Key procurement selection criteria of Auckland interior fitout clients: An empirical study

Industry Project CONS 7819

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Abstract

Over the past twenty years the construction industry has developed a myriad of alternative procurement routes to offer its clients. As a result of this vast quantity of options it has become imperative that construction industry clients utilise a set of well defined criteria or parameters to assess the merits of the various procurement routes available. The interior fitout sector is characterised by its tight time frames, challenging work environments where construction operatives often have to work around fully functioning offices, tight budgets, the prevalence of third parties in the form of building managers and tight budgets. Relatively little prior research has been conducted into the specific procurement selection criteria of Auckland interior fitout clients. This study's objectives are to evaluate how influential pre defined procurement selection criteria or parameters are on the procurement decisions of Auckland interior fitout clients. The results obtained from this study will then be partially compared to the results of a similar study conducted in Australia (Thanh Luu, Thomas, & Chen, 2003). A semi structured interview incorporating a questionnaire facilitated the collection of specific data addressing backgrounds of respondents, current procurement selection practices, influence of 34 procurement selection parameters in terms of procurement decision making and open ended questions around overall impressions of construction procurement. The results show that cost related criteria and time related criteria are by far the most influential parameters in terms of procurement decision making. The findings of this study support the findings of numerous previous studies that time and cost are the primary initial indicators of project success of failure and therefore most prevalent in procurement decision making. Furthermore results from this study suggest that interior fitout clients utilise consultant advice to determine a procurement path. Responses to open ended questions indicate contradictory thinking amongst research participants as the same clients who overwhelmingly rated time and cost as the most critical procurement selection criteria feel that too much emphasis is placed on cost factors at the expense of other valid considerations. Future study could focus on how factors other than time and cost could be incorporated into procurement decision making.

Confidentiality Statement

The author has agreed that the names and employers of all research participants will be kept confidential. This confidentiality has been achieved through the coding of respondents eg. R1, R2 etc and phrasing questions so as not to identify the participant's employer.

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Chapter 1 Introduction

1. 1 Introduction

This chapter provides an overview of the research topic and discusses why the current research has been conducted. This chapter is intended to highlight the purpose of the research, introduce the research question and to clarify the structure of this research report.

1.2 Research question

What are the key procurement selection criteria of Auckland interior fitout clients?

1.3 Background

Over the past two decades the construction industry has developed a myriad of procurement routes to offer it's clients, all of which have different strengths and weakness in terms of managing risk associated with any given construction project (Alhazmi & McCaffer, 2000). Despite the multitude of procurement options now available, studies consistently find that construction industry clients are often not satisfied with the procurement routes utilised in their projects (Love, Smith, & Regan, 2010).

Many studies on procurement route selection have been carried out internationally including in Australia (Thanh Luu, Thomas, & Chen, 2003), United Kingdom (Tookey, Murrary, Hardcastle, & Langford, 2001) and Saudi Arabi (Alhazmi & McCaffer, 2000). However there is a lack of research into the procurement route selection practices of Auckland interior fitout clients.

With such a raft of potential procurement options now available it is important to identify the criteria that are used to determine the appropriateness of any particular procurement route (Davenport & Smith, 1995). Several notable authors have theorised that enhanced understanding and evaluation of the criteria against which the appropriateness of procurement routes are evaluated would be conducive to improved procurement selection practices (Morledge, Smith, & Kashiwag, 2006).

1.4 Rationale

The selection of the optimal procurement system is widely accepted as an important factor in performance of the project during construction and ongoing functionality after completion. This research aims to identify amongst interior fitout clients and consultants how key procurement selection criteria (as identified in the literature), are reflected in procurement system selection practices. It is reasonable to assume improved procurement selection criteria and practices would lead to enhanced mitigation of risks inherent in construction projects and therefore lead to better project outcomes.

The field of interior fitouts is unique within the construction industry and can be characterised by tight project time frames, rigours budget requirements, out of sequence

works, after hour's works and often the need to carry out major works within an operating office environment. These unique challenges to interior fitouts should be represented in unique procurement selection criteria but is this case? Research is required to establish if the unique nature of interior fitouts is represented in the perception of importance of procurement selection criteria.

It is hoped this research project will be of value to client organisations that took part in the study, and add to the literature surrounding procurement available at Unitec. Client organisations taking part will be able to see the results of the proposed research project and a comparison with survey results from Australia should they so wish.

Thanh Lu et al's (2003) study into key procurement selection criteria amongst Australian construction clients and consultants has been used to form part of the questionnaire used in the data collection and evaluation section of this report. Results form Thanh Lu et al's (2003) study have been compared to results from this research and similarities and differences explained and explored.

1.5 Report structure

The structure of this research report is outlined below.

Chapter two presents a literature review around the broad topic of construction procurement and more specifically the relationship between procurement selection criteria, procurement selection practices and procurement needs of varying construction industry client types.

Chapter three focuses on research methodology and more specifically the research methodology used to answer the research question. The previous study on which this research is partially based is described and the specific data collection and research methods used to for this study are explained and justified. Chapter three also discusses issues relating to research ethics and reliability and validity of data are also discussed and explained with a focus on their application to this study.

Chapter four presents the interview data collected for this study. Data collected in this section identifies the roles of interview participants, economic sectors participants are involved in, procurement selection practices of participant organisations, procurement selection criteria as rated by interview participants and open ended questions designed to ascertain why certain procurement selection parameters were rated as more or less important and broad opinions on construction industry procurement.

Chapter five discusses the findings of the research and compares the results obtained to Thanh Lu et al's (2003) study and other existing literature. Key trends in the data are identified and explored.

Chapter six identifies limitations of the research and summarises findings, as well as suggesting potential areas for future research.

Appendix A includes a copy of the questionnaire used for the study

Chapter Two- Literature Review

2.1 Introduction

Over the past two decades the construction industry has developed a myriad of procurement options to satisfy its client's needs (Alhazmi & McCaffer, 2000). The body of literature around the broad topic of construction procurement is vast, and as result the broad field of construction procurement will not be extensively reviewed as part of this chapter.

Focusing on Auckland interior fitout clients a review of literature around key procurement selection criteria and procurement selection practices will be presented in this chapter. A brief overview of the development of procurement systems will be presented first to put the topic of selection criteria and practices in context. This will be followed by a review of international literature around the topic of procurement selection criteria and the relationship between client type and procurement requirements. Finally a brief discussion of procurement selection practices and criticisms of current procurement thinking is presented.

2. 2 Development of procurement systems

In the 1980's in the United Kingdom a series of studies were conducted into the procurement options the construction industry offered its clients (Love et al 1998). The studies generally found that industry clients were unhappy with the procurement options commonly utilised (predominately design-bid-build) and as result a number of alternative procurement systems began to become prevalent (Love et al 1998). In the modern day the construction industry now offers its clients a number of alternative procurement strategies all with different inherent strengths and weaknesses (Ng Thomas, Thanh Luu, & Eng Chen, 2002).

Five main procurement groups exist, although within each main group multiple variations of generic types are present (NgThomas et al 2002). These five generic procurement route descriptions are widely accepted and include traditional, design and build, partnering, management contracting and hybrid systems.

2.2.1 Traditional (design-bid-build)

Traditional procurement remains popular today despite the emergence of several alternative routes (Masterman 1994). Traditional methods typically involve a client appointed designer preparing a set of project documents and drawings and issuing these to various contractors in the form of a competitive tender (Morledge, Smith, & Kashiwag, 2006). Typically contracting organisations also issue construction documents to a variety of sub contracting organisations in the form of competitive tenders (Morledge et al 2006).

Traditional procurement provides relative certainty of cost through competitive tendering and minimises client risk exposure as contracting organisations accept liability for building works (Morledge et al 2006). However this approach to procurement also exposes the client to the risk of time and cost overruns and makes the overlapping of the design and construction phases of a project impossible.

2.2.2 Design and Build

Design and build is a well established alternative to traditional models, the client generally appoints a single contractor who assumes responsibility for the design and construction of the project (Masterman 2002). Typically design and build methods also involve the letting of numerous sub contracts through competitive tenders (McWilliam & Lorenti, 2009).

The design and build procurement approach allows the project time frame to be compressed through overlapping design and construction, allows a single point of accountability for the client and minimises client risk exposure as a single organisation is responsible for the design and construction process (Ive & Chang, 2007). However this approach to procurement requires an early financial commitment from the client and changes to project scope tend to be relatively costly (Ive & Chang, 2007).

2.2.3 Partnering

Partnering or project alliances have gained in notoriety since the late 1980's and have become a popular alternative to traditional procurement (Morledge et al 2006). Typically partnering involves a selected group of project participants forming a project alliance and in general adopting some form of financial pain share/ gain share (McWilliam & Lorenti, 2009). Partnering is primarily used on large scale public works projects and civil infrastructure projects (Morledge et al 2006). Many variations of partnering exist and include,

Build own operate transfer schemes (BOOT)

Public private partnerships (PPPs)

The partnering approach to procurement is generally regarded as an appropriate way to allocate risk on large scale construction and civil works projects and early contractor involvement can often facilitate innovation and time and cost savings (McWilliam & Lorenti, 2009). However partnering or alliancing systems are costly and complex to set up making them appropriate only for projects of significant value, these type of systems also generally involve complex and ongoing commitments from partners (McWilliam & Lorenti, 2009).

2.2.4 Management Contracting

Management contracting has developed as procurement method since the 1980's but its' use is relatively limited (Morledge et al 2006). Typically a client appoints a project management organisation to co-ordinate both the design and construction stages. An array of consultants and sub contractors are typically employed for expert advice and execution of physical project works (Masterman 2002).

Management contracting allows design and construction phases to overlap and facilitates clearly defined project roles and responsibilities (Cartlidge, 2004). However this type of system is prone to issues associated with the design briefing process and cannot deliver certainty of price until the latter stages of a project (Cartlidge, 2004).

2.2.5 Hybrid Systems

Hybrid procurement systems are typically, unique amalgamations of the assorted advantages and disadvantages of the generic procurement routes described above. Hybrid systems are increasing in popularity and promote procurement paths that are tailor made for project specific performance requirements (Tookey, Murrary, Hardcastle, & Langford, 2001). Hybrid systems generally promote procurement structures which can be adapted and manipulated throughout the project (Tookey et al 2001).

Hybrid systems tend to differ from more traditional and well defined alternatives through the use of manufacturing ideology and terminology to measure project performance (Love, Smith, & Regan, 2010). Key performance indicators (KPIs), benchmarking and supply chain management are used to measure efficiency and project success (Hardcastle & Tookey, 1998).

As hybrid procurement systems are unique and difficult to categorise it is impossible to simply compare widely accepted and generic advantages and disadvantages. There is an increasingly widely accepted school of thought towards the increased use of more fluid hybrid type procurement systems and the focus of procurement decision making shifting from system selection to system design and management (Tookey et al 2001).

2.3 Procurement Selection Criteria

2.3.1 Definition

Thanh, Thomas &Chen (2003, pp 209) define procurement selection criteria as “the set of project specific requirements that have most weighting when deciding upon a procurement path”.

Tookey, Murrary, Hardcastle & Langford (2001, pp 20) define procurement selection as, “a set of rationalistic decisions within a closed environment aiming to produce generic, perspective rules for clients to use to select the best procurement route for their project.”

