

Customer Perceptions of Value Disciplines in the Construction Industry

Jerome Neil Govender

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ABSTRACT

The purpose of this research was to determine to what extent construction customers' views of the value disciplines (Treacy & Wiersema, 1993, 1995a, 1995b) could be used by construction companies to develop a broader platform for competitive advantage, other than lowest price.

To achieve this, the research determined the most important value discipline to customers and the most important attributes per value discipline. Furthermore, construction consultants are important influencers in the selection of construction firms. Therefore the research also determined to what extent consultants' views of the value disciplines were consistent with the views of customers.

The research found that customers rated the value discipline of Customer Intimacy the highest as opposed to consultants who rated Operational Excellence the highest. The three most highly ranked attributes of all value disciplines were quality, understanding customer needs, and the reputation of the contractor's project team.

DECLARATION

I, Jerome Neil Govender declare that this research report is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Jerome Neil Govender

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1. INTRODUCTION

The purpose of this research was to determine the attributes that customers of the construction industry value in construction offerings. This determination was conducted within the framework of the value disciplines introduced by Treacy & Wiersema (1993, 1995a, 1995b).

This chapter discusses the background, context, and scope of the study in order to define the problem that the research addresses.

1.1 Background to the problem

The construction industry plays an important role in the South African economy. It contributes approximately 35% of South Africa's gross domestic capital formation and employs over 400 000 people (Department of Public Works, 1999). In 2002, it contributed 5.1% to Gross Domestic Product (CIDB, 2004). The industry provides the physical infrastructure that is essential to the country's development and impacts the lives of all South Africans facilitating the delivery of social and economic infrastructure such as potable water, sanitation, electricity, health, education, transport, industrial, commercial and residential infrastructure (CIDB, 2004).

The South African construction industry is also characterised by declining performance and an apparent inability to create value for clients (Hodgson, 2002). Hardy and Davies (1983) and the Department of Public Works (1999) assert that this characterisation is linked to the fact that the only apparent competitive advantage in the construction industry is the ability to offer clients the lowest price. However the lowest price does not mean the best value (Department of Public Works, 1999).

1.2 Context of the Study

The issues of poor performance in the construction industry as characterised by Hodgson (2002) are described by Singh & Tiong (2005) as being cost and duration overruns, serious problems in quality standards and safety measures, and an increased number of claims, counterclaims and litigation. Singh & Tiong (2005) argue that to minimize the risk of poor performance, the selection of an appropriate contractor to deliver a construction project within the performance requirements of the customer, is the most crucial challenge faced by any construction customer.

The construction customer's task of construction firm selection is exacerbated by low barriers to entry to the industry. Low barriers to entry have encouraged greater numbers of new entrants of construction firms ranging from small scale firms to large firms (Singh & Tiong, 2005). The proliferation of these construction firms, along with the shrinking of construction markets in developed and developing markets, has led to fierce competition for the limited number of construction projects. In addition, they usually compete in a highly volatile construction environment full of uncertainties and unknown risks.

There are also complexities in construction projects that are peculiar to the industry. No two projects are identical in terms of site conditions, design, use of materials, labour requirements, plant and equipment requirements, construction methods, technical complexity and the management skill required to deliver the project successfully (Singh & Tiong, 2005). This further underpins the assertion made by Singh & Tiong (2005) that in such a situation, the crucial dilemma faced by all construction customers is which contractor to select for the job.

However, despite this considerable increase in the complexity of construction projects and clients needs, along with an associated increase in alternative forms of delivery, Singh & Tiong (2005) point out that contractor evaluation criteria

themselves have remained virtually unchanged over the last three decades. The key construction firm selection criterion has remained price.

Hardy & Davies (1983) argue that the construction industry has traditionally, and continues to exemplify the competitive price bidding method of obtaining business. In many cases, the current adjudication practice by the public sector and most private sector clients place emphasis on price at the expense of overall value. The Department of Public Works (1999) believes that this has compelled the industry to seek immediate cost savings with little regard for long-term consequences in order to remain competitive with resultant negative consequences for the industry and clients.

Singh & Tiong (2005) support the view of the Department of Public Works (1999) and maintain that the selection of the contractor based on lowest tender price is one of the major reasons for project delivery problems as contractors quote desperately low prices by reducing their quality of work in the hope of being compensated by submitting claims.

In addition to the decline in performance of construction companies as explained earlier in this section (Singh & Tiong, 2005) the negative consequences that the practice of competitive price bidding has for the construction industry includes discouraging innovation, fragmentation of the industry, and impeding the growth of efficient firms (Hardy & Davies, 1983).

Grobler & Pretorius (2002) argue that price should not be the only award criteria. Instead factors such as previous records of quality of work, management ability and other important project success criteria should be included in an award system.

They (Grobler & Pretorius, 2002) contend that if the financial risk for contractors is reduced (by price not being the only award criteria) contractors can

concentrate on other important success criteria such as safety, completion on time and quality of the end product.

Given this environment in the construction industry, how do construction companies address the issue of creating customer value?

Treacy & Wiersema (1993, 1995a, 1995b) contend that leading and well known companies such as Nike and Dell, were able to attain their leadership position by changing what customers value and how that value is delivered. They assert that these companies focused on delivering superior value by focusing on one of three value disciplines i.e. Operational Excellence, Product Leadership, or Customer Intimacy.

These value disciplines form the theoretical framework of this study and are used to investigate how construction companies can create value for clients and develop a broader platform for competing based on more than just lowest price. This research builds on the theoretical underpinnings of Brown (2001) who carried out a similar study in the Retail Banking sector and the quantitative technique used by Daines (2003) whose study focussed on Industrial Buyer behaviour. Brown (2001) sought to establish whether there was a difference in the value that banks delivered, the customer's perception of value, and the value that customers actually wanted. Daines (2003) used Conjoint Analysis techniques in his study which is the quantitative technique used in this research.

This research seeks to determine how value is perceived by construction customers (within the framework of the value disciplines). This could ultimately assist construction companies to differentiate their offerings to customers beyond simply price. These offerings could then potentially form the basis of competitive advantage for construction firms that are not based on lowest price.

1.3 The Role of Construction Consultants

Hardy & Davies (1983:11) assert that a distinctive feature of the construction industry is that clients “surround themselves with an intricate and often overlapping network of independent advisors”. These advisors (or agents) are typically construction consultants such as architects, engineers, and quantity surveyors.

In many cases, the construction company will never meet the customer in the normal course of business and will negotiate with the customer’s agent prior to signing contracts, during the execution of the construction project itself, and in any dispute that might arise (Hardy & Davies, 1983).

Hardy & Davies (1983) further explain that sometimes customer’s have no real preference for a particular service provider or product and that “the matter is left entirely to his agent.” (Hardy & Davies,1983:11).

Accordingly, construction consultants play an important role in the selection and recommendation of an appropriate construction company.

1.4 The Research Problem

Based on the above background and context, the research problem identified for this study is:

To what extent do customer's views of the value disciplines create a broader platform on which construction companies can compete by delivering offerings other than lowest price?

1.5 Sub-problems

- 1.5.1 Which attributes of the value disciplines are the most important to customers?
- 1.5.2 Which is the most important value discipline to construction customers?
- 1.5.3 To what extent are construction consultants' views of the value disciplines consistent with that of construction customer's views?

1.6 Scope of the study

Construction companies included in the research are limited to the top five construction groups listed on the JSE Securities Exchange and are ranked by market capitalisation (Financial Mail, 2005b). They are: Murray & Roberts, Grinaker-LTA (Aveng), WBHO, Group 5, and Concor.

Construction activity can be broadly categorised into:

- civil engineering construction,
- residential building construction, and
- non-residential building construction (BER, 2005).

This research examined the non-residential building construction category.

Although many construction companies based in South Africa operate in both the domestic and international markets, the study was limited to customers and construction consultants that are South African-based. Furthermore, as patterns for non-residential building construction and ownership (Financial Mail, 2005a) are skewed towards Gauteng, the Western Cape, and KwaZulu-Natal, the study concentrated on these provinces within South Africa.

The study looks at the projects market which is considered a lumpy market (Competition Commission, 2003). This means that market information taken over a one year period may not be truly reflective of an organisation's market position because large projects or tenders may be won in one year and not the next or vice versa. This feature contributes to the volatility of market shares of individual companies. Therefore this research report assesses projects developed over a three year period to minimise this potential for errors in interpretation because of the nature of the market.

Construction consultants typically include architects, engineers and quantity surveyors. This research examined the views of architects and quantity surveyors who are usually the key influencers of construction firm selection in the non-residential building construction market. As engineers are usually key influencers in the civil engineering construction market or in the selection of specialist subcontractors such as mechanical or electrical subcontracts, their views were not included.

1.7 Significance of the Study

The study will benefit construction companies as it will assist them to understand their customers' needs as well as identifying what their customers value. More specifically, the research will assist them to identify potential opportunities to unlock value for customers by delivering offerings other than price in response to what their customers value. Construction companies will therefore be able to compete on a platform that is not based solely on lowest price to clients.

If there is consistency between the views of construction consultants and construction customers, construction companies can develop a strong strategy for delivering value. If there are contrasting views, construction companies may have to adopt a different strategy for customers and a different strategy for consultants.

This study will also assist consultants to gain a perspective of what their customers really value in a construction offering.

1.8 Structure of the Report

Following this introductory chapter, chapter two reviews relevant literature to further develop the conceptual framework for the research and to formulate the research propositions.

Chapter three states the research proposition formulated in chapter two.

Chapter four outlines the research methodology that is used in the study to test the research propositions and discusses the types of analyses performed on data collected.

Chapter five presents the results of the data analysis. Chapter six interprets this data.

Chapter seven summarises the discussion of the preceding chapters with the objective of presenting conclusions and recommendations to the study.

2. LITERATURE REVIEW

The purpose of this chapter is to develop a conceptual framework in order to derive appropriate research propositions to the research problem. It explores concepts and theories relevant to this study and concludes with a conceptual summary that synthesises them into a framework for the research.

2.1 Basis for Competitive Advantage

Market share and Return on Investment (ROI) are measures of the degree to which a business has been able to achieve sustainable competitive advantage. Porter (1980) suggests that sustainable competitive advantages are achieved through the erection of mobility barriers – barriers that make it costly for competitors to respond effectively.

One of the early strategic debates about competing developed from the work of Day & Wensley (1988) and Weitz (1985) where the question is whether to develop a Competitor focus or a Customer focus in developing competitive advantage.

According to Day & Wensley (1988) the term competitive advantage is sometimes used interchangeably with distinctive competence to mean relative superiority in skills and resources. Another widespread meaning refers to positional superiority, based on the provision of superior customer value or the achievement of lower relative costs, and the resulting market share and profitability performance. Taken together they describe both the state of advantage and how it is gained (Day & Wensley, 1988).

Hooley, Greenley, Fahy, & Cadogan (2001) suggest that competitive positioning is the combination of choice of target market (where the firm will compete) and competitive advantage (how the firm will compete).

To achieve superior performance, Slater & Narver (1994) argue that a business must develop and sustain competitive advantage. Whereas competitive advantage was based on structural characteristics such as a high market share, the ability to reap economies of scale or a broad product line, the emphasis today has shifted to capabilities that enable a business to consistently deliver superior value to its customers. Slater & Narver (1994) showed in their research that a market oriented culture provides a solid foundation for these value-creating capabilities.

Liu, Peach & Bernhardt (2005) suggest that the notion of providing value to customers is fundamental to marketing and research indicates that providing customer value may establish competitive advantage.

The link between competitive advantage and customer value is further emphasised by Andersen & Narus (1998) who propose that when businesses are able to draw on their knowledge of what customers value, and would value in the future, they are able to gain significant marketplace advantage over competitors who do not understand what their customers value.

