard and electronic material will be stored, for a period of 6 years, in a protected locker within the university premises with limited access only by the researcher and the supervisor. After 6 years the data will be deleted [destroyed] by the researcher in person. Data analysis will be conducted by the researcher and the supervisors in order to achieve study's goals. Ultimately, this information will be used in the researcher's PhD thesis and other research publications that the researcher may produce and publish.

Queries
If you have inquiries regarding your participation or the research project, please contact:

Researcher: Sadegh Allahbarian
Mobile: +64 021 213 6351
Email: sall@auburn.edu

Supervisor: Prof. Dr. Suzanne Wilkinson
Phone: +64 9 3737599 ext. 88184
Email: s.wilkinson@auckland.ac.nz

Supervisor: Dr. Seosamh B. Costello
Phone: +64 9 3737599 ext. 88164
Email: s.costello@auckland.ac.nz

Head of the Department: Prof. Pierre Quenneville
Phone: +64 09 3737599 ext. 87920
Email: p.quenneville@auckland.ac.nz

Chair contact details: “For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142. Telephone 09 3737599 extn. 87830/83761. Email: humanethics@auckland.ac.nz."

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON ____________ for (3) years, Reference Number ____________.
Participant Information Sheet (PIS)

Project title: CLIENT DECISION MAKING TOOL: SERVICE PROVIDER ASSESSMENT

Name of Researcher: SADEGH ALIaabARLOU

Degree: PhD in Civil Engineering

Department: Civil and Environmental Engineering

Research Supervisors: Dr. Suzanne Wilkinson and Dr. Seosamh B. Costello

Researcher introduction

This research is conducted by Sadegh Aliakbarloo, a doctoral student of Department of Civil and Environmental Engineering, Faculty of Engineering, The University of Auckland. Currently, enrolled in a degree of PhD in Civil Engineering and under supervision of Dr. Suzanne Wilkinson and Dr. Seosamh B. Costello.

Purpose of this Participant Information Sheet

The purpose of this Participant Information Sheet (PIS) is to invite you to participate in the research interviews. The objective of the survey will be to inform research into developing a basis that can assist clients to assess their service providers based on New Zealand construction client values.

Project description

In the construction industry, the client values forms the provision of construction services and the final constructed facility. The competence, commitment, and attitudes of service providers strongly influence client value. Consequently, choosing the appropriate service provider and monitoring the overall service delivery performance during the project is crucial task for clients.

Many clients nowadays evaluate service providers before determining which company should be awarded the assignment as well as after completion of the work. However, evaluating the service providers is seldom conducted in a systematic manner, as every assessor has his/her own value judgment to distinguish what is a ‘good’ or ‘bad’. As a result the clients may not select the best option when purchasing the services. This issue is highlighted in post-disaster situations where the concept of construction client values has not been well developed. Consequently, the construction clients are dissatisfied with the services they purchase. The failure of the industry to deliver for the clients has been the subject of many government reports.

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Data collection

Interview will be used as a data collection instrument in this study. The main purpose of the interview is to identify the key client values on service providers. The interviews will last approximately 40 to 50 minutes.
Appendix 1 | Ethics approval, questionnaires, and interviews documentations

Participation
Your invitation to participate is based on your knowledge about construction client values within contracting services, which is important for the achievement of the current study's aim. Your experience and knowledge in construction projects will provide the necessary data for the current research questionnaire in order to develop a basis that can assist clients to assess their service providers based on New Zealand construction client value. Participation in this study is totally voluntary. Participation requires going through this PIS. The current PIS is about the research description, process and the rights of the research's participants during the data collection process. The PIS needs to be read thoroughly by the participants.

Since this study is to be conducted within your company, this PIS has also been given to your organization Chief Executive Officer (or other suitably authorized manager) to obtain permission that your decision to participate will not have impact on your employment situation. While your organization authorized manager has given the permission, you have the right to choose whether or not to participate. While the final report of this study will be sent to you and your employer, the transcript of your response will be kept confidential.

The interview will be recorded only with your agreement, and you can decide to have the recorder turned off during the interview. The interview will be transcribed by the researcher and without third assistance. While you will not be given the opportunity to review the interview's recordings, you will have your transcripts if you wish. You have the right to withdraw from participation in this research at any time without any explanation. Also, you have the right to withdraw the data you provided by informing the researcher within a period of two months after the interview.