2.3.2 Selection Criteria

Procurement methods play a key role in defining the contractual and professional relationships amongst construction project participants (Alhazmi & McCaffer, 2000). Whilst the generic advantages and disadvantages of various procurement routes are easy to compare, the increasingly complex nature of construction procurement makes defining alternative procurement routes difficult (Ive & Chang, 2007). The selection of a most appropriate for project procurement method has been shown to reduce project costs by 5-10% (Alhazmi & McCaffer, 2000).

A myriad of different reasons for the selection/non selection of procurement have been put forward in studies into the subject including (Thanh Luu et al 2003, Tookey et al 2001, Masterman 1994). The construction industry has developed a vast array of alternative procurement systems over the past two decades, and as a result a need now exists for industry clients to utilise a set of simple well defined procurement selection criteria (Hardcastle & Tookey, 1998).

The well established measures of project success of time, cost and quality are well accepted and remain the overriding influences on procurement selection and client satisfaction (Love et al 1998). However as procurement routes have developed so have the criteria used to judge the appropriateness of any given alternative for a project (Thanh Luu et al 2003). In recent times some have argued for a paradigm shift in procurement thinking towards more of a manufacturing process using benchmarking and key performance indicators (KPIs) to measure project success (Tookey et al 2001).

Thanh Luu et al's (2003) study into the procurement selection criteria of Australian clients identified 34 procurement selection parameters (PSPs). These PSPs were collected from a literature review conducted by the studies authors (Thanh Luu et al 2003). A table based on research into the 34 PSPs identified by Thanh Luu et al (2003) has been modified for the purposes of this research project and is presented below.

Table 1- Procurement selection parameters

Selection Factors	Description	Authors
Client experience	Client experience levels should play a large part in determining the most appropriate procurement system	Ive & Chang (2007), Thanh Luu et al (2003), Love et al (1998), Masterman (1994)
Client type	The type of construction industry client dictates which procurement systems are most appropriate	Love et al (2010), Thanh Luu et al (2003),Masterman (1994),
Client access to in house construction expertise	Client's level of construction expertise will indicate which procurement alternatives are most appropriate	Thanh Luu et al (2003), Davenport & Smith (1995), Masterman (1994)
Clients' financial position	The client's financial position will determine how procurement criteria are weighted	Ive & Chang (2007), Ratnasabapathy et al (2007), Thanh Luu et al (2003)
Client risk profile	Client's willingness to take risks and utilise recent innovations will influence procurement decision making	Thanh Luu et al (2003), Ng Thomas et al (2002), Hardcastle & Tookey (1998), Than Luu et al (1998),
Level of client involvement	To a large degree client involvement will be determined by experience level, typically more experienced clients prefer to be more involved while less experienced clients generally take a more hands off approach	Thanh Luu et al (2003), Alhazmi & McCaffer (2000), Masterman (1994)
Client's trust of other	The level of trust and quality of relationships is a factor to	Cartlidge (2004), Thanh Luu et al (2003), Love et al

project participants	consider when deciding upon a procurement path	(1998)
Clients' requirements for level of technical performance	Technical performance requirements will make some procurement approaches more appropriate than others	McWilliam & Lorenti (2009), Thanh Luu et al (2003), Stirkland & Kirkendall (1998)
Aesthetic requirements of building	Aesthetic requirements can determine construction methodology and cost and therefore have a significant impact on procurement selection	Love et al (2010), Shiyamini et al (2005), Thanh Luu et al (2003)
Client requirement for on time completion	Requirements around project completion dates are often one of two most important factors to consider when determining a procurement route	Briscoe et al (2004),Thanh Luu et al (2003), Tookey et al (2001)
Client budget/cost requirements	Project cost is typically the single most important factor considered when assessing the appropriateness of a procurement	Ng Thomas et al (2005), Thanh Luu (2003), Masterman (1994)
Client requirements for ongoing maintenance	Maintenance requirements will dictate to an extent which procurement system is most appropriate	Ng Thomas et al (2005), Thanh Luu et al (2003), Masterman (1994)
Client requirements around on going operating costs	Operating costs will determine type of built asset and therefore procurement path	Thanh Luu et al (2003), Tookey et al (2001), Kumaraswamy & Dissanayaka (1996),
Client requirements in terms of value for money	Value for money as opposed to lowest cost is an under weighted requirement in the eyes of several notable writers on the subject of procurement	Thanh Luu et al (2003), Alhazmi & McCaffer (2000), Masterman (1994)
Project scope	Overall project scope will determine to an extent the weightings assigned to each criteria	Morledge et al (2006), Thanh Luu et al (2003),Alhazmi & McCaffer (2000), Masterman (1994)
Intended function of built asset	The end use of the built asset or type of building will determine how project success is measured and how procurement options are considered	Thanh Luu et al (2003), Love et al (1998), Hardcastle & Tookey (1998)
Construction	Methodology or buildability will be both a function of	Strikland & Kirkendall (2008), Thanh Luu et al

methodology	some procurement systems and measure of project success	(2003), Alhazmi & McCaffer (2000)
Site location	The physical location of the project will to some extent play a role in determining how alternative procurement routes are assessed	Ng Thomas et al (2005), Thanh Luu et al (2003),Alhazmi & McCaffer (2000)
Potential impact of unknown risk factors	Risk allocation structures are a key factor to consider when assessing the appropriateness of a procurement system, procurement systems should allocate project risk to the party best able to manage it	Ive & Chang (2007), Thanh Luu et al (2003), Hardcastle & Tookey (1998)
Management of known risk elements	Project procurement systems should allocate risk to the party best able to manage it	Ive & Chang (2007), Thanh Luu et al (2003), Alhazmi & McCaffer (2000)
Potential for innovation	The potential alternative procurement systems offer for innovate technology or methodology should be considered as part of selection process	Thanh Luu et al (2003), Tookey et al (2001), Kumaraswamy & Dissanayaka (1996),
Market conditions	The prevailing economic conditions will have a significant impact on the price competition between potential contractors and consultants	Shiyamini et al (2005), Thanh Luu et al (2003),Kumaraswamy & Dissanayaka (1996)
Technological feasibility	Technological feasibility and procurement systems ability to utilise these advancements can be considered when evaluating alternatives	Thanh Luu et al (2003), Kumaraswamy & Dissanayaka (1996)
Regulatory feasibility	The feasibility and performance of the project in terms of regulatory compliance can be considered a factor to consider in terms of procurement	Briscoe et al (2004), Thanh Luu et al (2003)
Availability of materials	Some procurement alternatives are more able to facilitate the integration of suppliers into the construction process	Moreledge et al (2006),Than Luu et al (2003)
Availability of	The availability of experienced contractors will	Cartlidge (2004), Thanh Luu et al (2003)

experienced contractors	dictate to some degree which procurement path is most appropriate	
Productivity of labour force	Some procurement routes are better than others at promoting productivity and efficiency of labour force	Thanh Luu et al (2003), Alhazmi & McCaffer (2000)
Inclement weather	The potential for inclement weather to affect project timeline can impact upon the selection of various procurement routes	Ng Thomas et al (2005), Thanh Luu et al (2003)
Natural disasters	Natural disasters can be considered an extreme unknown project risk	Thanh Luu et al (2003)
Industrial action	Industrial action is in some cases considered as a factor which impacts upon procurement selection	Thanh Luu et al (2003), Davenport & Smith (1995)
Objections from neighbours	Some procurement routes offer better flexibility in terms of accommodating requests from neighbours	Thanh Luu et al (2003), Kennedy & Sidwell (2001)
Objections from lobby groups or other interested parties	Some procurement routes offer better flexibility in terms of accommodating requests from interested parties	Thanh Luu et al (2003), Kennedy & Sidwell (2001)
Political influences	Typically of most importance in public projects	Thanh Luu et al (2003), Masterman (1994)
Cultural influences	Some procurement systems are more able than others to accommodate cultural requirements or features	Strikland & Kirkendall (2008), Thanh Luu et al (2003)

2.3.3 Procurement selection criteria groupings

In Thanh Luu et al's (2003) study the authors identified eight groups into which the 34 PSPs can be separated into. These groups include,

1. External environment- Client's procurement requirements will to a large extent be dictated by the client organisations operating environment (Thanh Luu et al 2003). On a project specific level external factors can include, legal, financial, cultural and physical environment considerations (Thanh Luu et al 2003).

2. Project risks- How project risk is allocated to project participants is perhaps the determining factor in selecting a procurement system (Thanh Luu et al 2003). Typical project risks include, time over runs, cost over runs, quality issues, inclement weather, industrial action and natural disasters (Thanh Luu et al 2003).

3. Clients' long term objectives- The clients' long term business objectives and objectives for the built asset will contribute towards procurement selection (Thanh Luu et al 2003). Client organisations objectives will influence operating and maintenance cost goals (Thanh Luu et al 2003).

4. Project characteristics- The unique characteristics of any given project will significantly impact the weightings of procurement selection criteria (Thanh Luu et al 2003). Projects characteristics include, project scope, construction systems and methodology and intended function of built asset (Thanh Luu et al 2003).

5. Clients' short term objectives- Typically short term client objectives are centred around objectives that span the projects' duration (Thanh Luu et al 2003). Short term or project objectives are generally, on time completion, on budget completion and value for money requirements (Thanh Luu et al 2003).

6. Client characteristics-Client experience level, type and access to in house expertise are generally regarded as major client characteristics which influence the most appropriate procurement selection system (Thanh Luu et al 2003).

7. Client involvement and risk allocation- Levels of client involvement and trust amongst project participants will impact upon procurement selection (Thanh Luu et al 2003). Risk should be allocated the party best able to manage it (Davenport & Smith, 1995). Client willingness to take risks will impact upon a multitude of procurement decisions (Thanh Luu et al 2003).

8. Building aesthetics and complexity- The complexity of the project will impact upon procurement selection (Thanh Luu et al 2003). Building aesthetics and complexity will in some way play a part in determining the most appropriate procurement route (Thanh Luu et al 2003).

These eight broad categories can be applied to the vast majority of construction projects procurement considerations (Thanh Luu et al 2003). These criteria groups can be compared to other major selection criteria identified in international studies (Ng Thomas et al 2005, Ng Thomas et al 2002, Love et al 1998 Masterman 1994,). Other typical procurement selection criteria include,

1. Allocation of responsibilities- In some ways similar to risk allocation but also including reporting and information structures and client points of contact with the construction process (Ive & Chang, 2007). Particularly important for less experienced clients whom Masterman (1994) identified as requiring clear allocation of project responsibilities. The way in which project responsibilities are allocated can be a significant factor in the selection of one procurement system over another (Love et al 1998).

2. Client Image considerations- Whilst client image is typically reflected by project design and branding, it must also be considered in terms of procurement (Ng Thomas et al 2002). Both public and private sector construction industry clients often like to use procurement

paths and various contracting organisations as a way of conveying their image (Alhazmi & McCaffer, 2000).