2.2 Customer Value

Andersen & Narus (1998) comment that despite the importance of understanding what value a supplier's products or services are worth to a customer, very few businesses are able to determine that worth and value. However, before businesses can determine what attributes of an offering their customers value, it is important to first understand what is meant by customer value. This section assesses different studies to develop an understanding of customer value.

The provision of customer value is a source of competitive advantage (Day & Fahey, 1988; Parasuraman, 1997). Woodruff (1997) asserts that the issue does

not seem to be whether an organisation should compete on delivering customer value, but rather how it should do it. The key is that organisations internal processes for delivering value must align with what customers value.

Woodruff (1997) explains that customer value takes the perspective of firms' customers combining what they want with what they believe they should be getting from buying the firms' product or service.

A study undertaken by Woodruff (1997) revealed many disparate views and interpretations of customer value. However, Woodruff (1997) was able to distil some areas of consensus and determined that "customer value is something perceived by customers rather than objectively determined by a seller ... these perceptions typically involve a trade-off between what a customer receives (e.g. quality, benefits, worth, utilities) and what he or she gives up to acquire or use a product (e.g. price, sacrifices)" (Woodruff, 1997:141).

Woodruff (1997) then proposes a definition of customer value: "Customer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customers goals and purposes in use situations" (Woodruff, 1997:142).

Hoffman (2000) confirms Woodruff's (1997) perspective by commenting that the major source of competitive advantage arises from a more outward orientation towards customers where firms work to match their core competencies with customers' desired value from the product or service.

Slater (1997:164) appears to concur with Woodruff (1997) and suggests that a "customer value-based theory of the firm would say that superior performance accrues to firms that have a customer value-based organisational culture (i.e. a market orientation), complemented by being skilled at learning about customers

and their changing needs and at managing the innovation process, and that organise themselves around customer value delivery processes”.

This concept of value delivered (Slater, 1997 & Woodruff, 1997) is further developed by Kotler (2000). Kotler’s view is that “*Customer delivered value* is the difference between total customer value and total customer cost. *Total customer value* is the bundle of benefits customers expect from a given product or service. *Total customer cost* is the bundle of costs customers expect to incur in evaluating, obtaining, using and disposing of the product or service” (Kotler, 2000: 34).

This is further supported by Knox (2004) who explains that from the customer’s point of view, value is created when the benefits they receive from a product or service (perceived quality) exceed the costs of owning the product or service (perceived sacrifice). These components of customer value can be disaggregated further into the benefits derived from the core product and customised service against the consumer’s transaction costs.

Andersen & Narus (1998) introduce the concept of the *competitor* to the definition of customer value and propose that the essence of the definition of value is captured in the following equation:

$$(Value\ S - Price\ S) > (Value\ A - Price\ A)$$

In this equation, Value S and Price S are the value and price of the suppliers market offering, and Value A and Price A are the value and price of the next best alternative. The difference between value and price is the customer’s incentive to purchase. Therefore the equation conveys that the customer’s incentive to purchase a supplier’s offering must exceed its incentive to pursue the next best alternative (Andersen & Narus, 1998).

Building on Andersen & Narus (1998) and Kotler (2000); Lam, Shankar, Erramilli & Murthy (2004) assert that customer value can be conceptualised as a comparison of weighted 'get' attributes to 'give' attributes. Customer value is operationalised as a ratio or trade off between total benefit received to total sacrifices taking into consideration the available suppliers' offerings and prices (Lam *et al*, 2004).

2.3 Customer Satisfaction and Willingness to Pay

Existing models of customer satisfaction have rarely addressed the role of customer perceived value as an antecedent of customer satisfaction. Some studies have examined service quality as an antecedent of satisfaction. While most of these models incorporate benefits (via a measure of performance) they ignore any sacrifice component (Lam *et al*, 2004).

The service management literature researched by Lam *et al* (2004) indicates that customer satisfaction is a result of a customer's perception of the value received in a transaction or relationship. They discuss how companies can deliver high value services (quality services at a reasonable price) to their customers, thereby satisfying their customer's needs well. Lam *et al* (2004) suggest that theoretically, customer value can be considered a cognition-based construct as opposed to an emotion-based construct. It therefore captures any benefit-sacrifice discrepancy.

Lam *et al* (2004) also suggest that customer satisfaction is primarily an affective and evaluative response and that customer's perceptions of value affect their perception of satisfaction.

In an empirical study, Lam *et al* (2004) are able to demonstrate that customer value is positively correlated with customer satisfaction.

The result of the value-satisfaction link suggests that to enhance customer satisfaction, a service provider should spend its effort on improving the value perceived by customers (Lam *et al*, 2004).

By focussing on attributes with high importance ratings, a service provider can tackle those critical weaknesses that severely hamper its effort to enhance customer value. By working on those weaknesses, a service provider could improve customer value and hence customer satisfaction (Lam *et al*, 2004).

Research conducted by Liu *et al* (2005) suggests that when customer's judgements of value are reassessed periodically, they become richer, more elaborate, and more accurate over time. As buyers refine their appraisal, customer value will continue to influence customer satisfaction and becomes more influential.

Homburg, Koschate & Hoyer (2005) contend that customer satisfaction has become an important focus of corporate strategy. Many company executives trusted their intuitive sense that higher customer satisfaction would lead to improved company performance. Thus many companies have implemented programmes to measure and improve performance. However, the general belief that satisfied customers are willing to pay higher prices is typically based on anecdotal evidence.

Homburg *et al* (2005) conducted empirical studies to test the anecdotal evidence. They conducted two experimental studies that reveal the existence of a strong positive impact of customer satisfaction on willingness to pay.

Furthermore, their second study (Homburg *et al*, 2005) provides evidence for the stronger impact of cumulative satisfaction rather than of transaction-specific satisfaction on willingness to pay. Their results indicate that the relationship between customer satisfaction and willingness to pay becomes stronger as

customer satisfaction judgement or perception moves from transaction-specific to cumulative. The findings show the importance of increasing cumulative customer satisfaction.

This section has shown that increasing customer value can increase customer satisfaction. Customer satisfaction could, in turn, increase customers willingness to pay.

2.4 The Value Disciplines

This research report seeks to determine customer's perceptions of value in the construction industry within the theoretical framework of the value disciplines. This section therefore examines the value disciplines as contained in the earlier work of Treacy and Wiersema (1993; 1995a; 1995b).

Treacy & Wiersema (1995a:5) contend that when companies “shine in a way their customers care most about. They have honed at least one component of value to a level of excellence that puts all competitors to shame.” In 1993, they described these components of value as Value Disciplines.

Treacy & Wiersema (1993) assert that successful companies such as Dell Computer, Home Depot, and Nike redefined value for customers. They built powerful cohesive business systems that could deliver more value to customers, and, by doing so they raised customers' expectations beyond the competition's reach.

Treacy & Wiersema (1993) explain that the idea that companies succeed by selling value is not new. What is new is how customers define value in many markets. In the past, customers judged the value of a product or service on the basis of some combination of quality and price. Treacy & Wiersema (1993) contend that today's customers have an expanded concept of value that includes

convenience of purchase, after-sales service, dependability, and so on. This could lead one to assume, that to compete today, companies need to meet all these different customer expectations. However, Treacy & Wiersema (1993) contend that this is not the case.

They argue that companies that have taken leadership positions in their industries in the last decade typically have done so by narrowing their business focus, not broadening it. They have focused on delivering superior customer value in line with one of three value disciplines:

- Operational Excellence,
- Customer Intimacy, or
- Product Leadership.

These companies have become champions in one of these disciplines while meeting industry standards on the other two (Treacy & Wiersema, 1993).

Companies that push the boundaries of one value discipline while meeting industry standards in the other two gain such a lead that competitors find it hard to catch up. This is largely because the leaders have aligned their entire operating model – that is, the company's culture, business processes, management systems, and computer platforms – to serve one value discipline. Knowing what they want to provide to customers, they have learnt what they must do to follow through. Also, with the hard work of transforming the organisations behind them, they can concentrate on smaller adjustments that produce incremental value. Less focused companies must do far more than simply tweak existing processes to gain this advantage (Treacy & Wiersema, 1993).

2.5 Operational Excellence

Operational excellence means providing customers with reliable products or services at competitive prices which are delivered with minimal difficulty or inconvenience (Treacy & Wiersema, 1993). Companies pursuing operational excellence are always seeking ways to minimize overhead costs, to eliminate intermediate production steps, to reduce transaction and other friction costs, and to optimize business processes across functional and organizational boundaries (Treacy & Wiersema, 1993).

Srivastava, Shervani, & Fahey (1999) have developed a framework for understanding the integration of marketing with business processes that are value creating processes. This is critical because improved operational performance in the construction industry depends on improvements in the work processes of individual contracting firms, in co-operation with customers and consultants. Improved operational standards will contribute towards an overall decline in unit costs, which can enhance competitiveness (Department of Public Works, 1999).

However, there are also other important aspects of operational excellence. These include elements of customer service (Treacy & Wiersema, 1995a). This is particularly important in the construction industry where factors such as quality of the work, project duration, health and safety of site personnel, and black economic empowerment are becoming increasingly important in the delivery of customer service and satisfaction (Department of Public Works, 1999).

The National Department of Public Works is a major client of the construction industry and is also the custodian of South Africa's construction industry development programme. It argues that productivity and output quality have fallen significantly since the early 1970's, while health and safety conditions showed little improvement (Department of Public Works, 1999). It proposes a

strategy for the industry to enhance operational performance that includes a partnering approach between customers and contractors, quality and productivity improvement, health and safety programmes, and environmental protection measures.

2.6 Customer Intimacy

Customer intimacy means segmenting and targeting markets precisely and then tailoring offerings to match exactly the demands of those niches. Companies that excel in customer intimacy combine detailed customer knowledge with operational flexibility so they can respond quickly to almost any need, from customizing a product to fulfilling special requests. As a consequence, these companies engender tremendous customer loyalty (Treacy & Wiersema, 1993).

While companies pursuing operational excellence concentrate on making their operations lean and efficient, those pursuing a strategy of customer intimacy continually tailor and shape products and services to fit an increasingly fine definition of the customer. This can be expensive, but these companies are willing to spend now to build customer loyalty over the longer term. They typically look at a customer's lifetime value to the company, not the value of any single transaction. This is why employees in these companies will do almost anything – with little regard for initial cost – to make sure that each customer gets exactly what they want (Treacy & Wiersema, 1993).

Companies that embrace a strategy of customer intimacy have designed operating models that allow them to address each customer or small subsegment of their market individually not only for the sake of the company's profitability but also for the sake of the customer's satisfaction. These companies have an infrastructure that facilitates multiple modes of producing and delivering products or services (Treacy & Wiersema, 1993).

In order to move towards a programme of customer intimacy, a company has to create the organisation, build the information systems, and educate and motivate the people required to pursue a strategy of customer intimacy. Like many companies that pursue this strategy, it is often necessary to decentralise the marketing operation in order to empower the people actually dealing with the customer (Treacy & Wiersema, 1993).

Treacy & Wiersema (1993) use the example of Kraft which pursued a Customer Intimacy strategy. In reinventing itself, Kraft's business processes stressed flexibility and responsiveness. Its information systems collect, integrate, and analyse data from many sources. Its organisational structure emphasises empowerment of people working close to customers and it stresses creative decision-making skills that are required to respond to individual customers needs. Its management systems recognise and utilise such concepts as customer lifetime value (Treacy & Wiersema, 1993).

2.7 Product Leadership

Product leadership means offering customers leading edge products and services that consistently enhance the customer's use or application of the product, thereby making rivals' goods obsolete (Treacy & Wiersema, 1993).