Personal details of the research's participants are not required. The collected data will be kept totally confidential. The hard and electronic material will be stored, for a period of 6 years, in a protected locker within the university premises with limited access only by the researcher and the supervisor. After 6 years the data will be deleted (destroyed) by the researcher in person. Data analysis will be conducted by the researcher and the supervisors in order to achieve study's goals. Ultimately, this information will be used in the researcher's PhD thesis and other research publications that the researcher may produce and publish.

Queries
If you have more inquiries regarding your participation in the research project, please contact:

Researcher: Sadegh Alikharlou
Mobile: +64 021 213 6591
Email: sai@aucklanduni.ac.nz

Supervisor: Dr. Suzanne Wilkinson
Phone: +64 9 3737599 ext. 88184
Email: s.wilkinson@auckland.ac.nz

Supervisor: Dr. Seamus B. Costello
Phone: +64 9 3737599 ext. 88164
Email: s.costello@auckland.ac.nz

Head of the Department: Prof. Pierre Quenneville
Phone: +64 9 3737599 ext. 87920
Email: p.quenneville@auckland.ac.nz

Chair contact details: “For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142, Telephone 09 3737599
extn. 87850/83761. Email: humanethics@auckland.ac.nz.”
APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON ........
for (3) years. Reference Number ....../....
CONSENT FORM
(Participant)

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Project title: CLIENT DECISION MAKING TOOL: SERVICE PROVIDER ASSESSMENT
Name of Researcher: SADIEH ALIKAHRADI
Degree: PhD in Civil Engineering
Department: Civil and Environmental Engineering
Research Supervisors: Dr. Suzanne Wilkinson and Dr. Seosamh B. Costello

I agree to voluntarily participate in this research. I have read the Participant Information Sheet. I have understood the nature of the research and why I have been invited to participate. I have had the opportunity to ask questions and have had them answered to my satisfaction.

- I agree, don’t agree to be audio recorded.
- I understand that even if I agree to being recorded, I may choose to have the recorder turned off at any time.
- I know that the data will be transcribed by the researcher himself without the assistance of any third party.
- I understand that I will not be offered the opportunity to review the recording of the interview.
- I understand that permission for my participation in this research has been given by the Chief Executive Officer (or other suitably authorized manager) of my organization.
- I understand that I retain the right to keep the response transcript confidential from the Chief Executive Officer (or other suitably authorized manager) and other members of my organization.
- I understand that I am free to withdraw participation at any time without any explanation, and to withdraw any data traceable to me up to one month after the interview date.
- I understand that data will be kept for 6 years, after which they will be destroyed.
- I understand that the data I provide will be stored securely within the university premises, and only the researcher and supervisor can have access to it.

Name: 
Company/Organisation name: 
Correspondence address: 
Telephone: 
Mobile phone: 
Fax: 
Email: 
Signature: 

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 
FOR (5) YEARS REFERENCE NUMBER .../...
CLIENT DECISION MAKING TOOL: SERVICE PROVIDER ASSESSMENT

To whom it may concern,

I am a PhD student, undertaking doctoral research in the area of construction management focusing on understanding construction client values within contracting services. Choosing the appropriate service providers and monitoring the overall service delivery performance during the project is of utmost importance for any construction client. This research will provide a practical tool which will help the clients to assess their service providers based on client values. Ultimately, the benefits from the research will be realised in the form of better decision-making tools for the clients.

This letter is to request your collaboration and assistance in this research. I truly appreciate your valuable contribution which is very important towards the success of the research. The research outcomes will be summarised and sent to all interested on their request.

This questionnaire will take approximately 15 to 20 minutes of your valuable time to complete. Data collected from this survey will be used only to provide information for the purpose of this research. Please find more information regarding this research on the enclosed Participant Information Sheet (PIIS). Since this is an anonymous questionnaire there is no separate consent form.

Please do not hesitate to contact me, if you require clarification and any further information.

I look forward to hearing from you.

Thank you in anticipation of your valuable assistance.

Yours sincerely,

Sadegh Alakbarlou
Doctoral Candidate
Department of Civil and Environmental Engineering
Faculty of Engineering, The University of Auckland
Private Bag 92035, Auckland 1142, New Zealand
Mobile No.: (+64) 212135551 Email: saa7988@aucklanduni.ac.nz
Appendix 1 | Ethics approval, questionnaires, and interviews documentations

Questionnaire Survey 1 (Chapter 4)

QUESTIONNAIRE SURVEY

Section A:
The main objective of section A is to find general information about you, your organization and project:

1. Years of experience of Respondent in construction work(s):
   1.1. 0-10 years □
   1.2. 11-20 years □
   1.3. 21-30 years □
   1.4. 31-40 years □
   1.5. Over 40 years □