3. Minimal risk exposure- A multitude of client organisations from both the public and private view minimising their own exposure to risk as a procurement consideration of paramount importance (Shiyamini et al 2005). Minimising client exposure to risk is not necessarily the same as allocating risk to the party most able to manage it (Alhazmi & McCaffer, 2000). Minimal risk exposure from a client perspective can also relate to eliminating the use of innovative or new procurement practices of construction methodologies in favour of more traditional approaches (Ng Thomas et al 2002). This apprehension from the client side to new and innovative practices may go some way to explaining why the construction industry has been perceived as being slow to adapt new thinking (Hardcastle & Tookey, 1998).

4. Early and firm indication of price- More than simply price certainty or lowest price, many client organisations require an early stage and definite budget to work from (Tookey et al 2001). This trend is most prevalent amongst less experienced industry clients and is viewed in some quarters as an inflexible approach that can negatively impact project level decision making (Tookey et al 2001). This may also help to explain the gaining popularity of design and build type systems where by fees and costs are typically agreed early on in the process (Ive & Chang, 2007).

5. Ability to accommodate design changes- Procurement systems which facilitate the easy incorporation of design changes should in almost all circumstances be viewed as extremely favourable (Kumaraswamy & Dissanayaka, 1996). Changes in design can result in costly additions to project costs and can also negatively impact project timelines (Kumaraswamy & Dissanayaka, 1996). More experienced industry clients tend to prefer procurement systems that allow for the straightforward incorporation of design changes (Masterman 1994).

6. Early project start date- As well as on time completion procurement routes which offer the ability for an early start to physical works (normally by overlapping design and construction stages) tend to be favourably weighted (Davenport & Smith, 1995). Early project start dates are generally viewed as resulting in an early completion date although this in not always the case (Hardcastle & Tookey, 1998).

7. Information flows between client, consultants and contracting organisations- Procurement systems that promote good information flows between project participants are typically viewed favourably (Masterman 1994). Experienced primary construction industry clients have in house construction expertise and are actively involved in the procurement process (Masterman 1994).

The combination of client type, project type and various other factors described above will ultimately dictate the procurement path deemed most appropriate for any given project.

2.4 Types of construction industry clients

The levels of client experience and expertise should play a large part in determining the most appropriate procurement system for any given project (Masterman 1994). Procurement selection can be considered a 'horses for courses' approach with client experience dictating which procurement selection criteria are most applicable (Thanh Luu, Thomas, & Chen, 2003).

Masterman (1994, pp 77-78) identified and defined four broad types of construction industry clients,

> Primary- Industry clients such as property developers whose core business revolves around the procurement of built assets.
>
> Secondary – Industry clients who procure built assets to facilitate or complement core business e.g. manufacturing company building new warehouse space.
>
> Experienced- Clients who procure built assets on a regular basis and generally have access to in-house construction expertise.
>
> Inexperienced- Clients who deal with the construction industry infrequently or on a one off basis.

2.4.1 Client profiles

These four categories can be combined to form a client procurement profile, e.g. primary experienced, secondary inexperienced, primary inexperienced, secondary experienced (Masterman, 1994). The needs of these varying types of construction industry clients vary greatly in terms of what procurement selection approach is most appropriate (Ng Thomas, Thanh Luu, & Eng Chen, 2002).

Several notable studies have commented on the differing needs of various types of industry clients in terms of procurement selection criteria including; (Love et al 1998,Ng Thomas et al 2002, Thanh Luu et al 2003). Less experienced industry clients need to clearly define project requirements and utilise simple procurement selection criteria (Love et al 1998). More experienced industry clients prefer to be more involved throughout the process, and consider a significant number of interrelated procurement selection criteria when deciding upon a procurement system (Thanh Luu et al 2003).

Experienced construction industry clients rely upon consultant advice, past experience and in house expertise when considering alternative procurement options (Davenport & Smith, 1995). This type of client generally has in house project management procedures and access to construction expertise (Davenport & Smith, 1995) Inexperienced industry clients often struggle to adequately define project requirements and procurement selection criteria (Masterman, 1994). This is partially as a result of less experienced clients often working with limited and imperfect information about the construction process (Masterman, 1994).

Whilst it is possible to loosely group construction industry clients according to experience, these clients groups are made up of a vast array of heterogeneous organisations (Masterman, 1994). These organisations requirements of the construction industry differ not only according to experience, but also by the goals, expectations and measures of project success (Hardcastle & Tookey, 1998).

Construction industry clients can also be distinguished as being either public or private sector (Shiyamini, Raufdeen, & Gamage, 2005). The procurement needs of the two sectors vary greatly and can be considered two almost separate topics of discussion (Shiyamini, Raufdeen, & Gamage, 2005). Generally speaking public sector clients tend to be experienced repeat customers of the construction industry, for example, the Ministry of Education, Department of Building and Housing (Thanh Luu et al 2005). Whilst in the private sector a mix of primary, secondary, experienced and inexperienced clients exist (Masterman, 1994).

In recent times particularly on large public works projects PPP schemes have become increasingly well utilised (McWilliam & Lorenti, 2009). Public sector projects require a high level of probity in terms of procurement (Kennedy & Sidwell, 2001). This is in stark contrast to the procurement of a property developer for example (Kennedy & Sidwell, 2001). The difference in procurement needs between the two sectors is represented in procurement selection criteria (Tookey et al 2001).

2.4.2 Procurement selection methods

Given the almost endless combinations of client types, project types and specific procurement selection criteria several notable authors have identified the need for procurement selection aids (Alhazmi & McCaffer, 2000). Industry clients who lack structured procurement selection systems often struggle to select the most appropriate procurement route (Alhazmi & McCaffer, 2000). Client organisations typically utilise a combination of consultant expertise and in house experience when deciding upon a procurement path (Masterman 1994).

Procurement selection practices can range from simple past experience or gut feel to complex mathematical models (Alhazmi & McCaffer, 2000). Consultant organisations tend to provide their clients with at the very least, mathematical evaluations of various procurement alternatives (Ive & Chang, 2007). These models are typically generated by assigning a weighting to each procurement selection criteria and generating a matrix that ranks procurement alternatives (Ive & Chang, 2007).

In some cases construction industry clients' utilise the same procurement system numerous times for projects of similar nature and undertake no evaluation of procurement alternatives (Hardcastle & Tookey, 1998). This approach may be appropriate for clients in some circumstances, for instance public sector clients often require a competitive tendering model to ensure probity and demonstrate lowest cost (Masterman, 1994).

Procurement selection models have developed in sync with the rapidly expanding list of procurement options the construction industry now offers its clients (Alhazmi & McCaffer, 2000). These models whilst generally regarded by industry experts as being useful tools in aiding the procurement selection process are not widely utilised (Ive & Chang, 2007).

Common explanations put forward to explain this lack of use are centred on the complexity of the systems and the difficulty in justifying the time and expense of using such models (Ive & Chang, 2007).

2.4.3 Procurement selection aids

Despite the well documented problems around utilisation of procurement selection models several notable authors have proposed procurement selection aids including;

Alhazmi & McCaffer (2000) proposed the use of a project procurement system selection model (PPSM). The model used four screening levels to determine the appropriateness of a procurement system (Alhazmi & McCaffer, 2000). The screening levels suggested were 1 feasibility ranking, 2 evaluation by comparison, 3 weighted comparison and 4 analytical hierarchy processes (Alhazmi & McCaffer, 2000).

Chang & Ive (2007) suggest that a phenomenon called 'the principal of inconsistent trinity' should be applied to construction procurement. The authors theorise that transaction cost economics can be applied to the procurement selection process (Ive & Chang, 2007).The authors propose the use of net present value type equations to select a procurement path (Ive & Chang, 2007).

Chan (2007) proposes the use of a 'fuzzy procurement selection model' to aid in selection. The model advocates applying a weighting to seven procurement selection criteria (time, cost, flexibility, risk allocation, complexity, price competition and quality) and assigning values to each alternative procurement method in terms of the seven factors (Chan, 2007). These multiplied by project specific analysis values generates a best procurement route (Chan, 2007).

Several other notable authors have opined that too much emphasis and time is spent on developing such procurement selection systems when, in most cases a set of simple well defined selection criteria and a simple weighting system are sufficient (Hardcastle & Tookey, 1998).

2.5 Criticisms of construction procurement

The construction industry has often been criticised for being too slow to adopt new thinking and techniques to its procurement systems and project delivery practices (Alhazmi & McCaffer, 2000). Several studies into client's satisfaction with the construction industry have noted a continued lack of satisfaction with the procurement process (Hardcastle & Tookey, 1998). This lack of satisfaction is partially attributed to un- realistic client expectations in terms of the time, cost, quality paradigm (Love et al 2010).

It has been suggested that too much focus is placed on the selection of an appropriate procurement system, when it is possible to in effect design a project specific system (Hardcastle & Tookey, 1998). Hybrid type procurement systems can be utilised to ensure the

elements of a number of traditional procurement systems are incorporated to best meet project specific requirements (Hardcastle & Tookey, 1998).

Less experienced construction industry clients often struggle to adequately define key procurement selection criteria (Masterman 1994). As a result of poor definitions of key selection criteria less experienced clients often select inappropriate systems that prevent maximum value being gained from the procurement process (Davenport & Smith, 1995).

Procurement selection aids have been criticised as being too time consuming and costly for organisations to implement (Chan, 2007). Whilst these mathematical models and systems are viewed as being valuable some have suggested they tend to be so complex that they almost constitute a distinct field of expertise (Chan, 2007).

In general the construction procurement process can be fragmented and time consuming (Davenport & Smith, 1995). Client organisations who lack construction experience need to utilise the services of outside industry experts and consultants to ensure adequate procurement selection practices are employed (Kumaraswamy & Dissanayaka, 1996).

2.6. Summary

A vast body of literature exists on the topic of construction procurement. Procurement selection criteria can be identified through literature and a reasonable consensus exists around key considerations in procurement selection. Several procurement selection models have been developed but their use is limited primarily by complexity (Chan, 2007).

Client experience and type plays a key role in determining procurement selection criteria and systems (Masterman 1994). Whilst it is possible to group clients according to experience and sector it is difficult to adequately describe the requirements of all possible types and combinations of industry clients (Masterman 1994).

Seven or eight well established broad selection criteria exist and include, external environment, project characteristics, allocation of risk, time requirements, cost requirements, quality requirements, client experience and client goals (Thanh Luu et al 2003).

Appropriate procurement selection criteria and practices can reduce project costs by 5-10% (Alhazmi & McCaffer, 2000). However there is no substantial research into the procurement selection criteria and practices of Auckland interior fitout clients. This research will therefore attempt to answer the research question- What are the key procurement selection criteria of Auckland interior fitout clients?

Chapter 3- Methodology

3.1 Introduction

Chapter three presents a review of research methodology used to answer the research question. The data collection method used for this study is discussed and justified and issues surrounding reliability, validity and research are discussed. The Thanh Luu et al (2003) study on which this research is partially based is also briefly described in this chapter.

3.2 Research Design

The research question was developed following a through review of literature around the topic of procurement and procurement selection and is: 'What are the key procurement selection criteria of Auckland interior fitout clients?' The primary goal of the research was to rank procurement selection parameters as identified by Thanh Luu et al (2003) in terms of the perceptions of Auckland interior fitout clients and then compare these results to Thanh Luu et al's (2003) study. To facilitate this comparison the questionnaire used throughout the interview process was partially based on that used by Thanh Luu et al (2003). The research method utilised was in the form of a semi structured interview incorporating questionnaire. The questionnaire also contained an open ended question segment which was designed to ascertain why respondents rated certain procurement selection parameters as either particularly high or low and to determine overall impressions of construction procurement.