Companies that pursue product leadership strive to produce a continuous stream of state-of-the-art products and services. Reaching that goal requires them to challenge themselves in three ways. First, they must be creative. Being creative means recognising and embracing ideas that usually originate outside the company. Second, such innovative companies must commercialise their ideas quickly. Therefore, all their business and management processes have to be engineered for speed. Third, product leaders must relentlessly pursue new

solutions to the problems that their latest products or services have just solved (Treacy & Wiersema, 1993).

Product leaders avoid bureaucracy because it slows commercialisation of their ideas. Managers make decisions quickly since in a product leadership company, it is often better to make a wrong decision than to make one late or not at all. In terms of this, companies are prepared to make decisions quickly and to implement them immediately. Moreover, they continually look for new ways – such as concurrent engineering – to shorten their cycle times (Treacy & Wiersema, 1993).

Treacy & Wiersema (1993) also point out though, that for their fast decision making, product leaders also possess the infrastructure and management systems needed to manage risk well.

2.8 Construction Customers as Organisational Buyers

This section locates construction customers and products within a marketing context.

Within the context of organisational buying theory, the construction product may be classified as a New Task Purchase. Peter & Donnelly (2000) explain that new task items are most often used for big-ticket items such as real estate. Because they are big-ticket items, the cost of a mistake with new task purchases is high. “Therefore, a new task purchase is time consuming and involves a relatively large number of decision makers who may consider many alternatives. This is a type of purchase decision that is most likely to involve joint decision making because many kinds of expertise are required to make the best decision” (Peter & Donnelly, 2000: 64).

Characteristics of New Task Purchases (Peter & Donnelly, 2000) are:

- Complex
- Long time frame
- Many potential suppliers
- Expensive, seldom purchased product, such as a new office block.

All of the above issues are characteristics present in the construction industry.

A current trend in many organisations is sole sourcing, in which all of a particular type of product is purchased from a single supplier. Sole sourcing has become more popular because organisational buyers have become more concerned with quality and timely delivery and less likely to purchase only on the basis of price. Sole sourcing is advantageous to suppliers because it provides them with predictable and profitable demand and allows them to build long term relationships with organisational buyers. It is advantageous for organisational buyers because it not only increases timely delivery and quality of supplies but also allows the buyers to work more closely with suppliers to develop superior products that meet their needs (Peter & Donnelly, 2000).

2.9 Attributes of Customer Value in the Construction Industry

In this section, various attributes of the value disciplines are identified through the literature review.

2.9.1 Operational Excellence

Various elements of Operational Excellence were identified through the literature review. In the context of the South African Construction Industry, they are:

- Quality

Customers now view quality as a fundamental measure of their total perception of the product or service as well as of the company, delivery and maintenance network that provides and supports it (Feigenbaum & Feigenbaum, 2005).

According to the Department of Public Works (1999) the public sector intends to actively encourage the adoption of internationally comparable quality improvement programmes which are also expected to contribute to reduced costs. They will adopt an incremental approach where construction companies will be encouraged to acquire certification in terms of quality standards or an accreditation programme for certain prime public sector contracts.

In this regard, the public sector will consider following the example of Singapore, where accredited firms can get up to a 5% tender advantage. The South African public sector will also investigate the advantages of adopting a quality auditing system such as the Construction Quality Assurance System (CONQUAS) used in Singapore (Department of Public Works, 1999).

Customers increasingly expect higher quality and service and some customisation. Kotler (2000) asserts that they perceive fewer real product differences and show less brand loyalty.

Apart from the acceptance of the lowest tender price, Singh & Tiong (2005) believe that there should be a trade-off between cost, time and quality in the final selection of a contractor.

- Price

Liu *et al* (2005) conceptualised different dimensions that provided customer value. One of those is economic value which refers to an organisational buyer's overall cost/benefit assessment of a supplier relative to other suppliers. Under this section, price was identified and related to the supplier providing best value for money.

- Health and Safety

In terms of Government policy (Department of Public Works, 1999) procurement related measures will be promoted by the public sector to ensure that the legislated requirements in terms of health and safety are adhered to in the Construction Industry. In terms of these requirements, all workers will eventually be expected to have undertaken certified health and safety training on all public sector construction. The roll-out of this requirement will be incremental, starting with larger government contracts. Additional mechanisms aimed at promoting health and safety will also be defined in terms of Construction Industry best practice (Department of Public Works, 1999).

- Environmental Protection

The public sector will use its procurement leverage to eventually enforce the existing requirements of environmental protection legislation on all public-sector contracts. Initially, minimum and best practice standards will be adopted and made a condition of contract on a select number of prime public sector contracts.

“To promote adherence to legislative requirements [on environmental issues] the Construction Industry Development Board will monitor industry practice and will make recommendations to the Department of Environmental Affairs and Tourism (DEAT) on the need for increased penalties and other appropriate measures.” (Department of Public Works, 1999:20)

- Time, Cost, and Defects

The Construction Industry Development Board (CIDB) has started what is envisaged to become an annual review of the Status of the Construction Industry. Part of this review is the measurement of key industry indicators that include Client Performance, Contracting Industry Performance, and the performance of the BEE contracting sector.

Key indicators under contracting industry performance are the predictability of time and cost, the percentage of contracts where the building or structure are relatively defect free or better, and the percentage of contracts with a high level of client satisfaction (CIDB, 2004).

Lam *et al* (2004) appear to concur with the importance of these attributes and identified timeliness and reliability as components of creating customer value.

2.9.2 Customer Intimacy

The elements of Customer Intimacy that were identified through the literature review are:

- Reputation of Individuals on the Project Team

The individuals on the project team who are in contact with the customer will change over the course of the construction project. This is often due to the time it takes to move a project from inception through the prequalification and tendering stages and beyond. This places great emphasis on all of a firm's personnel being trained to be caring to the client team. (Preece & Moodley, 2003)

Liu *et al* (2005) identified attributes such as the supplier's competence, professionalism, and overall job performance as being integral to creating customer value. Performance in these attributes is closely linked to the quality of the supplier's personnel.

Supplier reputation has been found to be one of the most highly rated attributes in buying decisions (Mudambi, Doyle & Wong, 1997). Reputation also appears to be at the heart of branding strategy (Mudambi *et al*, 1997) which is discussed in more detail below.

- Customer needs

Lam *et al* (2004) and Liu *et al* (2005) stressed the importance of understanding customer needs and identified key issues that contribute to creating customer value such as the effectiveness of the working relationships between suppliers and customers, servicing of customer needs, response to customer needs, and keeping the customer well informed of all developments.

The ability to resolve disputes amicably could be another indicator of the ability of suppliers to understand customer needs. The willingness of construction companies to use Alternative Dispute Resolution (ADR) in resolving disputes has already been successful in local and international examples, especially in resolving contractual disputes in the private sector (Department of Public Works, 1999).

The Public Sector will actively promote the use of ADR including issues such as the same terms for ADR being applicable to both main contracts and subcontracts, and that there should be no restrictions on the types of issues capable of being referred to ADR, either in the main contract or subcontracts (Department of Public Works, 1999).

- Corporate Culture and Cultural Fit

Kotler's (2000) view is that most business people would have difficulty in finding words to explain what he describes as the elusive concept of corporate culture. Kotler (2000: 42) describes corporate culture as "the shared experiences, stories beliefs, and norms that characterise an organisation."

Cultural fit can manifest itself through the partnering relationships between clients and contractors and have proved an effective means to achieve improved quality and reduced costs in the private sector. A practical difficulty with introducing partnering to the public sector is the requirement that such work be tendered for competitively in regard to individual projects. The real benefits arise from strategic partnering relationships where a relationship is established for a number of projects. (Department of Public Works, 1999)

- Brand

Construction products (a completed building) have nearly identical physical specifications and performance irrespective of which builder builds it. Yet some building contractors successfully maintain a high market share. The question arises as to what differentiates the successful product from its competitors in the eyes of the customer (Mudambi *et al*, 1997).

Mudambi *et al* (1997) argue that the basic explanation for this lies with the customer perception of value. However, the processes involved in adding value are complex and interrelated. The decisive factor in the purchase decision can often depend on what a brand means to a buyer.

Brands add to customer value by giving signals about the offer. These signals are often interpreted in terms of risk reduction and enhanced satisfaction (Mudambi *et al*, 1997).

Research appears to indicate that branding may be more important the more complex the buying decision (Mudambi *et al*, 1997) and therefore its application in the construction company purchase decision would be appropriate given the complexity involved in buying a construction product (Singh & Tiong, 2005).

Knox (2004) argues that if there is doubt about the value of brands, one needs to make two observations: look at what Chief Executives are prepared to pay for top brands and observe the extent to which the market capitalisation of brand-led organisations exceeds the value of their tangible assets. Knox (2004) uses the example of Nestle's acquisition of Rowntree to illustrate the point. Nestle paid 2.6 billion GBP for Rowntree which only had a balance sheet value of 0.4 billion GBP. The implication is that the difference

between the amount paid and the balance sheet value is the premium paid for the brand.

The above view of Knox (2004) appears to support the assertion by Mudambi *et al* (1997) who believe that brand value to the customer is a function of the expected price and the expected performance of tangible and intangible attributes.

Customers form preferences based on their perception of attributes. These preferences are translated into choice decisions with customers choosing the product with the highest expected value or utility (Mudambi *et al*, 1997).

A brand offers customers (and other relevant parties) added value based on factors over and above its functional performance. These added value or brand values, differentiate the offer and provide the basis for customer preference and loyalty. Brand value provides a promise of sameness and predictability (Knox, 2004).

However, Knox (2004) cautions that today's customers are highly sophisticated and confident in their own ability to decide between products and suppliers' offerings. Customers need much less brand reassurance to validate their choices. In most markets, the customer can choose between large numbers of high quality products made by renowned companies. In the modern economy, value is no longer exclusively created by marketers branding what their organisation wishes to produce (Knox, 2004).

2.9.3 Product Leadership

Defining the product under product leadership in the construction industry can be limiting if the product is seen narrowly to be the asset that is delivered. This is due to the fact that a construction company cannot continually improve the asset because of the separation of the design and construction processes. The design is in the hands of architects and engineers, not the contractor. However, if it is seen in the context of innovation in the delivery process that encompasses both design and construction, then the elements of Product Leadership that were identified through the literature review are:

- Types of construction procurement contracts

The standard of service in providing construction projects is often affected by major conflicts and disputes between the parties, rather than a partnership culture focusing on satisfying the needs and wants of customers. “Much of this conflict is associated with the professional culture of the industry which has traditionally divided design from construction and has perpetuated mistrust on all sides – the ‘them’ and ‘us’ syndrome.” (Preece & Moodley, 2003:82).

The Design-Bid-Build approach is the traditional construction contract procurement method that is often blamed as the cause of the issues identified by Preece & Moodley (2003) above. In this approach, the construction process is usually in series i.e. construction follows the design and bidding processes (Grobler & Pretorius, 2002).

The Design-Build approach attempts to overcome some of the issues created by the traditional approach identified above. Design-Build is a construction contract procurement approach where the owner of the project is in contract

with one entity only that is responsible for the both the design and construction of the building (Grobler & Pretorius, 2002).

Another construction contract procurement method identified by Grobler & Pretorius (2002) is the Construction Management approach. Studies confirm that the inflationary 1970's with subsequent rising construction costs and delays in projects procured by the traditional approach gave rise to the construction management approach (Grobler & Pretorius, 2002).

- Types of project finance

The public sector has been promoting and implementing alternative project finance approaches such as the Public Private Partnership (PPP) approach where the private sector contractors including construction companies are contracted to design-build-operate-transfer and finance projects (Department of Public Works, 1999). This approach has been successfully implemented in civil engineering and building construction projects.