2. Years of experience of Respondent in contractor’s service assessment:
   2.1. 0-5 years □
   2.2. 6-10 years □
   2.3. 11-15 years □
   2.4. 16-20 years □
   2.5. Over 20 years □

3. Years of experience of Respondent in recovery project/reconstruction after disaster:
   3.1. 0-5 years □
   3.2. 6-10 years □
   3.3. 11-15 years □
   3.4. 16-20 years □
   3.5. Over 20 years □

4. Years of experience of Respondent in client organization:
   4.1. 0-5 years □
   4.2. 6-10 years □
   4.3. 11-15 years □
   4.4. 16-20 years □
   4.5. Over 20 years □

5. Type of sector which Respondent works for:
   5.1. Public □
   5.2. Private □
   5.3. Mix Public and Private □

6. Number of people working with your organization:
   6.1. 1-10 □
   6.2. 11-50 □
   6.3. 51-100 □
   6.4. 101-200 □
   6.5. 201-500 □
   6.6. >500 □

7. Designation of respondent:
   7.1. Director □
   7.2. Decision maker/advisor □
   7.3. Project manager □
   7.4. Quantity surveyor □
   7.5. Engineer □

8. Type of project which defines Respondents view to answer the questionnaire:
   8.1. Residential □
   8.2. Commercial □
   8.3. Educational building □
   8.4. Hospital □
   8.5. Road, bridge, and rail □
   8.6. Public facility □
   8.7. Heavy infrastructure □

9. Procurement method which defines Respondents view to answer the questionnaire:
   9.1. Traditional □
   9.2. Construction management □
   9.3. Management constructing □
   9.4. Design and build □
   9.5. Partnering □
   9.6. Alliance □
   9.7. Public private partnership □
**Section B:**
The main objective of section B is to understand the importance levels of the client values within contractor's services in business-as-usual construction and post-disaster reconstruction situations. Hence, it is of interest to this study to understand how you rate the level of importance of the values, as shown in the below table, for those two situations by giving RATINGS based on the 5-point Likert scale.

Where:
1: least significant 2: slightly significant, 3: significant 4: very significant, 5: most significant

**Importance means:** how important are the criteria to your project/business.

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<th>NO</th>
<th>Construction client values within contracting services</th>
<th>Level of Importance</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Business-as-usual</td>
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<tr>
<td></td>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-disaster</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>1</td>
<td>Shorter contract time</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>2</td>
<td>Timeliness</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>3</td>
<td>Lower construction costs</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>4</td>
<td>To budget delivery</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>5</td>
<td>Higher standard of quality</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>6</td>
<td>Reduced defect &amp; rework</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>7</td>
<td>Corporate commitment</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>8</td>
<td>Trust based relationship</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>9</td>
<td>Competency</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>10</td>
<td>Understanding client</td>
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<td>11</td>
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<td>Free flow communication</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>14</td>
<td>Accessibility &amp; responsiveness</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>15</td>
<td>Security, health &amp; safety</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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<td>16</td>
<td>Environmental protection</td>
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</tr>
<tr>
<td>17</td>
<td>Availability of resources</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
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<td>18</td>
<td>Capability of sourcing</td>
<td>☐ ☐ ☐ ☐ ☐</td>
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CLIENT DECISION MAKING TOOL: SERVICE PROVIDER ASSESSMENT

To whom it may concern,

I am a PhD student, undertaking doctoral research in the area of construction management focusing on understanding construction client values within contracting services. Choosing the appropriate service providers and monitoring the overall service delivery performance during the project is of utmost importance for any construction client. This research will provide a practical tool which will help the clients to assess their service providers based on client values. Ultimately, the benefits from the research will be realised in the form of better decision-making tools for the clients.

This letter is to request your collaboration and assistance in this research. I truly appreciate your valuable contribution which is very important towards the success of the research. The research outcomes will be summarised and sent to all interested on their request.

This questionnaire will take approximately 20 to 30 minutes of your valuable time to complete. Data collected from this survey will be used only to provide information for the purpose of this research. Please find more information regarding this research on the enclosed Participant Information Sheet (PIS). Since this is an anonymous questionnaire there is no separate consent form.

Please do not hesitate to contact me, if you require clarification and any further information.

I look forward to hearing from you.

Thank you in anticipation of your valuable assistance.