3.2.2 Type of research

The research presented in this report can best be described as confirmatory research as it seeks to establish if trends in identified in the literature and published research are reflected in Auckland interior fitout clients rankings of procurement selection criteria (OECD Research, 2002). An exploratory element is also present in the research as no previous research into what Auckland interior fitout clients rate as being key procurement selection criteria exists (OECD Research, 2002). The research cannot be classified as pure research as its purpose is not to discover or present new theories or natural phenomenon (Fellows & Liu, 2003)

3.2.3 Quantitative vs qualitative data

"Qualitative data is data describing the attributes or properties that an object possesses. The properties are categorized into classes that may be assigned numeric values. However, there is no significance to the data values themselves, they simply represent attributes of the object concerned" (OECD Research, 2002)

"Quantitative data is data expressing a certain quantity, amount or range. Usually, there are measurement units associated with the data, e.g. metres, in the case of the height of a person. It makes sense to set boundary limits to such data, and it is also meaningful to apply arithmetic operations to the data" (OECD Research, 2002).

The data contained within this report is qualitative in its nature as it primarily deals with the perceptions and opinions of interview participants. Some quantitative analysis has been carried of for rating questions in the form of mean scores, standard deviation and rankings.

3.2.3 Type of data collected

A multitude of potential research techniques exist to conduct research of this nature and include surveys, observation, case studies and interviews. The semi structured interview incorporating questionnaire approach is essentially an interview based on pre prepared questionnaire with an open ended question segment and generally produces data which is empirical and through (Denscombe, 2003). The Thanh Luu et al (2003) study utilised the survey method and asked some 272 people to complete the survey, a far lager sample than that utilised for this research. Due to the small sample size a semi structured interview with questionnaire is a valid approach in terms of comparing the two studies (Denscombe, 2003). Essentially in the case of this research a survey was implemented in a face to face interview setting with some open ended questions to elicit more broad ranging responses from participants and therefore is a valid research method for comparison with the Thanh Luu et al (2003) study. Alternative research methods would not have been feasible due to sample size, time and logistical constraints.

3.2.4 Previous research

As previously stated the design of this research has been partially based on an Australian study conducted by Thanh Luu et al (2003). This is to ensure that the rankings of procurement selection criteria can be compared between the two studies. The wording of the 34 procurement selection parameters identified by Thanh Luu et al (2003) was in some cases slightly altered in the questionnaire for this research in order to ensure participants understood what they were being asked to rate. This was primarily to ensure employees of client organisations who were well versed in the procurement of construction services but not experts on construction procurement theory could easily relate each procurement selection parameter tho their own organisations practices. The wording of each parameter was directly based on that of Thanh Luu et al (2003) if not identical and therefore a comparison between the two studies remains a valid exercise (Denscombe, 2003).

3.3 The interview process

Respondents were made aware of the focus of the research via a phone call which also served as a request and acceptance to take part in the research. Prior the actual interview commencing all participants sighted and completed ethics documentation as required by the Unitec Ethics Committee. During the interview respondents were issued with a printed questionnaire, the researcher worked off a laptop using an Excel version of the questionnaire to transcribe the interview and input data electronically. Interview participants essentially dictated their responses to the open ended question segment to the interviewer. Overall the interviews lasted for approximately 15 minutes each, upon completion participants were thanked and made aware they could request a copy of the data collected or final report should they so wish. A copy of the questionnaire is contained as Appendix A.

3.3.1 The questionnaire

Interviewees were asked to rank a list of key procurement selection parameters as identified by Thanh Luu et al (2003) on a Leichhardt scale of 0-5 in terms of influence on procurement selection where 0=not influential at all, 1=minimal influence, 2=of some influence, 3=influential, 4=very influential, 5=extremely influential . Interviewees were also asked how their organisation decided on a procurement path on a scale of 1-4 where 0-never, 1=rarely, 2=sometimes, 3=usually, 4=always. Participants were asked background questions to identify their role and which sector of the economy their organisation was involved in. Finally participants also competed an open ended question section to ascertain why certain procurement selection parameters were rated as either very high or very low, in addition the open ended question segment also asked participants about their overall impression of construction procurement.

3.3.2 Participation requirements

All respondents had completed a commercial fitout valued over $1million total construction works value in the past 12 months, all respondents had also been actively involved in selection and implementation of procurement routes for said projects. This level of involvement in commercial fitouts was required to take part in the interview to ensure responses were valid and represented actual procurement selection practices of recent interior fitout clients. The number of interviewees was limited due to the number of accessible Auckland interior fitout clients and the time taken to conduct interviews. In total 10 interviews were conducted which, given the relatively small size of the interior fitout sector in Auckland should give an accurate representation of perceptions and provide results that indicate possible trends although these trends will be local.

The geographical location for the study was the greater Auckland region. In addition to logistical considerations, Auckland is a suitable location due to it being the largest commercial centre in New Zealand with a high concentration of commercial organisations and therefore high number of companies who procure interior fitouts.

3.4 Justification of research methodology

A semi structured interview allows the researcher control of the format of the questions and therefore also the format of the answers (Denscombe, 2003). Essentially a semi structured interview is a questionnaire which is administered in a face to face setting with the research participant (Denscombe, 2003). A primary advantage of the semi structured interview is that due to the uniform nature of questions and pre coded responses available to respondents a level of standardisation is possible to achieve (Denscombe, 2003). Semi structured interviews can be used to collect both quantitative and qualitative data (Denscombe, 2003).Semi structured interviews incorporating a questionnaire are suitable for small sample sizes and for research that seeks to ascertain respondent’s perceptions on a given subject (Denscombe, 2003).

In order to improve understanding and reasoning behind responses to closed questions utilising a Likert scale open ended questions can be added to the questionnaire to allow participants to express more broad ranging opinions and in essence describe why certain

ratings were given to Likert scale questions (Denscombe, 2003). The open ended question segment extracts a more pure form of qualitative data from respondents (Denscombe, 2003).

Denscombe (2003, pp 41-44) states a semi structured interview is most appropriate when:

Data collected is uncontroversial but may require some explanation

Standardised responses to each question are required

Research is focused on a specific geographical location

There is sufficient time to prepare interview questionnaire and conduct interviews

Common criticisms of semi structured interviews often focus on the researcher's ability to influence responses through their own bias or perceptions being projected onto interview participants (Denscombe, 2003). However as the subject matter being researched is not controversial and interview respondents are being asked about their own practices and perceptions this is considered not an applicable criticism in terms of this study. Semi structured interviews are also relatively time consuming and expensive when compared with say a survey emailed to respondents (Denscombe, 2003). However email based surveys are easy to ignore and would seem to be non beneficial in terms of time and cost given the small sample size and close geographical location of all participants.

3.5 Reliability and validity

The issues of reliability and validity are of paramount importance to the overall worth of any research (Fellows & Liu, 2003).

Reliability is primarily concerned with providing consistent results under consistent conditions in order to assure that the results of the research are reliable and will stand up to scrutiny (Fellows & Liu, 2003). Validity on the other hand is concerned primarily with ensuring that the research results assess or measure what was intended to be assessed (Fellows & Liu, 2003).

Providing research has been well designed with assessing what is intended to be assessed or measured in mind it is inherently valid (Fellows & Liu, 2003). As previously discussed a semi structured interview with questionnaire is a valid method of collecting empirical data from a small sample of respondents. The fact that this study has been partially based on Thanh Luu et al's (2003) study further contributes to overall validity of this research. By working off the same questionnaire for each interview the research is able reach a level of reliability and consistency, each interview is conducted based off the same questions and in a similar setting (Denscombe, 2003).

3.6 Ethical considerations

Research ethics as outlined by the Unitec Ethic Committee have been followed both in the design and implementation of this research. Anonymity and confidentially was guaranteed and participants were able to decline to answer any of the questions presented to them. All respondents were informed of the Unitec Ethics Committee requirement that all information

relating to the project be kept on file for five years. All research respondents signed and completed the consent form as required by the Unitec Ethics Committee.

Interview participants were made aware of why they were being asked to take part in the research and that their organisations and identities would remain confidential. This study can be classified as “low impact research” (Denscombe, 2003). Low impact research can be defined as: “research that focuses on events or practices that have already naturally occurred without any influence form the researcher” (Denscombe,2003, pp. 136-138).

Denscombe (2003, pp 140-141) describes good ethical research practice as:

Collect and process data in a fair and lawful manner

Use data only for the purposes originally specified

Collect only the data which is actually needed

Keep data no longer than is necessary

Keep the data source secure

Not distribute data

Restrict access to data

Keep data anonymous

These ethical research practices have been followed by the researcher and it is expected that the Unitec staff members responsible for holding the data for five years ensure that the principles listed above are followed by themselves and their organisation.

The researcher conducted the interview having identified themselves as a Unitec student and participants signed a document consenting to the interview and data collection prior to any questioning taking place in accordance with the Unitec Ethics Committee requirements.

Chapter four- data collection and findings

4.1 Introduction

The purpose of the data collection process was to provide data for analysis in order to answer the research question – 'What are the key procurement selection criteria of Auckland interior fitout clients?' The data presented in this chapter was collected using a semi structured interview incorporating a questionnaire as discussed previously. Chapter four presents' data collected from the interview process.

4.2 Response rate

Respondents were made aware the focus of the research via a phone call which also served as a request and acceptance to take part in the research. Prior the actual interview commencing all participants sighted and completed ethics documentation as required by the Unitec Ethics Committee. Of the ten people asked to take part in the interviews all ten agreed to take part and completed an interview which lasted for approximately 15 minutes. All respondents completed the entire interview answering all questions put them and completed interviews were all deemed to be useable.

4.3 Positions and industry sectors of respondents

All respondents had completed a commercial fitout valued over $1million total construction works value in the past 12 months, all respondents had also been actively involved in selection and implementation of procurement routes for said projects. This level of involvement in commercial fitouts was required to take part in the interview to ensure responses were valid and represented actual procurement selection practices of recent interior fitout clients.

4.4 Data presentation

4.4.1 Participant characteristics

Question one sought to identify the roles respondents had within their organisation, responses are presented in the table 2 (page 29). Consultant project managers were interviewed as often these professionals were engaged to make essentially all project related decisions on behalf of the client (excluding perhaps final budget approval or any client instigated design changes) in effect consultant project managers acted as the client's agent and therefore their opinions essentially represented the procurement selection practices of the clients they represented. Client employed project managers were employees of the client organisation and were actively involved in procurement decision making and implementation. These professionals often came from project management backgrounds in fields other than construction.

Table 2- Roles of respondents

Titles	No of respondents
Project Manager (employee of client organisation)	2
Facilities/Building Manager	2
Administration manager	1
Consultant Project Manager	4
Company Director/Associate Director/Partner	1

4.4.2 Economic sectors of participant's organisations

Question 2 was included to identify the sector of the economy each respondent's organisation was involved in. Consultant project managers answered on behalf of the organisations they had recently worked for. One senior project manager had in the past year been in involved in procurement selection for client's from each of the economic sectors identified, hence the greater number of sectors than respondents shown on table 3 below.