This approach is also being mooted by private sector customers.

The attributes identified in the literature review are consolidated and categorised in terms of the value disciplines in Appendix 1.

2.10 Conceptual Summary of the Introduction and Literature Review

Competitive advantage for construction companies is equated to tendering the lowest price to their customers. Often, other factors such performance, quality and service are sacrificed to achieve the lowest price (Hardy & Davies, 1983; Department of Public Works, 1999; Grobler & Pretorius, 2002; Hodgson, 2002; Singh & Tiong, 2005).

The literature review indicates that competitive advantage depends on companies creating value for their customers (Slater & Narver, 1994; Parasuruman, 1997; Woodruff, 1997; Andersen & Narus, 1998; Day & Fahey, 1998; Hoffman, 2000; Liu *et al*, 2005). How does this occur?

Customer value influences customer satisfaction. The higher the levels of customer satisfaction, the higher the customer's willingness to pay (Kotler, 2000; Knox, 2004; Lam *et al*, 2004; Homburg *et al*, 2005; Liu *et al*, 2005).

By synthesising the above three paragraphs, the implication is that if construction companies can create customer value, they will increase customer satisfaction and therefore increase customer's willingness to pay. Contractors will therefore be able to overcome the lowest tendered price basis of competitive advantage.

The literature review also indicates that construction companies can create value for customers by adopting the value disciplines concept (Treacy & Wiersema, 1993; 1995a; 1995b).

Questions that still need to be answered in the research are:

- What are the attributes of the value disciplines most valued by customers?
- Which value discipline should construction companies adopt?

- Given the influence of construction consultants have in the construction company selection process, are their views of value disciplines consistent with those of their customers?

3. RESEARCH PROPOSITIONS

In order to determine what customers valued and whether consultants' views were consistent with customers' views, the following research propositions were formulated based on the research problem and the literature review. The propositions in the context of the value disciplines are:

3.1 Proposition One: Key Attributes of Customer Intimacy

Construction companies should focus on understanding their customers' needs beyond the formal work specification.

This proposition is based on the preliminary survey outlined in the research methodology and the works of the Department of Public Works (1999), Kotler (2000), Preece & Moodley (2003), Lam *et al* (2004), and Liu *et al* (2005) which emphasise the importance of understanding customer needs.

3.2 Proposition Two: Customer Intimacy

Construction customers value Customer Intimacy in construction companies above the other value disciplines.

This proposition is also based on the preliminary survey outlined in the research methodology and the works of the Department of Public Works (1999), Kotler (2000), Preece & Moodley (2003), Lam *et al* (2004), and Liu *et al* (2005) which emphasise the importance of understanding customer needs as outlined above.

3.3 Proposition Three: Construction Consultants

Construction consultants' views of value disciplines are consistent with those of construction customers.

This is based on the work of Hardy & Davies (1983), Grobler & Pretorius (2002), and the preliminary survey outlined in the Research Methodology.

4. RESEARCH METHODOLOGY

The purpose of this research report was to determine what attributes of a construction offering was perceived to create value for construction customers other than lowest price within the framework of the value disciplines. Construction companies could then use this offering to hone their offerings in line with one of the value disciplines and therefore create a platform for competitive advantage other than lowest price.

The methodology used in this study included both qualitative and quantitative studies. The methods used to collect and analyse data relevant to the research problem and propositions are described in this chapter.

4.1 Qualitative Study

4.1.1 Preliminary Interviews

Preliminary interviews were conducted to determine the validity of the attributes of the three value disciplines derived from the literature review. This information was also used in constructing the conjoint analysis questionnaire used in the quantitative study. To add further value to the research report, the questions asked were open ended to determine if there were additional attributes that were not identified through the literature review. The responses also assisted in determining the research propositions.

4.1.2 Populations and Sampling

Six interviews were conducted through convenience sampling. Two populations were used. One population comprised construction customers

and the other population comprised construction consultants. Three interviews were conducted for each population. The interviews were conducted either telephonically or face-to-face.

4.1.3 Data Analysis

The responses were analysed using simple frequency distribution. The outline of the questionnaire is attached as Appendix 2.

Key results are as follows:

- 5 of 6 Respondents felt that **Customer Intimacy** is the most important attribute.
- 1 of 6 Respondents felt that **Operational Excellence** is the most important attribute.

Of all respondents:

- 3 of 3 **Customers** felt that Customer Intimacy is the most important attribute.
- 2 of 3 **Consultants** felt that Customer Intimacy is the most important attribute.
- 1 of 3 **Consultants** felt that Operational Excellence is the most important attribute.

Additional attributes that were identified under Customer Intimacy are:

- Assisting customers' to mitigate their risks.
- Understanding of the customers' business.
- Understanding of customers' requirements.
- Cultural fit with customers.

However, after revisiting the literature review, it was established that only the last two additional attributes (understanding customer requirements and cultural fit) were identified by other researchers. They were then included in the study. The first two additional attributes (assisting customers mitigate their risk and understanding customers' business) were not included in the study.

Additional attributes that were identified under Product Leadership are:

- Ability to implement Engineer, Procure, and Construction Management (EPCM) projects.
- Ability to implement Engineer, Procure, and Construction (EPC) projects.

EPC projects are similar to Design & Build projects which were identified in the literature review and were included in the quantitative study. EPCM projects were not identified in the literature review and were not included in the study.

No additional attributes were identified under Operational Excellence.

4.2 Quantitative Study

4.2.1 Conjoint Analysis

The primary research technique used in this study is conjoint analysis. Conjoint analysis is a research technique used to measure the trade-offs people make in choosing products and service providers (Populis, 2003). "Using conjoint analysis, the value that individuals place on any product is equivalent to the sum of the utility they derive from all the attributes making up the product [or service]. Further, it assumes that the preference for a product and the likelihood to purchase it is in proportion to the utility an individual gains from the product [or service]." (Populis, 2003:1).

Curry (1996) asserts that conjoint analysis provides a quantitative measure of the relative importance of one attribute versus another. Leedy (1997) asserts that a quantitative study tests a theory, which is composed of variables and measured in numbers. It is analysed with statistical procedures to determine if the theory holds true. The research approach is quantitative in nature.

There are various conjoint analysis tools such as Adaptive Conjoint Analysis (ACA), Conjoint Value Analysis (CVA), and Choice Based Conjoint Analysis (CBC).

Adaptive conjoint analysis (ACA) was used for this research. Orme (2003) explains that the main advantage to using ACA is its ability to measure more attributes than other full profile conjoint tools. ACA can include up to 30 attributes although typical ACA projects involve eight to fifteen attributes. Other full profile conjoint analysis tools cannot effectively process more than six attributes (Orme, 2003). This research report has ten attributes.

The reason ACA can accommodate a larger number of attributes is because it is a computer-based technique and adapts the questionnaire. As the respondent proceeds with the questionnaire, ACA is able to 'home-in' on what is important to the respondent therefore making the questionnaire length and duration appropriate for both respondent and interviewer.

However, Orme (2003) also points out that although being computer-based is ACA's biggest advantage in studies with more than six attributes, it is also the foremost limitation of ACA. It is a proprietary programme and the disadvantage with ACA is that it must be personally administered by the interviewer. The questionnaire cannot be sent out to a large number of potential respondents concurrently as is the case with the paper-and-pencil method. This is exacerbated in time sensitive studies.

4.2.2 Deriving Attributes and Levels

For the purpose of this research, the attributes derived for the study are categorised into the value disciplines of Operational Excellence, Customer Intimacy, and Product Leadership. These attributes are derived from the literature review and the qualitative study.

Levels were also defined for each attribute. According to Daines (2003) levels define the range of measure for each attribute.

The attributes and levels are tabulated in Appendix 1.

4.2.3 Conjoint Analysis and the Value Disciplines

This research examines customer's perceptions to understand how they trade off various attributes that are categorised according to the value disciplines. Thus it is able to draw conclusions about customer's perceptions of value and draw conclusions about which attributes customers will trade off against other attributes. This will assist construction companies decide which value discipline to focus on in order to gain competitive advantage. It will offer Contractors alternatives to develop and market offerings other than price in response to what customers value.

4.2.4 The Research Population

There are two populations.

The first is customers of the construction industry. For the purpose of this study, they were decision makers in organisations that are major customers of construction companies. They may or may not be the ultimate owners of the

construction project but are the initiators and developers of the construction project with overall responsibility for appointing the contractor.

The second are construction consultants who act as agents and advisors to construction clients. For the purpose of this study, they were decision makers in firms of Architects and Quantity Surveyors.

4.2.5 Sampling

An ACA-based interview results in a set of utilities for each individual sampled. Therefore, in ACA, the minimum sample size is one person (Orme, 1998). In fact Orme (1998) contends that if the sample size is particularly small and the number of attributes is relatively large (more than 6), then ACA is the best conjoint tool to use.

Convenience sampling was used for both populations in this research.

Sixty five interviews were completed in total. Thirty two interviews were completed with customers and thirty three interviews were completed with consultants.

4.2.6 Questionnaire Construction

Sawtooth Software was used to construct the questionnaire and was derived from the attributes and levels attached in Appendix 1.

The actual questionnaire could not be included in this report as it computer-based and is adaptive. Adaptive means that the questions change for each respondent depending on how the initial questions are answered. However, the ACA questionnaire used in this research had four standard ACA sections.

Appendix 3 provides an indicative example of each section of the questionnaire as listed below:

- ACA ranking questions
- ACA importance questions
- Paired-comparison trade-off questions
- ACA calibration questions

In addition to the standard ACA sections, questions relating to the demographics of the respondents were also asked and are tabled in Appendix 4.

4.2.7 Questionnaire Administration

Respondents were interviewed telephonically, or in person, because ACA is a computer-based tool that requires direct contact between the interviewer and interviewee.

4.2.8 Reliability and Validity

The accuracy of the study is determined by the representivity of the sample to the population. Because convenience sampling was utilised in the study, a Chi Square Goodness-of-Fit Test was conducted to determine geographic representivity of the sample of consultants in relation to the population of consultants. A Chi Square Goodness-of-Fit Test was also used to determine representivity of the sample of customers.

The questionnaire was prepared so as to minimise interpretation. The possibility of misunderstandings were further minimised through conducting a pilot test of the questionnaire.

4.2.9 Pilot Test

The use of a pilot study is recommended by Leedy & Ormrod (2001) to test the validity and reliability of a measurement instrument that is developed for a specific purpose and has not been previously tested or used in practice.

The questionnaire in this study was pilot tested. The main reason is that the questionnaire used in this study was not tested or used prior to this research. The pilot test was used specifically to eliminate any ambiguities that may result in confusing statements or instructions, and to ascertain whether the questionnaire has language that was understandable and concise.

The pilot test was conducted with two customers and two consultants. Two specific technical terms in the questionnaire were modified to eliminate confusion about their meaning. In the original questionnaire, the levels of the attribute Contract Types were:

<i>Traditional variable price contract</i>	Construction management contract	<i>Lump sum turnkey contract</i>
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This was changed to:

<i>Design-Bid-Build contract</i>	Construction management contract	<i>Design & Build Contract</i>
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4.2.10 Method of data analysis

Chi-square Goodness-of-fit tests were used to analyse the demographic statistics to determine the representivity of the convenience samples relative to their populations.

Sawtooth software was used to analyse the data collected through the ACA questionnaire.

The R-Square for the regression characterises the internal consistency of the respondents and are tabulated in Table 1 in the presentation of the results.