Yours sincerely,

Sadegh Alakbarfou
Doctoral Candidate
Department of Civil and Environmental Engineering
Faculty of Engineering, The University of Auckland
Private Bag 92019, Auckland 1142, New Zealand
Mobile No.: (64) 212186531 Email: sadeh1798@aucklanduni.ac.nz
**Questionnaire Survey 2 (Chapter 5)**

**QUESTIONNAIRE SURVEY**

**Section A:**
The main objective of section A is to find general information about you, your organization and project.

1. Years of experience of Respondent in construction work:
   1. 0-5 years 
   2. 6-10 years 
   3. 11-15 years 
   4. 16-20 years 
   5. Over 20 years 

2. Years of experience of Respondent in contractor's service assessment:
   1. 0-5 years 
   2. 6-10 years 
   3. 11-15 years 
   4. 16-20 years 
   5. Over 20 years 

3. Years of experience of Respondent in recovery project/reconstruction after disaster:
   1. 0-5 years 
   2. 6-10 years 
   3. 11-15 years 
   4. 16-20 years 
   5. Over 20 years 

4. Years of experience of Respondent in client organisation:
   1. 0-5 years 
   2. 6-10 years 
   3. 11-15 years 
   4. 16-20 years 
   5. Over 20 years 

5. Type of sector which Respondent work for:
   1. Public 
   2. Private 
   3. Mix Public and Private 

6. Number of people working with your organisation:
   1. < 100 
   2. 100-500 
   3. 501-1000 
   4. 1001-2000 
   5. 2001-5000 
   6. > 5000 

7. Designation of respondent:
   1. Director 
   2. Decision maker/Advisor 
   3. Project manager 
   4. Quantity surveyor 
   5. Engineer 

8. Type of project which define Respondent's view to answer the questionnaire:
   1. Residential 
   2. Commercial 
   3. Educational building 
   4. Hospital 
   5. Road, bridge, and rail 
   6. Public facilities 
   7. Heavy infrastructure 

9. Procurement method which define Respondent's view to answer the questionnaire:
   1. Traditional 
   2. Construction management 
   3. Management contracting 
   4. Design-construct 
   5. Partnering 
   6. Alliance 
   7. Public private partnership
**Appendix 1 | Ethics approval, questionnaires, and interviews documentations**

**Section B:**
The main objective of section B is to understand the importance and performance levels of the construction client values within contractor’s services in post-disaster reconstruction situations. Hence, it is of interest to this study to understand how you rate the level of importance and performance of the values, as shown in the below table, by giving RATINGS based on the 5-point Likert scale. Where; 1: least significant, 2: slightly significant, 3: significant, 4: very significant, 5: most significant

**Importance means:** how important are the criteria to your project/business.

**Performance means:** your perception of the contractors’ actual performance.

<table>
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<th>Level of Importance</th>
<th>Level of Performance</th>
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<td>1 2 3 4 5</td>
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<td>Delivery speed in construction process &amp; lead-time</td>
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<td>5</td>
<td>To budget delivery/appropriate to budget</td>
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<td></td>
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<tr>
<td>6</td>
<td>Whole life cost</td>
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<td>7</td>
<td>Higher standard of quality</td>
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<td>8</td>
<td>Information system adequacy</td>
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<td>Accuracy of decision making and process</td>
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<td>10</td>
<td>Improved organizational culture</td>
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<td>11</td>
<td>Corporate commitment</td>
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<td>Closer relationship/elasticity in relationship</td>
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<td>17</td>
<td>Minimised aggravation &amp; irritation</td>
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<td>Efficiency of construction methods &amp; techniques</td>
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<td>20</td>
<td>Appropriate tangibles (site facilities, documentations, claims &amp; reports)</td>
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<td>21</td>
<td>Competency (Functional skill and knowledge for planning and implementing reconstruction programs)</td>
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<td>22</td>
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<td>Accuracy of variations/invoices &amp; claims</td>
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<td>24</td>
<td>Potential for innovation &amp; creativity</td>
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<td>Internal teamwork development</td>
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<td>Productivity</td>
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<td>27</td>
<td>Efficiency of leadership &amp; coordination</td>
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<td>28</td>
<td>Employee empowerment</td>
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<td>Perceived procedural behavior (friendly environment, no blame culture, respect, fairness, good faith &amp; attitude)</td>
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<td>Communication technique &amp; documentation</td>
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<td>Accessibility &amp; responsiveness</td>
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<td>Financial strength &amp; stability</td>
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<td>36</td>
<td>Risk management skills &amp; techniques</td>
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<td>37</td>
<td>Availability of resources (material, labour, &amp; plant)</td>
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<td>38</td>
<td>Capability of sourcing</td>
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<tr>
<td>39</td>
<td>Willingness of use of local resources</td>
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</table>
Appendix 1 | Ethics approval, questionnaires, and interviews documentations