The results of the research based on the economic sectors identified above will be heavily biased towards the procurement selection practices of Auckland interior fitout clients involved in the commercial sector of the economy. Identifying bias or limitations of research is important to identify the credibility and reliability of results (Weber, Current, & Benton, 1991).

Table 3- Economic sectors

Economic sectors	Number of responses
Education	1
Commercial	10
Retail	1
Industrial	1
Public sector	1
Healthcare	1

4.4.3 Participant's ratings of procurement path selection advice

Question three sought to ascertain how respondent's organisations utilised procurement path selection advice from a variety of sources. Respondents were asked to rate how their organisation decided on a procurement path on a scale of 1-4, where 1=never, 2=sometimes, 3=usually, 4=always. Out of the ten respondents interviewed all said that consultant advice was usually or always followed to decide on a procurement path. 9 out of 10 respondents said their organisations usually or always utilised past experience to play a part in procurement decision making. Five out of ten respondents said their organisations used a combination of consultant advice and in house expertise in terms of procurement decision making. Four out of ten respondents said their organisations usually used in house experience to drive procurement decision making, but it should be noted all four of these respondents also utilised consultant advice and essentially a combination of in house expertise and consultant advice was used in terms of procurement decision making. Only one of ten respondents said their organisation usually used procurement selection models to guide procurement decision making, five of ten respondents said procurement selection models were used rarely.

The ranking of each form of procurement selection advice is based on mean scores is shown below in table 4. With a mean score of 3.5 consultant's advice was rated as the form of procurement advice most often relied upon to guide procurement decision making, past experience with a mean score of 3.1 was rated as next most utilised driver of procurement decision making, followed by a combination of consultant advice and in house expertise with a mean score of 2.4. The least utilised drivers of procurement decision making were in house expertise with a mean score of 1.8 and procurement selection models with a mean score of 1.

Table 4- Procurement selection advice-participant ratings

Respondents ratings of procurement path selection advice 0-4	R1 CPM	R2 FM	R3 CPM	R4 CPM	R5 CPM	R6 MD	R7 FM	R8 PM	R9 AM	R1 PM	Mean	Rank
Consultant advice	4	3	4	4	4	3	3	3	4	3	3.5	1
In house expertise	0	0	1	1	3	2	3	3	2	3	1.8	4
Combination of consultant advice and in house	1	1	1	2	3	4	3	4	2	3	2.4	3
Procurement selection models	1	1	1	2	3	0	0	1	0	1	1	5
Past experience (historical	3	3	3	3	4	3	3	4	2	3	3.1	2

Key

CPM= Consultant project manager, FM= Facilities manager, MD= Managing director, PM= Project manager (employee of client organisation), AM= Administration manager, R#= Respondent interview number i.e. R1= respondent one

Rating key

0-Never, 1=Rarely, 2=Sometimes, 3= Usually, 4= Always

4.4.4 Participant's ratings of the influence of procurement selection parameters

Question four was essentially the crux of the research and sought to ascertain the actual influence of procurement selection parameters as identified by Thanh Lu et al (2003), amongst Auckland interior fitout clients. The questionnaire required that participants rate the influence of each procurement selection parameter using a six point Likert scale where 0= not influential at all, 1= minimal influence, 2= of some influence, 3= influential, 4=very influential, 5= extremely influential.

The rankings of each procurement selection parameter was based on a mean rating scores as shown on table four on the following page. With a mean rating of 4.7 and standard deviation of 0.483 client budget/cost requirements was rated as being the single most influential parameter on procurement selection, followed closely by client requirement for on time completion with a mean score of 4.6 and standard deviation of 0.516. 10 out of 10 respondents rated these two parameters as being either very influential or extremely influential on procurement decision making. The next most influential parameters were client experience with a mean score of 3.9 and standard deviation of 0.567, followed by client requirements for value for money with a mean score of 3.8 and standard deviation of 0.421.

The procurement selection factor rated least influential was natural disasters with a mean score of 0.2 and a standard deviation of 0.422. The second least influential procurement selection parameter was industrial action with a mean score of 0.4 and standard deviation of 0.516. These two parameters were rated as being of either no influence or minimal influence by all respondents. The next least influential parameters were inclement weather with a mean score of 0.5 and standard deviation 0.707, followed by objections from neighbours with a mean score of 1.5 and a standard deviation of 0.707.

The standard deviations of all 34 procurement selection parameters were relatively similar with the largest standard deviation of 1.033 for client trust of other project participants and the smallest standard deviation of 0.422 for natural disasters. This indicates that the ratings of the 34 procurement selection parameters were relatively similar amongst respective interview participants.

A number of procurement selection parameters were rated as equally once mean scores were calculated, which is perhaps a symptom of the small sample size. 14 parameters had mean scores of between 3.4 and 2.7 respectively the standard deviation for these similarly scored parameters ranged from 1.033 to 0.516 respectively, which is also likely a symptom of the small sample size.

A complete table showing each procurement selection parameter, the rating from each participant, mean score and standard deviation is presented as table five on the following page.

Table 5- Respondent rating of procurement selection parameters

Respondent rating of PSPs 0-5	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Mean	Standard	Rank
	CPM	FM	CPM	CPM	CPM	MD	FM	PM	AM	PM		deviation	
Client budget/cost requirements	5	4	5	5	4	5	5	4	5	5	4.70	0.483	1
Client requirement for on time completion	5	4	5	5	4	4	5	4	5	5	4.60	0.516	2
Client experience	4	4	4	4	4	3	4	4	3	5	3.90	0.568	3
Client requirements in terms of value for money	4	4	4	3	4	4	4	4	3	4	3.80	0.422	4
Market conditions	4	4	3	3	3	4	3	4	4	4	3.60	0.516	5
Clients' financial position	3	4	4	4	2	3	4	4	3	4	3.50	0.707	6
Client type	3	4	4	3	4	3	3	4	3	3	3.40	0.516	11=
Access to in house construction expertise	3	3	4	3	3	3	4	4	3	4	3.40	0.516	11=
Availability of experienced contractors	2	3	5	4	3	3	4	4	3	3	3.40	0.843	11=
Client risk profile	4	4	3	2	3	4	4	4	3	3	3.40	0.699	11=
Level of client involvement	3	3	3	4	3	3	4	4	3	4	3.40	0.516	11=
Client requirements around on going operating costs	3	2	2	3	4	4	4	4	3	3	3.20	0.789	13=
Project scope	3	3	3	5	3	3	3	3	3	3	3.20	0.632	13=
Management of known risk elements	4	4	4	2	2	3	3	4	3	2	3.10	0.876	16=
Potential for innovation	3	3	5	3	2	3	3	4	3	2	3.10	0.876	16=
Client requirements for ongoing maintenance	2	1	4	4	4	2	4	4	3	3	3.10	1.101	16=
Availability of materials	2	3	3	3	2	3	3	4	3	3	2.90	0.568	17
Client's trust of other project participants	2	3	5	3	2	2	2	4	3	2	2.80	1.033	18
Intended function of built asset	2	3	1	4	3	3	3	3	3	2	2.70	0.823	20=
Productivity of labour force	2	3	4	4	3	2	2	2	3	2	2.70	0.823	20=
Potential impact of unknown risk factors	4	3	2	3	2	2	2	3	3	2	2.60	0.699	22=
Regulatory feasibility	2	4	3	2	3	3	2	2	3	2	2.60	0.699	22=
Construction methodology	3	3	2	3	2	2	2	3	3	2	2.50	0.527	24=
Clients' requirements for level of technical performance	2	3	4	3	2	2	2	3	2	2	2.50	0.707	24=
Technological feasibility	2	2	1	2	3	3	2	2	3	2	2.20	0.632	26=
Aesthetic requirements of building	2	2	2	4	3	2	2	1	2	2	2.20	0.789	26=
Cultural influences	1	1	1	3	1	2	3	3	3	1	1.90	0.994	27
Objections from lobby groups or other interested parties	1	3	1	1	1	2	2	1	3	1	1.60	0.843	29=
Political influences	1	2	1	1	1	2	3	1	3	1	1.60	0.843	29=
Objections from neighbors	1	2	1	1	1	2	2	1	3	1	1.50	0.707	30
Site location	1	1	2	2	2	1	1	2	1	1	1.40	0.516	31
Inclement weather	0	0	0	1	2	0	0	1	0	1	0.50	0.707	32
Industrial action	0	0	1	1	1	0	0	1	0	0	0.40	0.516	33
Natural disasters	0	0	0	0	1	0	0	1	0	0	0.20	0.422	34

Key

CPM= Consultant project manager, FM= Facilities manager, MD= Managing director, PM= Project manager (employee of client organisation), AM= Administration manager, R#= Respondent interview number i.e. R1 respondent one

Rating key

0= Not influential at all, 1= Minimal influence, 2= Of some influence, 3= Influential, 4=Very influential, 5= Extremely influential

Table five (presented below) compares rankings and mean scores of this research to Thanh Luu et al's (2003) study. As previously noted the wording of some parameters was changed so as to ensure interview participants were clear about what they were being asked and to avoid confusion, essentially parameters were put into 'layman's terms'. Further analysis and discussion of this comparison is presented in Chapter 5. It should be noted the Thanh Luu et al (2003) study initially calculated mean and scores and rankings based on the role of the respondent then provided an overall mean score and ranking for each parameter. The overall score as calculated by Thanh Luu et al (2003) has been used for comparison in table five.