4.2.11 Goodness-of-fit test for Consultants

The Goodness-of-fit test (Lind, Mason & Marchal, 2000) was used in this research to determine if the consultants' sample is geographically representative of the population of consultants. This was particularly important because of the geographical concentration of non-residential building construction projects in Gauteng

The population of consultants consisted of firms of Architects and Quantity Surveyors and was restricted to the three provinces of Gauteng, Western Cape, and KwaZulu-Natal.

Province	Population: No. of Firms	Sample: No. of Firms
KwaZulu-Natal	617	5
Gauteng	1,666	19
Western Cape	1,029	7
	3312	31

Source: Adapted from SA Council for the Architectural Profession (faxed communication, 5 August 2005) & Association of SA Quantity Surveyors (faxed communication, 28 July 2005).

The steps to follow in the Goodness-of-fit test as described by Lind *et al* (2000).

Step 1: State the Null Hypothesis and the Alternate Hypothesis:

Ho: There is no difference between the population frequency distribution and the sample frequency distribution

H1: There is a difference between the population frequency distribution and the sample frequency distribution

Step 2: Select the level of significance:

For the purpose of this research, the 0.05 level of significance was selected. Thus the probability is 0.05 that a true null hypothesis will be rejected.

Step 3: Select the Test Statistic:

$$X^2 = \text{Sum} [(fo-fe)^2/fe]$$

With $k - 1$ degrees of freedom. where:

K is the number of provinces

fo is the observed frequency i.e. sample observed

fe is the expected frequency in the provinces

Step 4: Formulate the decision rule:

$K-1 = 2$ degrees of freedom

From the Chi Square Table, at a 0.05 level of significance, the critical value = 5.991

The decision rule, therefore is:

Accept H_0 if $X^2 \leq 5.991$

Reject H_0 and accept H_1 if $X^2 > 5.991$

Step 5: Compute the value of Chi-square and make a decision

Province	Observed number of firms (Fo)	Expected number of firms (fe)
KwaZulu-Natal	5	6
Gauteng	19	16
Western Cape	7	9
	31	31

PROVINCE	fe	fo	fo - fe	(fo - fe) ²	(fo - fe) ² /fe
KwaZulu-Natal	6	5	-1	1	0.167
Gauteng	16	19	3	9	0.563
Western Cape	9	7	-2	4	0.444
	31	31	0		X² = 1.174

$$X^2 = 1.174$$

Therefore $X^2 < 5.991$

Therefore accept the null hypothesis H_0 : There is no difference between the population frequency distribution and the sample frequency distribution

4.2.12 Goodness-of-fit test for Customers

The population of customers was restricted to their projects in the non-residential building construction sector. In order to determine a level of representivity, the study determined the value of non-residential buildings completed in South Africa over a three year period from 2002 to 2004. This was compared with the value of projects developed by customers over the same period.

Province	Value of Non-residential Buildings completed in RSA (Sum 2002 – 2004) (R Billion)	Percent
KwaZulu-Natal	2.008	21%
Gauteng	4.650	49%
Western Cape	1.788	19%
Other	0.992	11%
Total	9.438	100%

Source: Adapted from the Bureau of Economic Research (emailed communication, 1 August 2005).

Step 1: State the Null Hypothesis and the Alternate Hypothesis

Ho: There is no difference between the provincial distribution of the value of non-residential buildings **competed** (the population) and provincial distribution of the value of non-residential buildings **developed** (the sample).

H1: There is a difference between the provincial distribution of the value of non-residential buildings **competed** (the population) and provincial distribution of the value of non-residential buildings **developed** (the sample).

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Step 2: Select the level of significance:

For the purpose of this research, the 0.05 level of significance was selected.
Thus the probability is 0.05 that a true null hypothesis will be rejected.

Step 3: Select the Test Statistic:

$$X^2 = \text{Sum} [(fo-fe)^2/fe]$$

With $k - 1$ degrees of freedom. where:

K is the number of provinces

fo is the observed value of projects i.e. sample observed

fe is the expected value of projects in the provinces

Step 4: Formulate the decision rule:

$K-1 = 3$ degrees of freedom

From the Chi Square Table, at a 0.05 level of significance, the critical value = 7.815

The decision rule, therefore is:

Accept H_0 if $X^2 \leq 7.815$

Reject H_0 and accept H_1 if $X^2 > 7.815$

Step 5: Compute the value of Chi-square and make a decision

Province	Observed value of projects (Fo)	Expected value of projects (fe)
KwaZulu Natal	1.269	1.557
Gauteng	4.220	3.606
Western Cape	1.258	1.387
Other	0.573	0.769
Total	7.320	7.320

PROVINCE	fe	fo	fo - fe	(fo - fe) ²	(fo - fe) ² /fe
KwaZulu Natal	1.557	1.269	-0.288	0.083	0.053
Gauteng	3.606	4.220	0.614	0.377	0.105
Western Cape	1.387	1.258	-0.129	0.017	0.012
Other	0.769	0.573	-0.196	0.038	0.050
Total	7.320	7.320	0		X² = 0.220

$$X^2 = 0.220$$

Therefore $X^2 < 7.815$

Therefore accept the null hypothesis H_0 :

There is no difference between the provincial distribution of the value of non-residential buildings **competed** (the population) and provincial distribution of the value of non-residential buildings **developed** (the sample).

5. PRESENTATION OF RESULTS

The results of the demographics and ACA questionnaire are presented in this chapter. The presentation of results follows the sequence listed below:

- Demographics,
- Relative Importance of Value Disciplines and Attributes, and
- Simulation Results of Likelihood of Purchase.

5.1 Demographics

Table 1 shows the number of interviews conducted. A total of 65 interviews were conducted of which 3 were disregarded. The disregarded interviews were rejected because they had a coefficient of correlation less than 0.4 which is considered to represent a weak correlation (Lind *et al*, 2000).

Table 1: Demographics – Total Sample

	Customers	Consultants	Total
Number of respondents	33	32	65
Responses disregarded	2	1	3
Total number of responses	31	31	62
Coefficients of Correlation	0.68	0.69	0.69

Table 2 shows the provincial spread of the sample of consultants. The survey of consultants was limited to Gauteng, the Western Cape, and KwaZulu-Natal due to the geographic distribution of buildings completed. Eighty nine percent of buildings completed over the period 2002 to 2004 were in Gauteng, Western Cape, and KwaZulu-Natal combined. Eleven percent of buildings completed were in the remaining provinces during the same period (BER, 2005).

Table 2: Demographics – Consultants Provincial Distribution

	Gauteng	Western Cape	KwaZulu- Natal	Total
Consultants	19	7	5	31

Table 3 lists the value of projects that customers of the construction industry developed over the three year period 2002 to 2004 in terms of their provincial distribution.

Table 3: Demographics – Value of Customers' Projects per Province

Province	Value of Projects (Sum 2002 - 2004) (R billion)	Percentage
Gauteng	4.220	58
Western Cape	1.258	17
Kwazulu Natal	1.269	17
Other Provinces	0.573	8
Total	7.320	100

5.2 Relative Importance of Value Disciplines and Attributes

This section presents the relative importance of the value disciplines and the attributes as perceived by the sample groups. Relative importance is expressed in percentages relative to all attributes. They are derived from the utilities. However, the utilities themselves are not presented in the report as utilities on their own do not express a useful basis of comparison or analysis in ACA. Utilities must be expressed as relative importance percentages to be useful bases of comparison for analysis in ACA.

Table 4 and Figure 1 reflect the perception of the total sample group with regard to the relative importance of the value disciplines.

Table 4: Relative Importance of Value Disciplines – Total Sample

Value Discipline	Relative Importance %
Operational Excellence	44
Customer Intimacy	37
Product Leadership	19
	100

Figure 1: Relative Importance of Value Disciplines – Total Sample

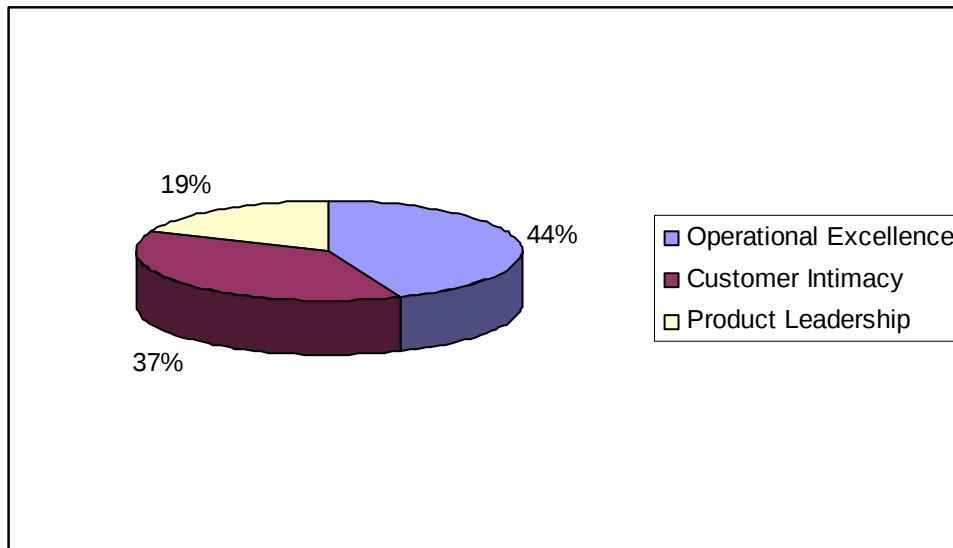


Table 5 and Figure 2 reflect the perception of the customer sample group only with regard to the relative importance of the value disciplines.

Table 5: Relative Importance of Value Disciplines - Customers

Value Discipline	Relative Importance %
Operational Excellence	40
Customer Intimacy	41
Product Leadership	19
	100

Figure 2: Relative Importance of Value Disciplines - Customers

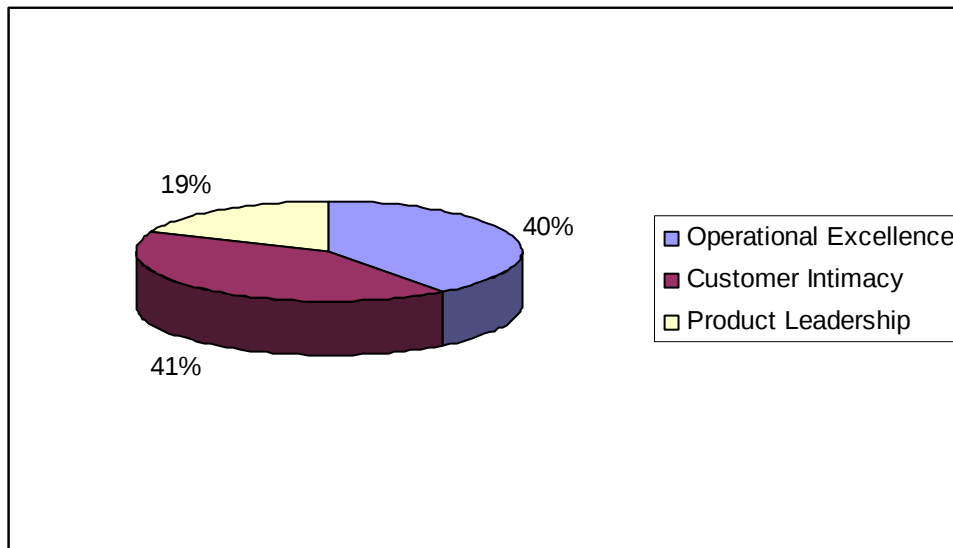


Table 6 and Figure 3 reflect the perception of the consultant sample group only with regard to the relative importance of the value disciplines.