Interview Survey 2 (Chapter 3), Interview Survey 3 (Chapter 4), Interview Survey 4 (Chapter 5), Interview Survey 5 (Chapter 6)

INTERVIEWS QUESTIONS

In addition to the pilot study’s interviews (Interview Survey 1 shown in Appendix 2), a set of standard questions were devised to run the interviews, as follows:

Interview Survey 2 (Chapter 3)
- Defining general information about you and your project
  - Can you describe your experience and the type of construction project that you have been involved?
- Determining the term “Value”
  - What does value mean in your business?
  - How do you measure value in your business?
- Determining service provider assessment criteria:
  - What do you value within your procured contracting services?
  - Do you formally evaluate the service you receive from service providers, if so how, if not why?

Interview Survey 3 (Chapter 4)
- Defining general information about you and your project
  - Can you describe your experience and the type of construction project that you have been involved?
- Verifying the identified values
  - Can you review and confirm the significance of the identified values (Appendix 4), and recommend any additional values not included in the list?
- Determining service provider assessment criteria:
  - Select two key values for each of the nine PM areas.

Interview Survey 4 (Chapter 5)
- Defining general information about you and your project
  - Can you describe your experience and the type of construction project that you have been involved?
- Verifying the identified values
  - Select the most important values for reconstruction from the list (Appendix 4), and recommend any additional values not included in the list?

Interview Survey 5 (Chapter 6)
- Defining general information about you and your project
  - Can you describe your experience and the type of construction project that you have been involved?
- Verifying the identified values
  - Can you review and confirm the significance of the identified values (Table 7.3), and recommend any additional values not included in the list?

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Appendix 2: Pilot/Scoping study

Introduction

The pilot study involved semi-structured interviews conducted with 5 decision makers from different construction organisations type in New Zealand. Table A2.1, represents the participants’ details.

Table A2.1
The Interviewee Information

<table>
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<th>Position</th>
<th>Type of organisation</th>
<th>Years of experience</th>
</tr>
</thead>
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<td>1</td>
<td>Project manager &amp; Director</td>
<td>Developer</td>
<td>more than 30</td>
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<tr>
<td>2</td>
<td>Director</td>
<td>Investor</td>
<td>more than 30</td>
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<tr>
<td>3</td>
<td>Senior project manager</td>
<td>Consultant</td>
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</tr>
<tr>
<td>4</td>
<td>Senior quantity surveyor</td>
<td>Contactor</td>
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<td>5</td>
<td>Construction manager</td>
<td>Contactor</td>
<td>10</td>
</tr>
</tbody>
</table>

Prior to the interview, the participants were informed that this is a scoping study to provide direction for a PhD research, and the study aims to understand what client value from the services they receive. The questions and key comments summarised in the following sections.
Interview Survey 1 (Appendix 2)

A set of standard questions were devised to run the semi-structured interviews, as follows:

- **Determining the term “Value”:**
  - What does value mean in your business? (e.g., Low price or Quality or etc.)
  - How do you measure value in your business? (e.g., Profit; Satisfaction or etc.)
  - How do you know you have received value from a service you have bought?

- **Determining service provider assessment criteria:**
  - What do you value when you are hiring your service provider? (e.g., Tender price or Last experience or etc.)
  - What are the service provider selection criteria that you use?
  - How do you measure the value that you receive from your service provider? (e.g., Service delivery or Communication or etc.)
  - What methods do you use to select your service provider? (e.g., Competition or Reference or etc.)
  - What service provider selection methods are the best and why?
  - Do you formally evaluate the service you receive from service providers, if so how, if not why?
  - Please list any barriers, strengths, challenges with the service provider criteria and your selection methods

- **What information and/or advice would be useful for clients procuring service provider?**

- **When procuring a service, who is your advisor (background. Direction etc.)**

- **Please add any idea that you may have in term of question or statement.**
Key findings:

Client value on business
Costs and benefits analysis was highlighted as an important approach to measure a business value. However, the interviewees believed that although there is a significant emphasis on contract cost/price, there should be more focus on quality.

Client value on service
The interviews highlighted that the participants have a clear understanding about their needs and requirements from the services they purchase. Problem solving, management, and communication abilities, reliability, insurance, creativity, knowledge and understanding of technical characteristics of the construction project, as well as low contract price were some of the values that they expect from their service providers.