Table 6- Comparison to original study

Respondent rating of PSPs 0-5	**Mean**	**Rank**	**Thanh Luu et al (2003)**	Mean	Rank
Client budget/cost requirements	4.70	1	Client requirement for within budget completion	4.23	1
Client requirement for on time completion	4.60	2	Client requirement for on time completion	4.2	2
Client experience	3.90	3	Client requirement for value for money	3.99	3
Client requirements in terms of value for money	3.80	4	Project type	3.86	4
Market conditions	3.60	5	Project size	3.82	5
Clients' financial position	3.50	6	Market's competitiveness	3.68	6
Client type	3.40	11=	Client's willingness to take risks	3.51	7
Access to in house construction expertise	3.40	11=	Availability of experienced contractors	3.5	8
Availability of experienced contractors	3.40	11=	Clinet's trust towards other parties	3.49	9
Client risk profile	3.40	11=	Known site factors likely to cause problems	3.48	10
Level of client involvement	3.40	11=	Technological feasibility	3.42	11
Client requirements around on going operating costs	3.20	13=	Client's experience	3.33	12
Project scope	3.20	13=	Client's willingness to be involved	3.23	13
Management of known risk elements	3.10	16=	Client's in house technical capability	3.21	14
Potential for innovation	3.10	16=	Building construction type	3.12	15
Client requirements for ongoing maintenance	3.10	16=	Client type	3.08	16
Availability of materials	2.90	17	Client's requirement for low operational costs	3.04	17
Client's trust of other project participants	2.80	18	Client's requirements for low maintenance costs	2.98	18
Intended function of built asset	2.70	20=	Client's financial capability	2.98	19
Productivity of labour force	2.70	20=	Client's requirement for highly serviced or technically advanced building	2.93	20
Potential impact of unknown risk factors	2.60	22=	Regulatory fesibility	2.89	21
Regulatory feasibility	2.60	22=	Materials availability	2.86	22
Construction methodology	2.50	24=	Unkown site risk factors	2.83	23
Clients' requirements for level of technical performance	2.50	24=	Client's requirement for asthetic building	2.81	24
Technological feasibility	2.20	26=	Political constraints	2.73	25
Aesthetic requirements of building	2.20	26=	Industrial actions	2.58	26
Cultural influences	1.90	27	Use of pioneering technology	2.54	27
Objections from lobby groups or other interested parties	1.60	29=	Labour productivity	2.52	28
Political influences	1.60	29=	Project site location	2.49	29
Objections from neighbors	1.50	30	Objection from neighbour	2.4	30
Site location	1.40	31	Objections from local lobby groups	2.38	31
Inclement weather	0.50	32	Inclement weather	2.3	32
Industrial action	0.40	33	Cultural differences	1.93	33
Natural disasters	0.20	34	Natural disasters	1.58	34

Rating key

0= Not influential at all, 1= Minimal influence, 2= Of some influence, 3= Influential, 4=Very influential, 5= Extremely influential

A table of the most influential parameters was compiled for two purposes, firstly in order to facilitate a comparison with Thanh Luu et al (2003) and secondly in order to discuss findings in relation to the research question. The top two parameters client budget/cost requirements and client requirement for on time completion achieved mean scores of 4.7 and 4.6 respectively. Table 6 presents the 11 most influential parameters as five parameters had equal mean scores of 3.4 and therefore could not be separated.

Table 7- Most influential parameters

Most influential parameters	Rank	Mean
Client budget/cost requirements	1	4.7
Client requirement for on time completion	2	4.6
Client experience	3	3.9
Client requirements in terms of value for money	4	3.8
Market conditions	5	3.6
Client's financial position	6	3.5
Availability of experienced contractors	11=	3.4
Client risk profile	11=	3.4
Level of client involvement	11=	3.4
Access to in house construction expertise	11=	3.4
Client type	11=	3.4

In order to collect and collate data so as to answer the research question and facilitate comparison with Thanh Luu et al (2003) a table of the least influential parameters is also presented. Natural disasters were rated as least influential with a mean score of 0.2 followed by industrial action, and inclement weather with mean scores of 0.4 and 0.5 respectively. Table seven presents the least influential procurement selection parameters.

Table 8- Least influential parameters

Least influential parameters	Rank	Mean
Aesthetic requirements of building	25=	2.2
Technological feasibility	25=	2.2
Cultural influences	27	1.9
Objections from lobby groups or other interested parties	28=	1.6
Political influences	28=	1.6
Objections from neighbors	30	1.5
Site location	31	1.4
Inclement weather	32	0.5
Industrial action	33	0.4
Natural disasters	34	0.2

4.4.5 Parameter ratings explained

Question five of the questionnaire asked participants why certain parameters had been rated as either high (4 or 5 out of 5) or low (0 or 1 out of 5). No such data is presented in the Thanh Luu et al (2003) study and therefore no comparison can be made, this data is however useful in answering the research question.

All respondents rated client requirement for on budget completion and client for on time completion as either 4 out of 5 or 5 out of 5. All respondents indicated that these two parameters were most critical to the overall perception of project success or failure in the eyes of the client.

Client experience was rated as being influential to procurement because of impacts on reporting and procurement path implementation by 7 out of 10 respondents. Value for money was rated as being influential to procurement path selection as it was perceived as being a key determinant of client satisfaction by 6 out of 10 respondents. Market conditions were rated as being very influential by 6 out of 10 respondents due to the impact economic conditions have on overall cost i.e. difficult market conditions tend to equate to more competitive pricing and a preference for competitive tenders. Client financial position was rated as being very important by 6 out of 10 respondents. This was primarily explained as being due to influencing the weighting of procurement paths in terms of ability to deliver lowest cost, primarily identified as being a competitive tender (design-bid-build) process.

The parameters rated as equal 11th most influential in terms of procurement selection all had mean scores of 3.4 and rated as very important or extremely important by between four and six out of 10 respondents. The availability of experienced contractors was explained as being rated highly due to the ability of experienced contractors to deliver in terms of financial and time constraints. Whilst client risk profile and level of client experience were rated highly due to the 'horses for courses' nature of procurement selection by four out of ten respondents, different systems offer different benefits to clients.

Client access to in house construction expertise, client type and level of client involvement were noted as being interdependent parameters as often the level client involvement is dictated by the client's access to in house construction expertise, which in turn is often dictated by client type. These three parameters were rated as being very important by four out of ten interview respondents. These parameters were rated as being very important by these respondents again due to the 'horses for courses' nature of construction procurement, different procurement systems offer varying benefits in terms of client understanding and involvement.

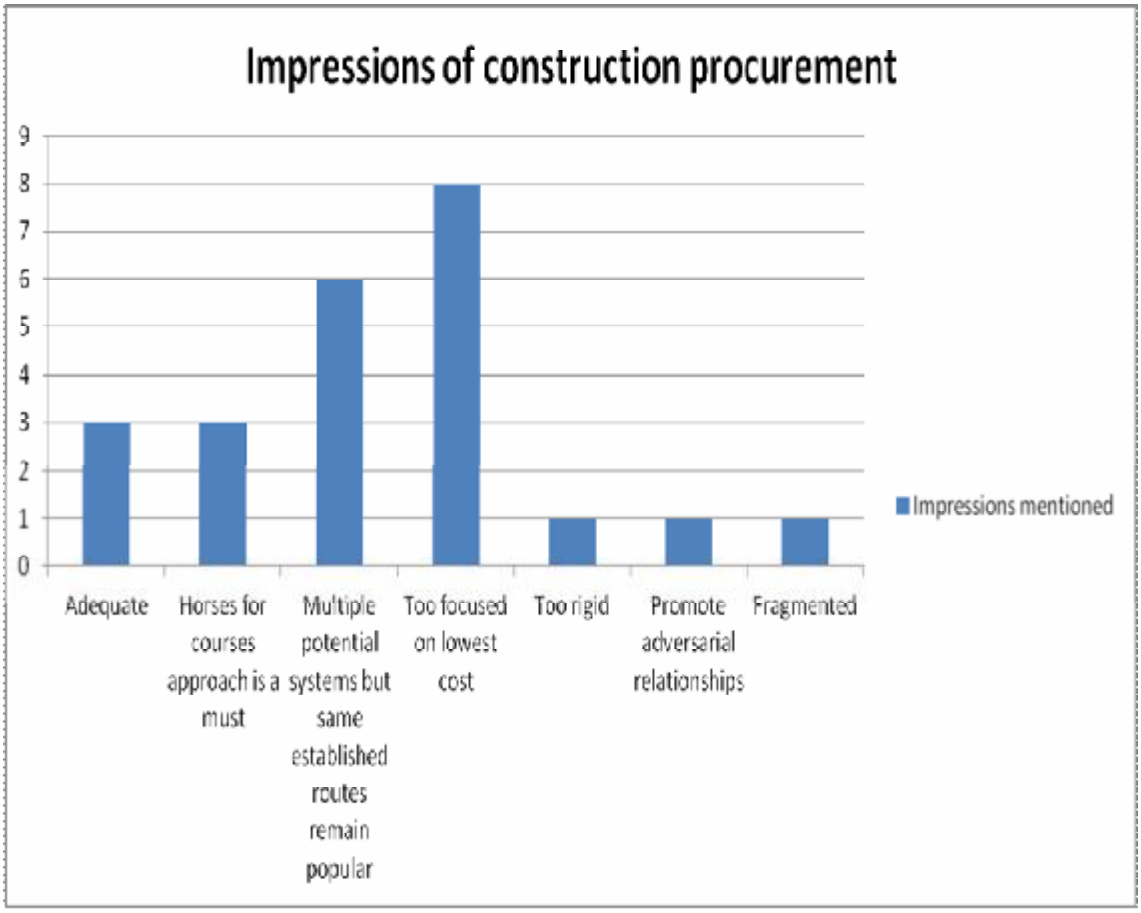
Natural disasters, inclement weather and industrial action all had mean scores of below one. Nine out of respondents rated all three of these parameters as being either not influential at all, or being of minimal influence. Interview respondents noted that procurement is unable to mitigate the effects of a natural disaster and that it is unlikely that such an event would occur. Interviewees noted that in terms of interiors work inclement weather is irrelevant as work areas are not exposed to the elements.

Site location, objections from neighbours, political influences and objections from lobby groups or interested parties were rated as being of minimal influence by six out of ten participants. Participants commented on site location being rather irrelevant for interiors projects excepting certain material delivery constraints. Objections from neighbours and lobby groups were rated as being of minimal importance due to the fact that once a project has regulatory and landlord approval objections from neighbours can usually be mitigated. Political influences were rated as being of minimal importance again due to the fact that once regulatory approval and landlord approval have been granted political concerns can generally be mitigated. Site location was rated as being of minimal influence because of the nature of interiors projects with sites typically being relatively similar.

4.4.6 Participant's impression of construction procurement options

Question six was included to ascertain the opinions of research respondents in terms of the broad topic of construction procurement. The responses to this open ended question were quantified by picking out key themes of respondent answers and tallying how often each was mentioned. Several respondents identified multiple themes/impressions of construction procurement. Respondent's impressions of construction procurement are presented in the figure 1.