Table 6: Relative Importance of Value Disciplines - Consultants

Value Discipline	Relative Importance %
Operational Excellence	47
Customer Intimacy	35
Product Development	18
	100

Figure 3: Relative Importance of Value Disciplines - Consultants

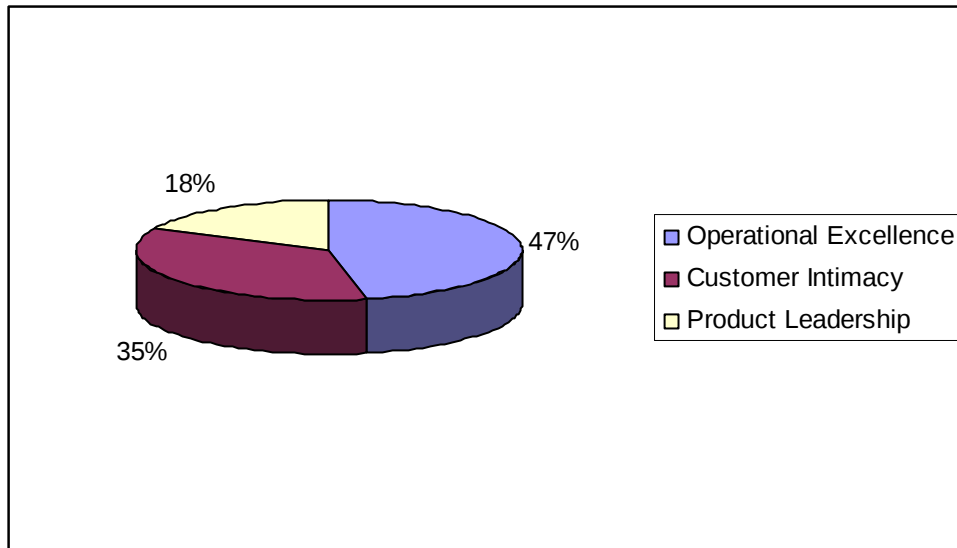


Table 7 and Figure 4 reflect the perception of the total sample group with regard to the relative importance of the different attributes. Perceptions of the individual attributes are the antecedents to the perception of the value disciplines.

Table 7: Relative Importance of Attributes – Total Sample

Value Discipline	Attribute	Rank	Relative Importance Range %		Relative Importance Average %
			Lowest	Highest	
Operational Excellence	Quality	1	8.94	26.16	17.43
	Timeous Delivery	3	1.73	18.40	10.44
	Price	7	2.72	21.91	9.17
	Health & Safety	10	0.10	15.69	6.51
Customer Intimacy	Understand Customer needs	2	1.03	20.78	11.57
	Project Team Reputation	4	4.04	18.66	9.78
	Cultural Fit	8	0.20	18.40	8.23
	Brand	9	2.43	18.46	8.08
Product Leadership	Contract Types	5	1.49	18.49	9.58
	Project finance	6	2.15	17.85	9.21
					100.00

Figure 4: Relative Importance of Attributes - Total

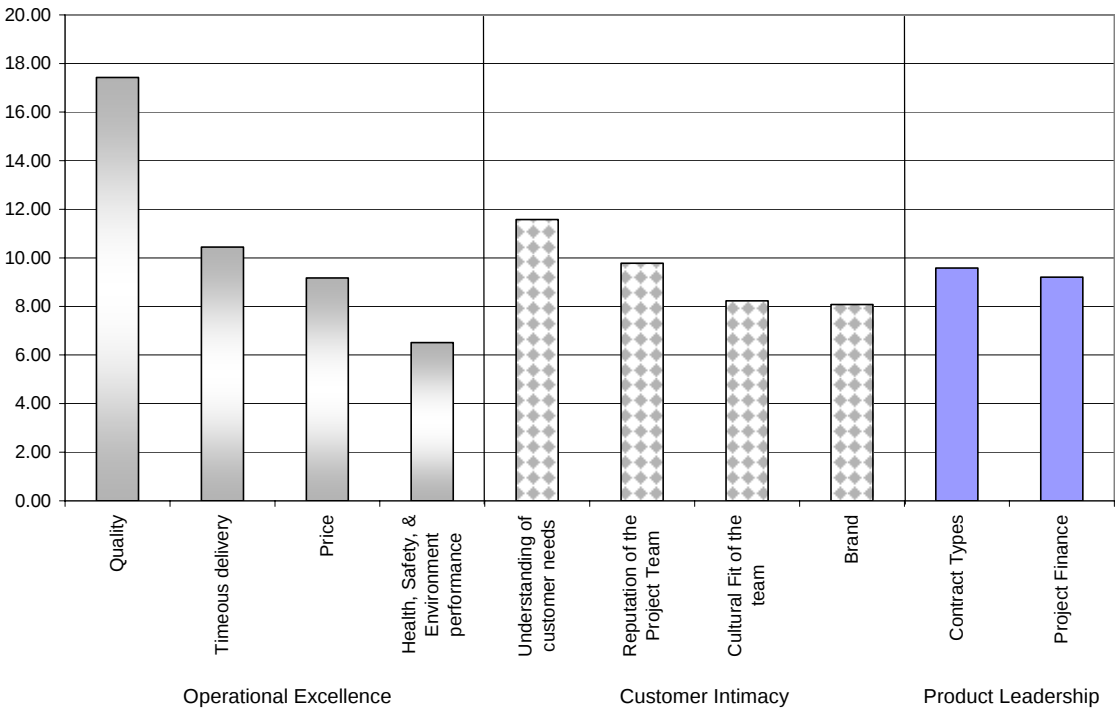


Table 8 and Figure 5 reflect the perception of the customer sample group only with regard to the relative importance of the different attributes.

Table 8: Relative Importance of Attributes - Customers

Value Discipline	Attribute	Rank	Relative Importance Range %		Relative Importance Average %
			Lowest	Highest	
Operational Excellence	Quality	1	10.95	22.91	17.16
	Timeous Delivery	5	1.73	17.31	9.39
	Price	8	2.72	18.66	8.73
	Health & Safety	10	0.10	13.07	4.73
Customer Intimacy	Understand Customer needs	2	1.03	20.78	13.85
	Project Team Reputation	3	4.04	18.66	9.98
	Cultural Fit	6	0.20	18.40	9.36
	Brand	9	2.43	14.00	7.58
Product Leadership	Contract Types	4	1.49	16.42	9.98
	Project finance	7	2.15	16.43	9.23
					100.00

Figure 5: Relative Importance of Attributes - Customers

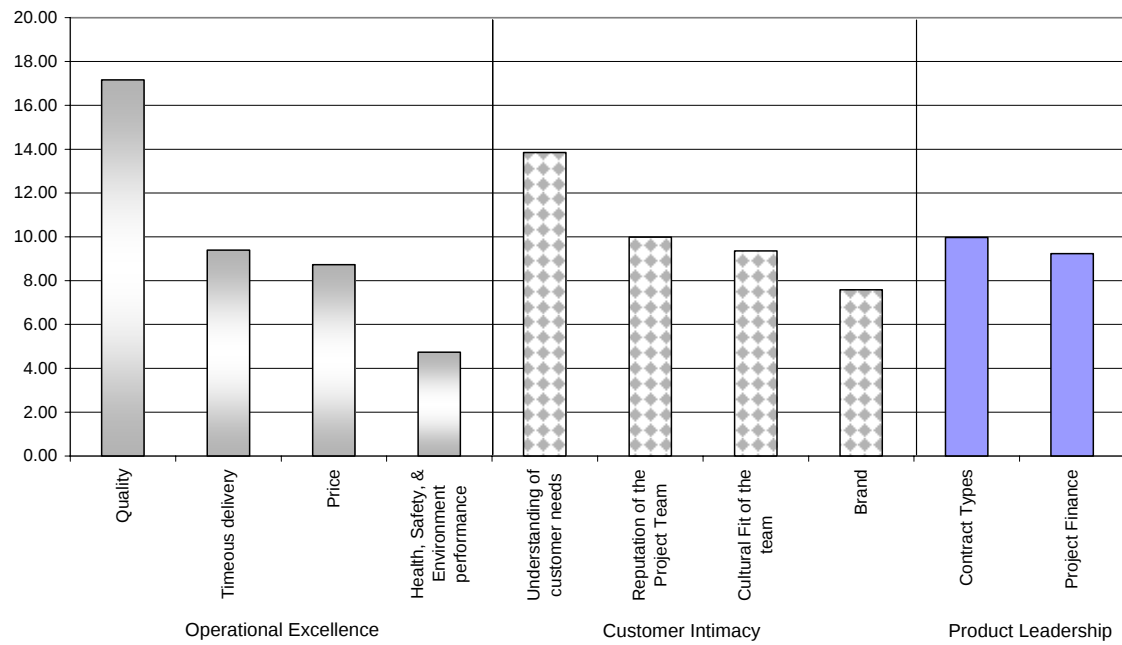
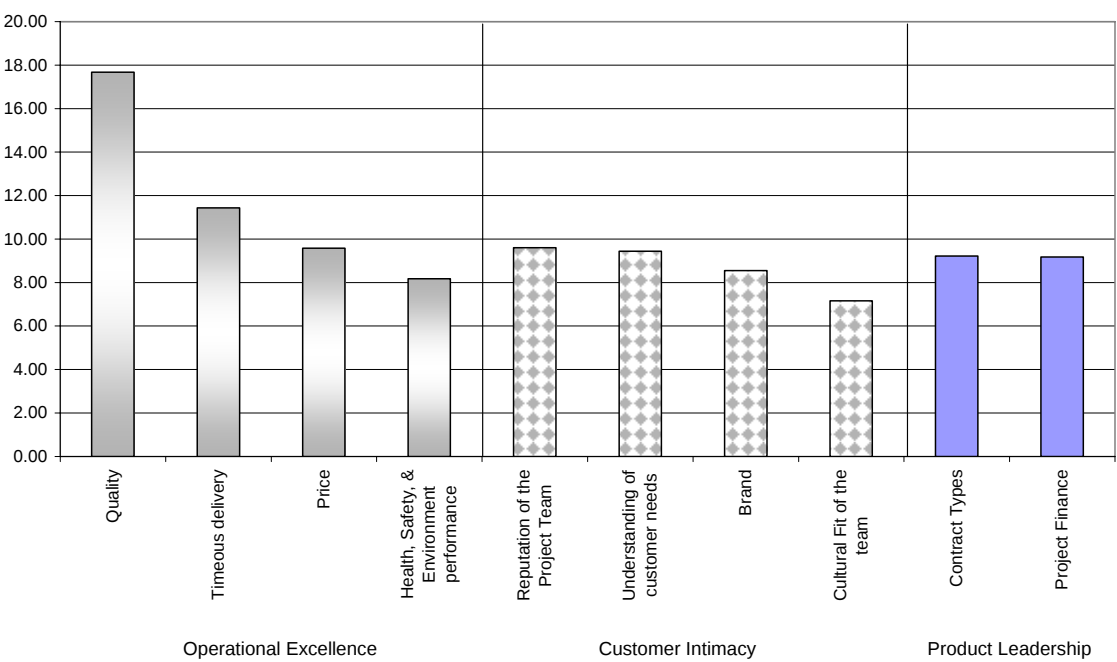


Table 9 and Figure 6 reflect the perception of the consultant sample group only with regard to the relative importance of the different attributes

Table 9: Relative Importance of Attributes - Consultants

Value Discipline	Attribute	Rank	Relative Importance Range %		Relative Importance Average %
			Lowest	Highest	
Operational Excellence	Quality	1	8.94	26.16	17.68
	Timeous delivery	2	5.86	18.40	11.43
	Price	4	2.93	21.91	9.58
	Health, Safety, & Environment performance	9	2.38	15.69	8.17
Customer Intimacy	Reputation of the Project Team	3	4.53	17.59	9.60
	Understanding of customer needs	5	1.87	18.88	9.44
	Brand	8	3.31	18.46	8.55
	Cultural Fit of the team	10	0.65	14.77	7.16
Product Leadership	Contract Types	6	3.24	18.49	9.22
	Project Finance	7	2.34	17.85	9.18
					100.00

Figure 6: Relative Importance of Attributes - Consultants



5.3 Simulation Results of Likelihood of Purchase

After utilities and relative importance percentages are estimated, simulations can be run on ACA (McCullogh, 2002).