The interviewees were requested to outline the criteria that they use to assess the services providers. Although they could define their own assessment criteria, they believed there is a potential for improvement of service provider’s assessment procedures, particularly regarding the evaluation of service quality.

Sources of information and difficulties in current service provider selection producer
The interviews’ results showed that most of the participants prefer to use personal sources of information, such as service provider’s reputation gained form their past experiences. However, issues related to evaluation of the non-price criteria such as reputation, reliability and creativity of service providers were highlighted during the interviewees. For example, it was not clear that how a service provider’s reputation can be formalised and be measured in a tender satisfaction.

The interviewees prefer to rely on recommendations from other colleagues or clients. However, one of the interviewees stated that using reference to select the service providers may not allow the clients to achieve the best Value for Money as, for example, the recommended option could be expansive. He also added that the selection of a service provider based on recommendations may case argument that whether the rules and regulations can be followed, particularly in public procurement.
Conclusion

Procurement of construction services still tends to be mostly driven by the construction contract price. There is a need to switch from current evaluation formats that only assess the technical and financial capabilities of service providers against predetermined specifications, to better evaluation method that can motivate service providers to provide improved services to achieve all client values and satisfaction.

This study’s findings are subject to the limitations of interview based research. For example, the findings were based on the perspectives of the New Zealand construction industry participants. In addition, the number of interviewees is small and may not be representative of the views of the wider industry.
### Appendix 3: Keywords and codes for Chapter 2

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<td>- profitability for client</td>
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<td>- personal growth and development</td>
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## Keywords and codes for Chapter 2

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<td>• consistency</td>
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<td>• durability</td>
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<td>• trust</td>
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<td>Pro-social</td>
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<td>• comfortable</td>
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<td>• peaceful</td>
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<td>• equal</td>
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<td>• health and safety</td>
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<td>• environmental impact, sustainability</td>
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<td>• inner harmony</td>
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<td>• national security</td>
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<td></td>
<td>• better safety</td>
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<td>• performance</td>
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<td>Achievement</td>
<td>• a sense of accomplishment</td>
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<td>• social recognition</td>
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<td>• ambitious</td>
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<td>• independence</td>
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<td>• logical</td>
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<td>Commitment</td>
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## Appendix 4: Client values, categories and references for Chapter 4

### PMBOK categories

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<tr>
<th>Values</th>
<th>References</th>
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| - Organisational trust  
- Building a trust-based relationship | (Boies et al., 2015); (Ibrahim et al., 2014); (Strategic Forum for Construction, 2013); (Ibrahim et al., 2013b); (Yeung et al., 2012); (Meng, 2012); (Ling & Tran, 2012); (Meng et al., 2011); (Davis & Walker, 2009); (Park, 2009); (Pryke, 2009); (Godfrey Ochieng & Price, 2009); (Lu & Yan, 2007); (Yeung et al., 2007); (Kumaraswamy et al., 2005a); (Kumaraswamy et al., 2005b); (Rahman & Kumaraswamy, 2004); (Chan et al., 2004); (Bayliss et al., 2004); (Black et al., 2000); (Bresnen & Marshall, 2000a); (Chan et al., 2003); (Naoum, 2003); (Packham et al., 2003); (Palaneeswaran et al., 2003); (Bower, 2003); (Ng et al., 2002); (Cheng & Li, 2001); (Kwan & Ofori, 2001) |
| - Partnerships development | (Yasamis et al., 2002); (Lu et al., 2008); (Zou et al., 2014) |
| - Corporate commitment  
- Understanding commitment of each other  
- Commitment from employees  
- Long business relationship | (Tan et al., 2017); (Ling et al., 2014b); (Ibrahim et al., 2014); (Ling et al., 2014b); (Zou et al., 2014); (Ibrahim et al., 2013b); (Meng, 2012); (Yeung et al., 2012); (Mollaoglu-Korkmaz et al., 2011); (Meng et al., 2011); (Butcher & Sheehan, 2010); (Godfrey Ochieng & Price, 2009); (Davis & Walker, 2009); (Lu & Yan, 2007); (Yeung et al., 2007); (Bennett & Peace, 2006); (Lu & Yan, 2007); (Kumaraswamy et al., 2005b); (Kumaraswamy et al., 2005a); (Rahman & Kumaraswamy, 2004); (Chan et al., 2004); (Chan et al., 2003); (Chan et al., 2003); (Ng et al., 2002); (Takim & Akintoye, 2002); (Ng et al., 2002); (Cheng & Li, 2001); (Kwan & Ofori, 2001); (Cheng & Li, 2001); (Black et al., 2000); (Bresnen & Marshall, 2000a) |
| - Problem solving  
- Absence of claims and disputes  
- Dispute/Conflict resolution | (Tan et al., 2017); (Ling et al., 2014b); (Meng et al., 2011); (Butcher & Sheehan, 2010); (Park, 2009); (Lu & Yan, 2007); (Bennett & Peace, 2006); (Chan et al., 2004); (Chan et al., 2003); (Naoum, 2003); (Bower, 2003); (Black et al., 2000) |
| - Cultural alignment between client and contractor | (Ling et al., 2014b); (Ke et al., 2011); (Butcher & Sheehan, 2010); (Erik Eriksson et al., 2009); (Kumaraswamy et al., 2005a) |
| - Win-win strategy | (Yeung et al., 2012); (Chan et al., 2004); (Palaneeswaran et al., 2003); |
| - Flexible attitude  
- Flexibility in response to change | (Black et al., 2000); (Kumaraswamy et al., 2005b); (Ibrahim et al., 2013b); (Strategic Forum for Construction, 2013); (Bassioni et al., 2004) |
| - Acting consistent with goals  
- Jointly agreed objectives  
- Common objectives and responsibilities  
- Shared objectives | (Koralian & Dikbas, 2002); (Bennett & Peace, 2006); (Black et al., 2000); (Drexler Jr & Larson, 2000); (Harper & Bernd, 2005); (Kadefors, 2004); (Kumaraswamy et al., 2005b); (Kwan & Ofori, 2001); (Ling et al., 2014b); (Meng, 2012); (Meng et al., 2011); (Naoum, 2003); (Pryke, 2009); (Ng et al., 2002); (Yeung et al., 2012); (Bower, 2003); (Ibrahim et al., 2013b); (Mollaoglu-Korkmaz et al., 2011); (Godfrey Ochieng & Price, 2009); (Strategic Forum for Construction, 2013) |
| Scope | 
- Efficiency of construction methods & techniques  
- Reliability of construction engineering techniques | (Araújo et al., 2015); (Takim & Akintoye, 2002); (Lu et al., 2008); (Park, 2009) |
### Appendix 3 | Keywords and codes for Chapter 2