Figure 1 Impressions of construction procurement

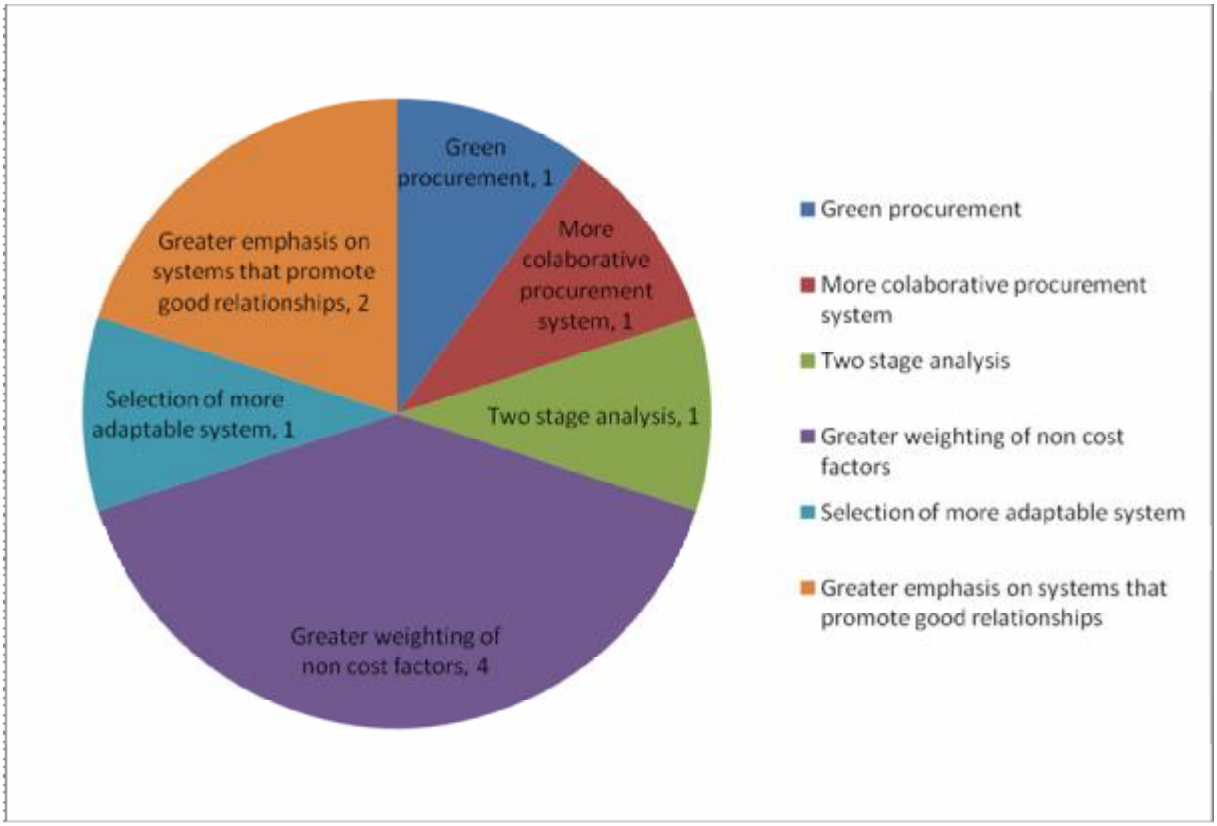


4.4.7 Respondent's ideas to improve construction procurement

Question seven was an open ended question included to ascertain what if anything interview respondents would change in terms of their procurement selection practices. The responses to this open ended question were quantified by picking out key themes of respondent answers and tallying how often each was mentioned. No respondent identified more than one theme.

Despite the clear rating of budget requirements and on time completion as being most influential to procurement selection, four of ten respondents identified greater weighting of non cost factors as something that they would change if procuring construction industry services in future. The two stage analysis response related to a 1st screening stage where benefits other than cost minimisation were assessed then in the 2nd stage cost impacts would be evaluated. Green procurement related to greater emphasis on systems that promote the "green supply chain" and utilise local companies and materials as much as possible. Participant's responses are presented in figure 2 below.

Figure 2 Procurement selection improvements



4.5. Chapter summary

Chapter four presented data collected through the interview process and also presented an initial analysis of data collected. Demographic information was presented initially followed by data relating to respondents ratings of varying forms of procurement selection advice. The crux of the research was presented in the form of several tables and graphics, most notably showing the ratings, mean and rankings of the 34 procurement selection parameters. Finally data complied from the open ended question segment of the questionnaire has been presented. Chapter five will present an in depth discussion of findings in terms of the research question utilising the data presented in this chapter.

Chapter five- Discussion and findings

5.1 Introduction

Chapter five discusses the findings of the research based on the data presented in chapter four. Discussion surrounding the utilisation of procurement selection advice from multiple sources will be discussed and essentially the crux of the research the ratings of procurement selection parameters and reasoning for these ratings are discussed and analysed in this chapter. Finally this chapter will present discussion surrounding overall impressions of construction procurement and respondent's thoughts on improving their own procurement selection practices.

5.2 The questions

The questionnaire utilised during the interview (see appendix A) contained a total of seven questions. Initially respondents were asked two background questions followed by one question asking respondents how their organisation decided upon a procurement path. The fourth question was the main focus point of the research and asked respondents to rate the influence of 34 procurement selection parameters when deciding upon a procurement path. The findings obtained from the fourth question will be discussed first as it represents the most critical discussion in terms of the research question. Three open ended questions asked respondents why they had rated certain procurement selection parameters as high or low, their overall impressions of construction procurement and what if any changes they would make in terms of procurement in the future. All respondents fully completed the interview and answered all questions.

5.3 Key procurement selection criteria of Auckland interior fitout clients

The reader is asked to refer to chapter four for a complete table showing mean scores and rankings of each procurement selection parameter and complete tables presenting most and least influential parameters.

The standout feature of the most influential procurement selection parameters is the gap between the mean scores of 4.7 & 4.6 respectively for the time and cost parameters and the rest of the parameters rated as being most influential. It is interesting to note that on the table of most influential procurement selection parameters 4 out of 11 can be described as financial factors or cost factors namely client cost/budget requirements, client's financial position, client requirement in terms of value for money and market conditions. One factor relates to project completion time and several research participants noted that essentially 'time is money'. Four out of 11 of the most influential parameters related to the client organisation namely client experience, level of client involvement, client type and client risk profile. The availability of experienced contractors and client risk profile were also rated as being among the most influential procurement selection parameters, several research participants noted that experienced contractors were most likely to be able to deliver the project on time and on budget. This suggests that the time and cost paradigm is prevalent amongst client's of Auckland's interior fitout industry. This was to be expected as numerous studies focused on

various construction industry sub sectors have consistently concluded that time and cost are they overriding determinants of the perception of project success or failure.

Quality related parameters were not rated as being among the most influential by research participants. This was possibly a result of having several individual parameters which could be considered as quality parameters as opposed to a single simple parameter i.e. client requirements for overall quality (or similar).Of the procurement selection parameters rated as being least influential most interview participants noted that the bottom 3 parameters were not very applicable to interiors projects. It was also noted by several respondents that industrial action has not been a major issue in the NZ construction industry for some time. It is interesting to note that of procurement selection parameters rated as being least influential 4 out of 10 could be classified our grouped as objections or concerns from 3rd parties. Several respondents suggested that providing regulatory requirements have been met 3rd party objections can generally be either alleviated or minimised.

The 14 remaining procurement selection parameters had mean scores of between 2.5 and 3.2 indicating that all were rated of a similar level of influence. A number of the 14 procurement selection parameters rated in this middle group by research participants had equal mean scores. This would indicate that a reasonable consensus existed regarding the influence of these respective procurement selection parameters amongst research participants. It is noteworthy that the same group of respondents who overwhelming rated budget requirements and time requirements as being most influential to procurement selection also considered that too much emphasis was placed on the pursuit of lowest cost above all else. This indicates that whilst a general consensus exists amongst clients of Auckland's interior fitout industry regarding the influence of procurement selection parameters these same people also recognise the at times destructive consequences of focusing solely on lowest cost.

The standard deviations of respective parameters was generally low between 0.433 and 1.033 indicating that a reasonable level of consensus exists regarding the influence of respective parameters on procurement selection. Low standard deviations were equally true of parameters rated as either very or extremely influential and not influential at all or of minimal influence. Low standard deviations were also likely a result of the small sample size.

5.3.1 Comparison of parameters to original research

The reader is asked to refer to table five for a fully ranked list comparing this research to Thanh Luu et al's (2003) study. It is also important to note that the wording of the majority of the procurement selection parameters was slightly altered for this research to ensure participants understood what was being asked of them. Also the Thanh Luu et al (2003) asked well over 200 people to rate the parameters as opposed to the ten respondents who took part in this study. Thanh Luu et al's (2003) study related to construction projects in general as opposed to focusing on interior fitouts as per this research. Thanh Luu et al (2003) presented tables representing the difference between the ratings project managers gave to procurement selection parameters versus clients ratings. This has not been presented as part of this research due the small sample size rendering such an activity irrelevant. Thanh Luu et al (2003) also performed statistical analysis to identify the relationships between the 34

parameters which has not been attempted as part of this research. None the less the exercise of comparing the overall rankings of parameters in this study to Thanh Luu et al (2003) is a valid exercise.

Thanh Luu et al's (2003) study found that by far the most influential procurement selection parameters were related to project time and cost, as did this research once again reinforcing the overriding influence of the time and cost paradigm in construction procurement thinking. Of the top eleven parameters from this research five were also ranked in the top eleven in Thanh Luu et al's (2003) study. A major reason for the six parameters that differ between the studies is the focus of this research on interiors projects. Parameters including project type, project size, technological feasibility and known site risk factors are not as influential on interiors projects as they are on new build projects. Parameters including level of client involvement, access to in house expertise and client experience seem to be more influential on interiors procurement than on new build project procurement. These differences can to a large extent be explained by the unique nature of interiors projects when compared to new builds in terms of time frames, construction environment and coordination with building and facilities managers. A table comparing the top parameters from each study is presented as table 9 below.

Table 9- Comparison of most influential parameters to previous research

Most influential parameters	Rank	Mean	Thanh Luu et al (2003) most influential	Mean	Rank
Client budget/cost requirements	1	4.7	Client requirement for within budget completion	4.23	1
Client requirement for on time completion	2	4.6	Client requirement for on time completion	4.2	2
Client experience	3	3.9	Client requirement for value for money	3.99	3
Client requirements in terms of value for money	4	3.8	Project type	3.86	4
Market conditions	5	3.6	Project size	3.82	5
Clients' financial position	6	3.5	Market's competitiveness	3.68	6
Availability of experienced contractors	11=	3.4	Client's willingness to take risks	3.51	7
Client risk profile	11=	3.4	Availability of experienced contractors	3.5	8
Level of client involvement	11=	3.4	Client's trust towards other parties	3.49	9
Access to in house construction expertise	11=	3.4	Known site factors likely to cause problems	3.48	10
Client type	11=	3.4	Technological feasibility	3.42	11

In terms of parameters rated as being the least influential eight of ten parameters were the same in both studies. This suggests that a reasonable consensus exists in terms of which parameters are considered either of minimal influence or not influential at all. A table comparing the least influential parameters form each study is presented as table 10 on the next page.

Table 10- Comparison of least influential parameters to previous research

Least influential parameters	Rank	Mean	Thanh Luu et al (2003) least influential parameters	Mean	Rank
Aesthetic requirements of building	25=	2.2	Political constraints	2.73	25
Technological feasibility	25=	2.2	Industrial actions	2.58	26
Cultural influences	27	1.9	Use of pioneering technology	2.54	27
Objections from lobby groups or other interested parties	28=	1.6	Labour productivity	2.52	28
Political influences	28=	1.6	Project site location	2.49	29
Objections from neighbors	30	1.5	Objection from neighbour	2.4	30
Site location	31	1.4	Objections from local lobby groups	2.38	31
Inclement weather	32	0.5	Inclement weather	2.3	32
Industrial action	33	0.4	Cultural differences	1.93	33
Natural disasters	34	0.2	Natural disasters	1.58	34

5.4 Procurement selection advice

The advice of professional consultants was by far the most commonly used method of deciding upon a procurement path. This was hardly surprising given the number of consultant project managers interviewed and given the fact that most if not all construction projects are served by a virtual army of consultants and sub consultants. The overriding thoughts of research participants was that construction industry professionals are employed because of their knowledge and experience in the procurement of built assets and therefore their advice is almost always followed. In the case of client employed project managers in most instances a consultant was employed to work alongside them to compensate for a lack of construction knowledge and experience and/or to minimise perceived or actual risks of the procurement of construction industry services.