In this study, a likelihood of purchase simulation was run to determine what the likelihood of purchase will be at the different levels of each attribute. This particular simulation is useful because it indicates at what levels of attribute performance the likelihood of purchase will increase. The steepness of the graphs indicate the extent of the change in purchase likelihood relative to the change in attribute level.

These simulations were conducted for the total sample and separately for the consultant and customers. They are depicted in tabular and graphical form below and are categorised for each value discipline.

5.3.1 Operational excellence

Table 10: Quality - Purchase likelihood of Levels

Levels of Quality	Less 20%	Less 10%	Acceptable	Plus 10%	Plus 20%
Total	5.32	5.50	5.89	6.11	6.33
Consultants	5.65	5.83	6.26	6.45	6.74
Customers	4.99	5.17	5.53	5.78	5.92

Figure 7: Quality- Purchase likelihood of Levels

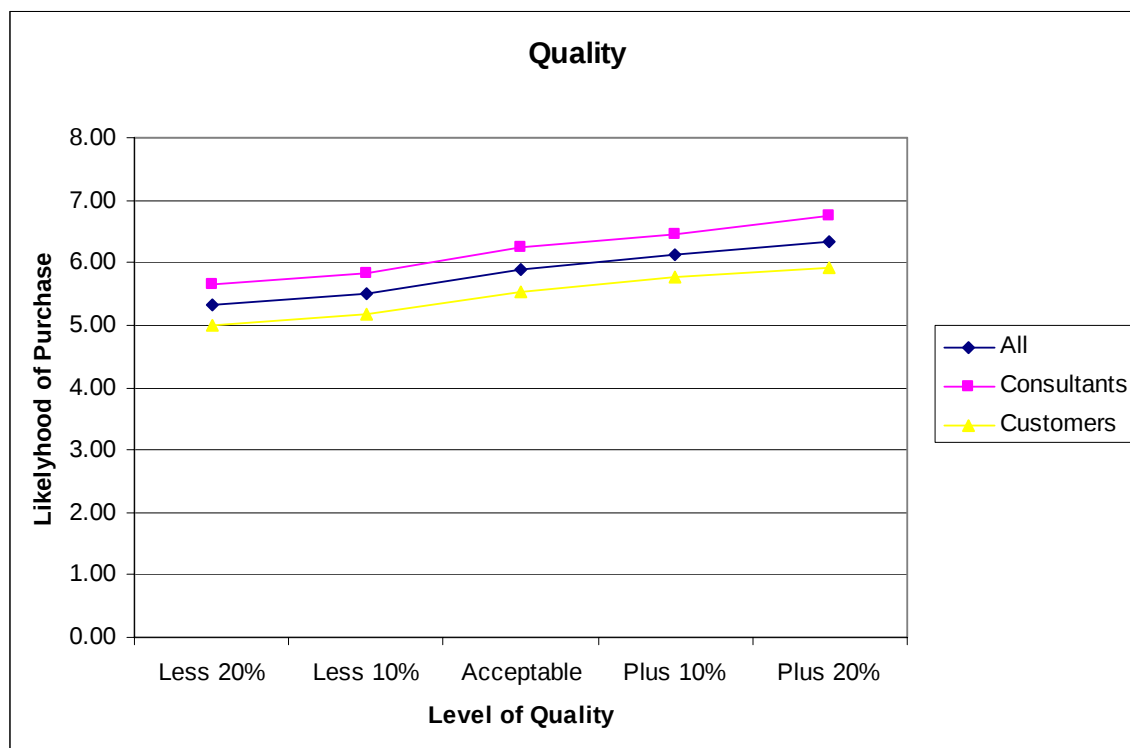


Table 11: Delivery Time - Purchase likelihood of Levels

Levels of Delivery Time	10% late delivery	20% late delivery	On-time delivery	10% early delivery	20% early delivery
Total	5.50	5.65	5.89	5.92	6.03
Consultants	5.78	5.99	6.26	6.27	6.39
Customers	5.23	5.32	5.53	5.57	5.67

Figure 8: Delivery Time - Purchase likelihood of Levels



Table 12: Health Safety & Environment (HSE) - Purchase likelihood of Levels

Levels of HSE	HSE at Legislated Levels	Best-in-class HSE
Total	5.89	6.32
Consultants	6.26	6.82
Customers	5.53	5.82

Figure 9: Health Safety & Environment (HSE) - Purchase likelihood of Levels

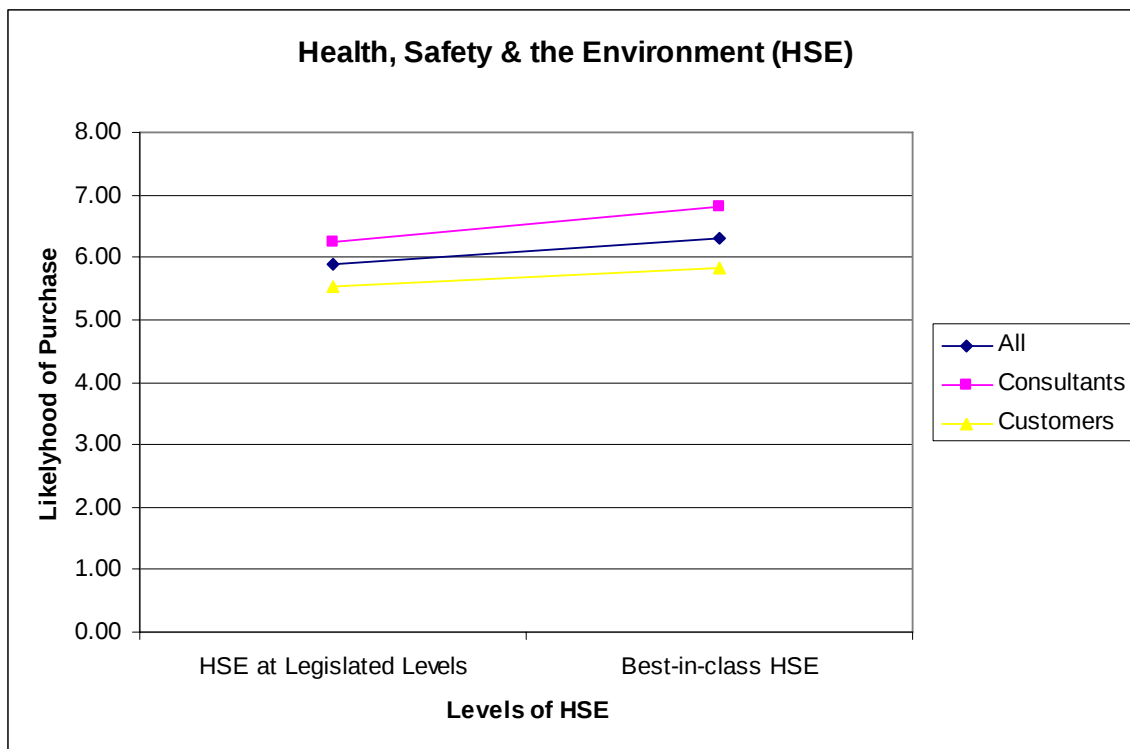
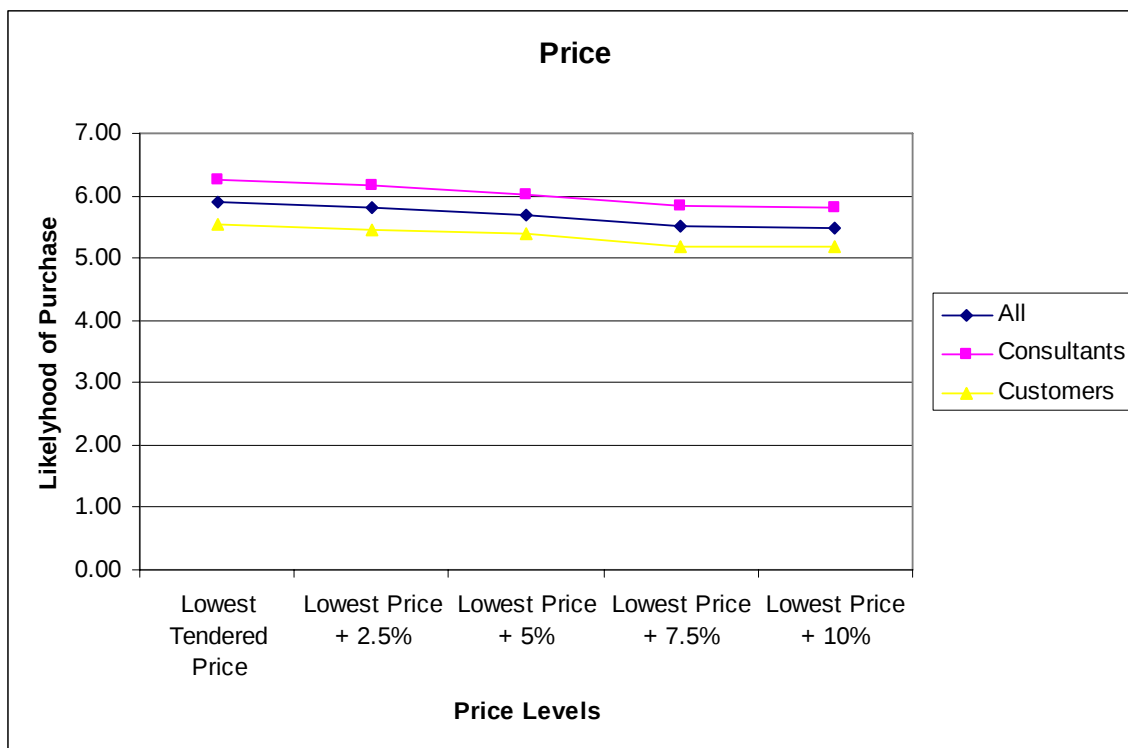


Table 13: Price - Purchase likelihood of Levels

Levels of Price	Lowest Tendered Price	Lowest Price + 2.5%	Lowest Price + 5%	Lowest Price + 7.5%	Lowest Price + 10%
Total	5.89	5.81	5.70	5.52	5.49
Consultants	6.26	6.16	6.01	5.85	5.81
Customers	5.53	5.46	5.39	5.20	5.17

Figure 10: Price - Purchase likelihood of Levels



5.3.2 Customer Intimacy

Table 14: Understanding Customer Needs - Purchase likelihood of Levels

Levels of Understanding	Does not understand beyond the formal work specification	Understands beyond the formal work specification
Total	5.89	6.64
Consultants	6.26	6.91
Customers	5.53	6.36