**Quality**
- Competency
- Appropriate tangibles (site facilities, documentations, claims & reports)  
  - [Yasamis et al., 2002]; (Idrus & Sodangi, 2010)

- Understanding of client
- Understanding of project requirements
- Managing client expectations
- Client focus
- Understanding of responsibilities  
  - [Ibrahim et al., 2014]; (Ibrahim et al., 2013b); (Strategic Forum for Construction, 2013); (Toor & Ogunlana, 2010); (Park, 2009); (Godfrey Ochieng & Price, 2009); (Lu et al., 2008); (Chan et al., 2004); (Yasamis et al., 2002); (Ng et al., 2002); (Black et al., 2000)

- Innovation & creativity initiative
- Accuracy of variations/invoices & claims  
  - (Takim & Akintoye, 2002); (Strategic Forum for Construction, 2013); (Yeung et al., 2007)

**Time**
- Contract/construction time
- Construction process speed and Lead time  
  - (Araújo et al., 2015); (Jafari, 2013); (Idrus & Sodangi, 2010); (Plebankiewicz, 2010); (Marzouk, 2008); (Yeung et al., 2007); (Shen et al., 2006); (Yasamis et al., 2002); (Hatush & Skitmore, 1997a); (Hatush & Skitmore, 1997b)

- Timeliness  
  - (Idrus & Sodangi, 2010); (Toor & Ogunlana, 2010); (Butcher & Sheehan, 2010); (Plebankiewicz, 2010); (Park, 2009); (Yasamis et al., 2002); (Topcu, 2004)

- Overrun duration
- Project time constraints
- Adequacy in preparing timelines  
  - (Jafari, 2013); (Butcher & Sheehan, 2010); (Park, 2009)

**Cost**
- Contract price
- Whole life cost  
  - (Araújo et al., 2015); (Plebankiewicz, 2010); (Marzouk, 2008); (Shen et al., 2006); (Bassioni et al., 2004); (Topcu, 2004); (Hatush & Skitmore, 1997a); (Hatush & Skitmore, 1997b)

- Meet budget/ To-budget delivery  
  - (Toor & Ogunlana, 2010); (Park, 2009); (Yeung et al., 2007); (Takim & Akintoye, 2002)

- Long-term profitability
- Cost effectiveness
- Value for money  
  - (Park, 2009); (Yeung et al., 2007); (Takim & Akintoye, 2002)