Past experience was also usually used to determine a procurement path. A key difference between experienced and inexperienced construction industry clients is the ability of experienced clients to utilise past experience to aid in the selection and implementation of a procurement route (Masterman, 1994). Inexperienced clients are best advised to utilise consultant advice from project inception to completion (Masterman, 1994). Both these trends are visible in the data presented for this research.

Procurement selection models were only used often by one consultant project manager, with other consultant project managers suggesting that on occasion a simple matrix was utilised to determine the appropriateness of respective procurement systems in terms of project requirements. It should be noted that a simple matrix is not a pure procurement selection model but rather an adaptation of a common generic application to aid in the selection of a procurement system (Alhazmi & McCaffer, 2000). Several interview participants were unsure of what procurement selection models were. This result seems to be consistent with the perception that while procurement selection may in some cases be beneficial they are not widely used. In house experience and a combination of consultant advice and in house experience were utilised in some instances but were usually secondary to the advice of specialist construction industry consultants.

5.5 Impressions of construction procurement

It is noteworthy that the same group of respondents who overwhelming rated budget requirements and time requirements as being most influential to procurement selection also considered that too much emphasis was placed on the pursuit of lowest cost above all else. It is also worth noting that despite the myriad of procurement routes available several participants were of the opinion that the same well established routes remain popular. Only one respondent noted the link between focus on lowest cost and promotion of adversarial relationships. This is an obvious contradiction with the ratings given to procurement selection parameters (see page 30) and seems to indicate that whilst respondents are aware of the flaws in thinking only in terms of time and cost these factors are undeniably the measure of the perceived success or otherwise of any construction project.

The perception that selecting a construction procurement system is essentially a 'horses for courses' approach is consistent with several other studies which have concluded that the selection of a procurement system must match a multitude of variable parameters and project specific requirements to the procurement best able to meet these requirements.

5.6 Procurement selection improvements

Again it is an interesting contradiction that the same group who overwhelmingly rated project cost as the most influential procurement selection parameter, also suggested that if they were to change anything in terms of future procurement selection practices they would assign a greater influence or weighting to non cost parameters. The fact respondents also suggested focusing on systems that promote good working relationships is also contradictory to the weighting of lowest cost before all else. The relationship between focus on lowest cost and adversarial relationships amongst construction project participants should not be ignored (Geringer, 1991).

5.7 Chapter summary

Chapter five has discussed and analysed the data and results presented in the previous chapter. The parameters of time and cost are overwhelmingly the most influential in terms of procurement system selection. This finding is consistent with the findings of Thanh Luu et al (2003) and several other notable studies. Other influential factors included client requirement for value for money, client experience, market conditions, client's financial position, availability of experienced contractors, level of client involvement, client risk profile, access to in house construction expertise and client type. These findings were relatively consistent with Thanh Luu et al (2003) although some differences did exist. These differences were likely a result of the fact this research was focused on the interiors sector which is unique in terms of construction environment therefore also procurement requirements. Consultant advice is the single most commonly utilised procurement route selection practice, which is consistent with prevalence of consultants within the construction industry. Interestingly despite rating cost as the overwhelmingly most influential parameter research participants also suggested that too much emphasis is placed on ensuring a procurement system is capable of delivering lowest cost and that non cost factors should be afforded a higher weighting. Also of note was the fact respondents suggested that a greater emphasis should be placed on

procurement systems that promote good working relationships despite the obvious clash between constantly striving to reduce and save on cost and still maintain good relationships with other parties looking to make a profit from the project.

Chapter six- Conclusion and future research

6.1 Introduction

Chapter six summarises notable findings of this research and presents a general overview of the research and draws final conclusions. Chapter six also outlines the limitations of this research and suggests areas for future research.

6.2 Research overview

A great number of alternative procurement systems exist all with different inherent strengths and weaknesses, no two construction projects are the same and therefore the selection of a procurement system is essentially a 'horses for courses approach'. The literature review also indicated that the type of client plays a key role in determining the appropriateness of any given procurement system, as any procurement route must be appropriate for the client type and project specific requirements. A vast number of alternative procurement selection parameters exist and it is therefore imperative that appropriate weightings are assigned to each parameter when procurement routes are being assessed against one another. With such an ocean of clients, projects, procurement selection parameters, alternative procurement selection techniques and procurement routes available to today's construction client it has become imperative that some form of detailed and through pre selection evaluation of not only alternative routes but procurement selection parameters is carried out.

Thanh Luu et al's (2003) Australian study asked respondents to rate on Likert scale the 34 pre identified procurement selection parameters in terms of influence on procurement selection. This study was focused on new build construction projects. However no such study had ever been conducted into the unique requirements on interior fitout clients and more specifically Auckland interior fitout clients. This survey utilised the 34 parameters as identified by Thanh Luu et al (2003) and in the form of a semi structured interview asked Auckland interior fitout clients to rate the parameters on a Likert scale of 0-5 in terms of influence on procurement selection. The research also asked interior fitout clients how often they utilised alternative forms of procurement selection and their overall impressions of construction procurement including any potential improvements they could make to their own procurement selection practices. The research addresses the question 'What are the key procurement selection criteria of Auckland interior fitout clients?'

Through a process of conducting interviews and compiling the data obtained key procurement selection criteria of Auckland interior fitout clients was assessed and results partially compared to the findings of Thanh Luu et al (2003). Findings have also been presented regarding procurement selection practices, overall impressions of construction procurement and possible areas of improvement in terms of procurement selection within interview respondents own organisations.

6.4 Research findings

The well established time and cost paradigm is as prevalent amongst Auckland interior fitout clients as in other construction industry sectors and elsewhere in the world. The procurement selection parameter of client requirement for budget/cost requirements was universally rated

as the single most influential parameter on procurement route selection. This was closely followed by client requirement for on time completion. These two parameters were clearly rated as being the most influential in terms of procurement selection. The next most influential parameters were client experience and client requirement for in terms of value for money. These findings were generally consistent with international studies and particularly with Thanh Luu et al (2003). However overall impressions of construction procurement suggested that the same group also felt too much emphasis was placed on lowest cost.

Consultant advice was the most commonly utilised procurement selection practice with respondents stating that essentially the consultants they employ are relied upon to make project decisions that require some level of construction knowledge. This was consistent with other studies. Procurement selection models were not well utilised which was also consistent with other studies.

The findings of this study further confirm the well established view that time and cost requirements are the primary measure of success or failure of any project and are therefore most influential when deciding upon a procurement path.

6.5 Research limitations

The small sample size of this study is a major limitation in terms of the usefulness and reliability of findings. With such a small sample of only ten participants it is impossible for the findings or data to have any real statistical value as participants represent such a small section of the pool of interior fitout clients in Auckland. The techniques used to compile and evaluate data collected were relatively basic and were not intended to constitute in depth statistical analysis.

Results of this study may also be influenced by the prevailing economic uncertainty at the time of implementation, which may have lead to an undue level of influence being assigned to cost parameters.

The comparison to Thanh Luu et al (2003) is also limited for several reasons. Firstly the wording of most parameters was slightly altered to ensure participants understood what was being asked of them. However the slight difference in wording could well have resulted in participants responding differently to the question than if the wording had been identical. The comparison was also limited as the focus of Thanh Luu et al's (2003) study was far broader than this research. The statistical analysis and parameter groupings as carried out by Thanh Luu et al (2003) were not attempted for this study, which further limits the reliability of any comparison. Finally Thanh Luu et al (2003) compared the responses of project managers and clients which could not be attempted in this study as the small sample size would have rendered any such comparison irrelevant.

6.6 Future research

One primary area of future research could and perhaps should focus on how non cost related factors can be applied to procurement decision making. This is not a new idea but one of the overriding comments from research participants was that too much emphasis is placed on

cost related procurement parameters. This suggests that as yet no suitable solution has been devised to accommodate non cost factors in procurement thinking.

Another potential area of future research could focus on how satisfied clients were with their procurement decisions and could include procurement route utilised, how procurement selection parameters were rated in terms of influence, how well project relationships worked and overall project performance in terms of pre defined performance criteria. This suggestion is based on the trend identified in the literature of a variety of competing factors dictating project success or failure.

6.7 Conclusion

The simple answer to the research question is that budget/cost requirements and the requirement for on time completion are the key procurement selection criteria of Auckland interior fitout clients. This finding supports the existing literature surrounding the topic of construction procurement. Overall results suggest while cost related factors are without a doubt the most influential in terms of procurement selection there is a realisation amongst interiors clients and consultants that perhaps this focus on lowest cost above all else is at least somewhat flawed and that greater focus on other parameters or criteria could be beneficial to construction industry.

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Appendix A- Questionnaire

Key procurement decision criteria: An empirical study of Auckland interior fitout clients

Question 1- Please tick the option which BEST describes your current position.

Titles	Tick one only
Project Manager (employee of client organisation)	
Procurement Manager	
Facilities/Building Manager	
Administration	
Consultant Project Manager	
Company Director/Associate Director/Partner	
Project coordinator	
Financial controller	
Other (please specify)	

Question 2- Which economic sector(s) is your organisation involved in?

Economic sectors	Tick if applicable
Education	
Commercial	
Retail	
Industrial	
Private sector	
Other (please specify)	

Question 3- How does your organisation decide upon a procurement path?

How does your organisation decide on a procurement path?	Never	Rarely	Some-times	Usually	Always
	0	1	2	3	4
Consultant advice					
In house expertise					
Combination of consultant advice and in house expertise					
Procurement selection models					
Past experience (historical projects)					

Question 4- Please rate the level of influence on procurement selection of the 34 Procurement Selection Parameters (PSPs) identified in the literature, with 0= no influence at all, through to 5 extremely influential

Please rate on a scale of 0-5 how influential each of the 34 PSPs are on procurement selection	Not influential at all	Minimal influence	Of some influence	Influential	Very influential	Extremely influential
	0	1	2	3	4	5
Client experience						
Client type						
Access to in house construction expertise						
Clients' financial position						
Client risk profile						
Level of client involvement						
Client's trust of other project participants						
Clients' requirements for level of technical						
Aesthetic requirements of building						
Client requirement for on time completion						
Client budget/cost requirements						
Client requirements for ongoing maintenance						
Client requirements around on going operating costs						
Client requirements in terms of value for money						
Project scope						
Intended function of built asset						
Construction methodology						
Site location						
Potential impact of unknown risk factors						
Management of known risk elements						
Potential for innovation						
Market conditions						
Technological feasibility						
Regulatory feasibility						
Availability of materials						
Availability of experienced contractors						
Productivity of labour force						
Inclement weather						
Please rate on a scale of 0-5 how influential each of the 34 PSPs are on procurement selection	Not influential at	Minimal influence	Of some influence	Influential	Very influential	Extremely influential
	0	1	2	3	4	5
Natural disasters						
Industrial action						
Objections from neighbors						
Objections from lobby groups or other interested parties						
Political influences						
Cultural influences						

Open ended questions
This section of the interview is designed to ascertain your opinions on construction procurement and to determine why you rated certain PSPs are more or less influential
Q5. Why did you rate certain PSPs as either very influential (4-5/5) or not influential (0-1/5) ?
Q6. Please describe your overall impressions of procurement options the construction industry offers its' clients ?
Q7. If you were to deal with the construction industry again in the future, what if anything would you change in terms of procurement ?