**Quality**
- Long term quality focus
- Corporate quality culture  
  - (Chen & Chen, 2007); (Bower, 2003); (Yasamis et al., 2002)

- Standard of contracted work quality
- Design quality
- Material quality
- Product quality including (performance, features, reliability, conformance, durability)  
  - (Araújo et al., 2015); (Jafari, 2013); (Idrus & Sodangi, 2010); (Butcher & Sheehan, 2010); (Park, 2009); (Plebankiewicz, 2010); (Marzouk, 2008); (Shen et al., 2006); (Topcu, 2004); (Bassioni et al., 2004); (Yasamis et al., 2002); (Hatush & Skitmore, 1997a); (Hatush & Skitmore, 1997b)

- Quality assurance measurement;
- Quality Systems;
- Operational quality planning;
- Strategic quality management  
  - (Strategic Forum for Construction, 2013); (Idrus & Sodangi, 2010); (Lu et al., 2008); (Yasamis et al., 2002)

- Free from defects
- Decision effectiveness
- Accuracy of decision making and process  
  - (Toor & Ogunlana, 2010); (Butcher & Sheehan, 2010); (Lu et al., 2008); (Yeung et al., 2007); (Takim & Akintoye, 2002); (Yasamis et al., 2002)
### Appendix 3 | Keywords and codes for Chapter 2

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<th>Human resource</th>
<th>Keywords and codes for Chapter 2</th>
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<td>Teamwork</td>
<td>(Ling et al., 2014b); (Meng et al., 2011); (Pryke, 2009); (Bennett &amp; Peace, 2006); (Chen &amp; Chen, 2007); (Yeung et al., 2007); (Kadefors, 2004); (Rahman &amp; Kumaraswamy, 2004); (Koraltan &amp; Dikbas, 2002)</td>
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<td>Cooperation</td>
<td>(Zou et al., 2014); (Yeung et al., 2012); (Park, 2009); (Allan et al., 2008); (Chan et al., 2004); (Packham et al., 2003); (Palaneeswaran et al., 2003); (Koraltan &amp; Dikbas, 2002)</td>
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<td>Effective coordination</td>
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<td>Power</td>
<td>(Ling et al., 2014b); (Strategic Forum for Construction, 2013); (Harper &amp; Bernold, 2005); (Packham et al., 2003); (Koraltan &amp; Dikbas, 2002); (Yasamis et al., 2002); (Ng et al., 2002);</td>
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<td>Manpower and technical capabilities</td>
<td>(Hatush &amp; Skitmore, 1997a); Hatush &amp; Skitmore, 1997b); (Takim &amp; Akintoye, 2002); (Lu et al., 2008)</td>
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<td>Personnel change</td>
<td>(Drexler Jr &amp; Larson, 2000)</td>
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<td>(Lu &amp; Yan, 2007); (Kadefors, 2004); (Palaneeswaran et al., 2003)</td>
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<td>Productivity</td>
<td>(Toor &amp; Ogunlana, 2010); (Yeung et al., 2007); (Bassioni et al., 2004); (Takim &amp; Akintoye, 2002)</td>
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<td>Skilled personnel</td>
<td>(Idrus &amp; Sodangi, 2010); (Park, 2009)</td>
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<td>Communication</td>
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### Appendix 3 | Keywords and codes for Chapter 2

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<td><strong>Risk</strong></td>
<td>Accessibility &amp; responsiveness</td>
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<td></td>
<td>Sharing guarantees</td>
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<td>Risk sharing</td>
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<td>Risks and opportunities</td>
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<td>Minimum risk</td>
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<td>Financial stability &amp; financial management</td>
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<td>Cash flow reliability</td>
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<td>Financial measure</td>
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<td>Environment influences</td>
<td>(Butcher &amp; Sheehan, 2010); (Yeung et al., 2007); (Takim &amp; Akintoye, 2002)</td>
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<td>Environmental considerations</td>
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<td>Generated positive reputation</td>
<td>(Araújo et al., 2015); (Takim &amp; Akintoye, 2002)</td>
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<td>Security</td>
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<td>Health and safety</td>
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<td>Availability of resources</td>
<td>(El-Abbasy et al., 2013); (Tan¹ et al., 2007); (Black et al., 2000)</td>
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<td>Transparency in contract</td>
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<td>Procurement strategy</td>
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<td>Use of local resources</td>
<td>(Le Masurier et al., 2006a); (Wilkinson et al., 2006)</td>
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