Figure 11: Understanding Customer Needs - Purchase likelihood of Levels

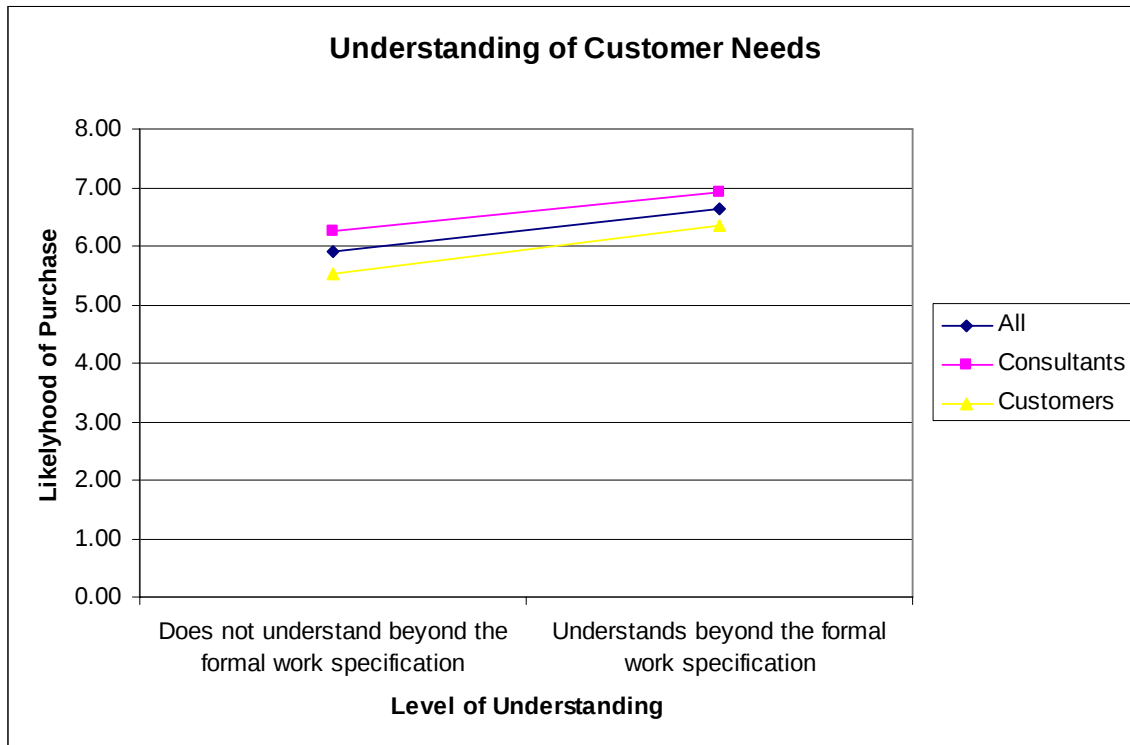


Table 15: Cultural Fit - Purchase likelihood of Levels

Levels of Cultural Fit	Poor Fit	Good Fit
Total	5.89	6.42
Consultants	6.26	6.62
Customers	5.53	6.10

Figure 12: Cultural Fit - Purchase likelihood of Levels

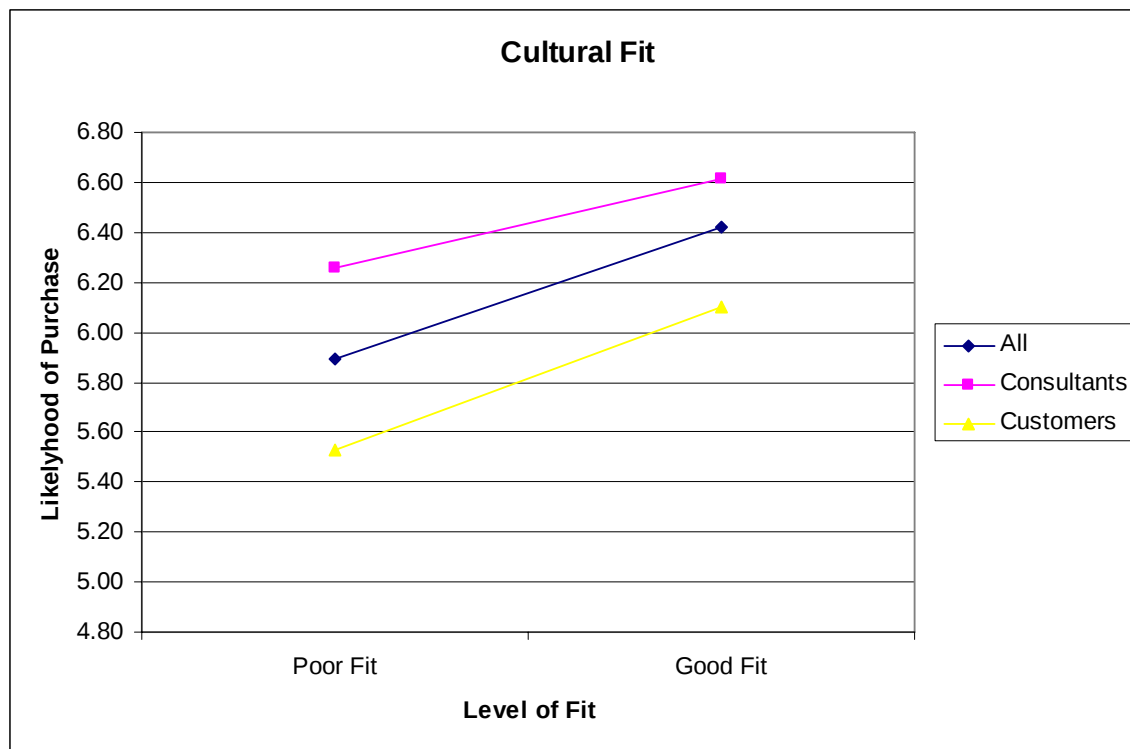


Table 16: Reputation of Project Team - Purchase likelihood of Levels

Levels of Reputation	Average Reputation	Above Average Reputation	Best Reputation
Total	5.89	6.23	6.52
Consultants	6.26	6.62	6.92
Customers	5.53	5.84	6.13

Figure 13: Reputation of Project Team - Purchase likelihood of Levels

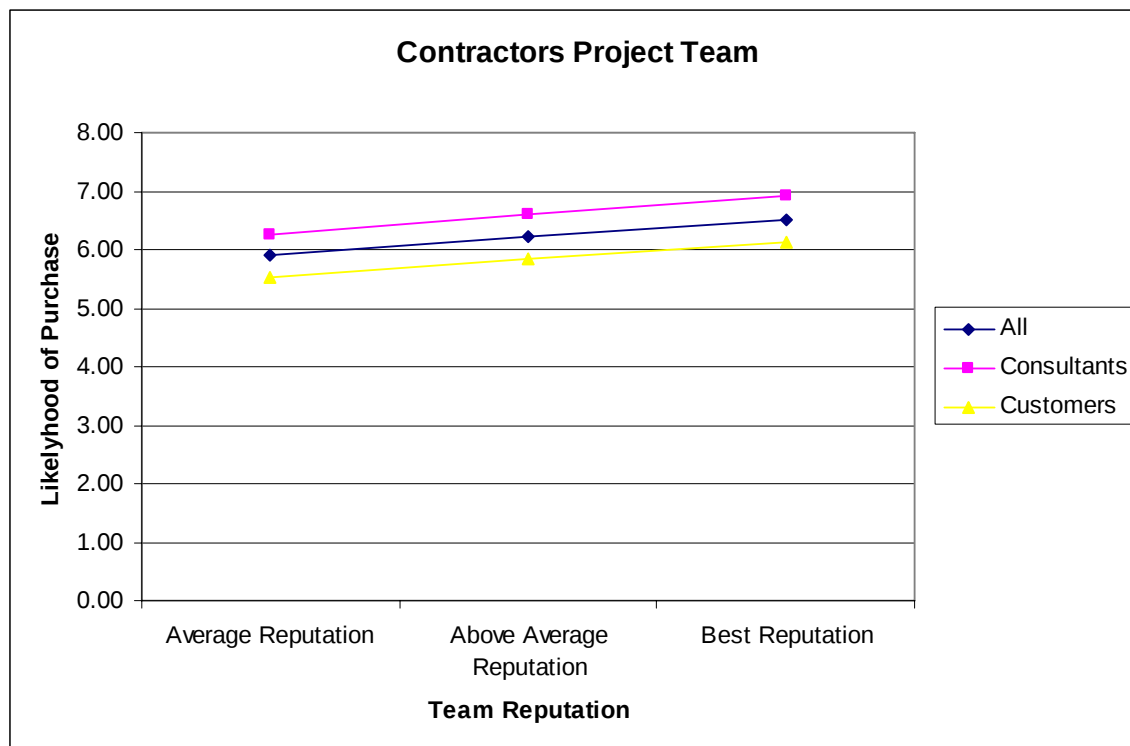
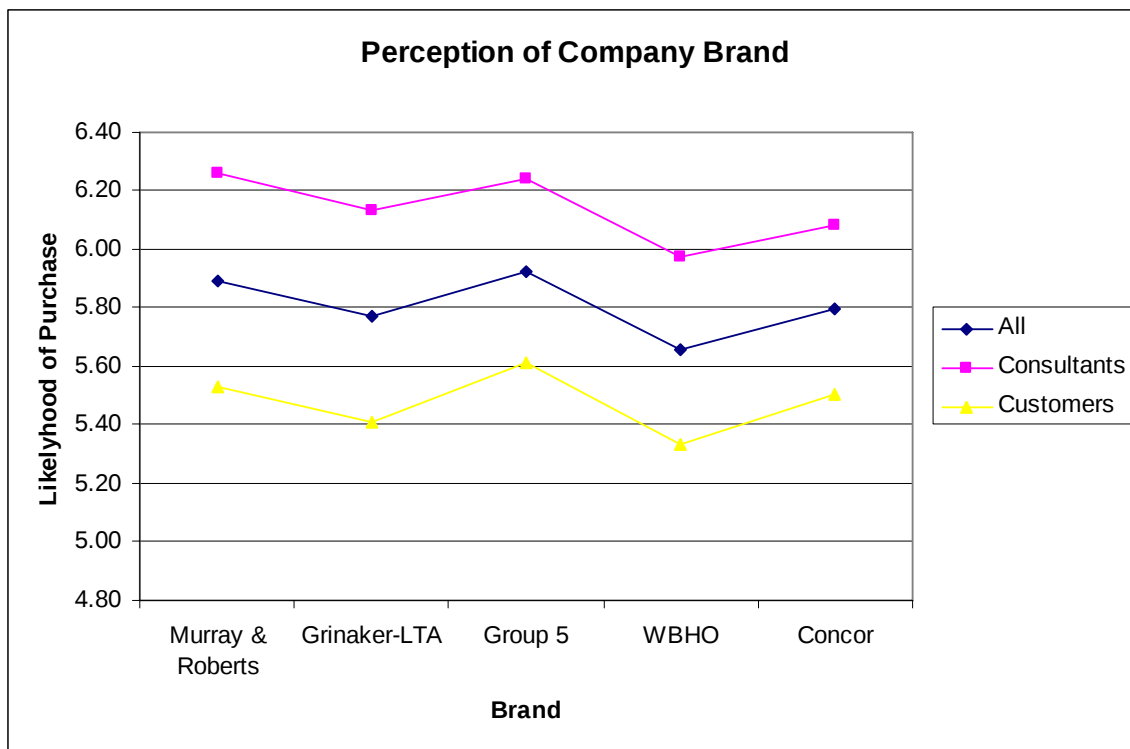


Table 17: Brand - Purchase likelihood of Levels

Levels of Price	Murray & Roberts	Grinaker-LTA	Group 5	WBHO	Concor
Total	5.89	5.77	5.92	5.65	5.79
Consultants	6.26	6.13	6.24	5.98	6.08
Customers	5.53	5.41	5.61	5.33	5.50

Figure 14: Brand - Purchase likelihood of Levels



5.3.3 Product Leadership

Table 18: Contract Types - Purchase likelihood of Levels

Levels of Price	Design Bid Build	Construction Management	Design Build
Total	5.89	5.60	5.81
Consultants	6.26	5.88	5.89
Customers	5.53	5.32	5.74

Figure 15: Contract Types - Purchase likelihood of Levels

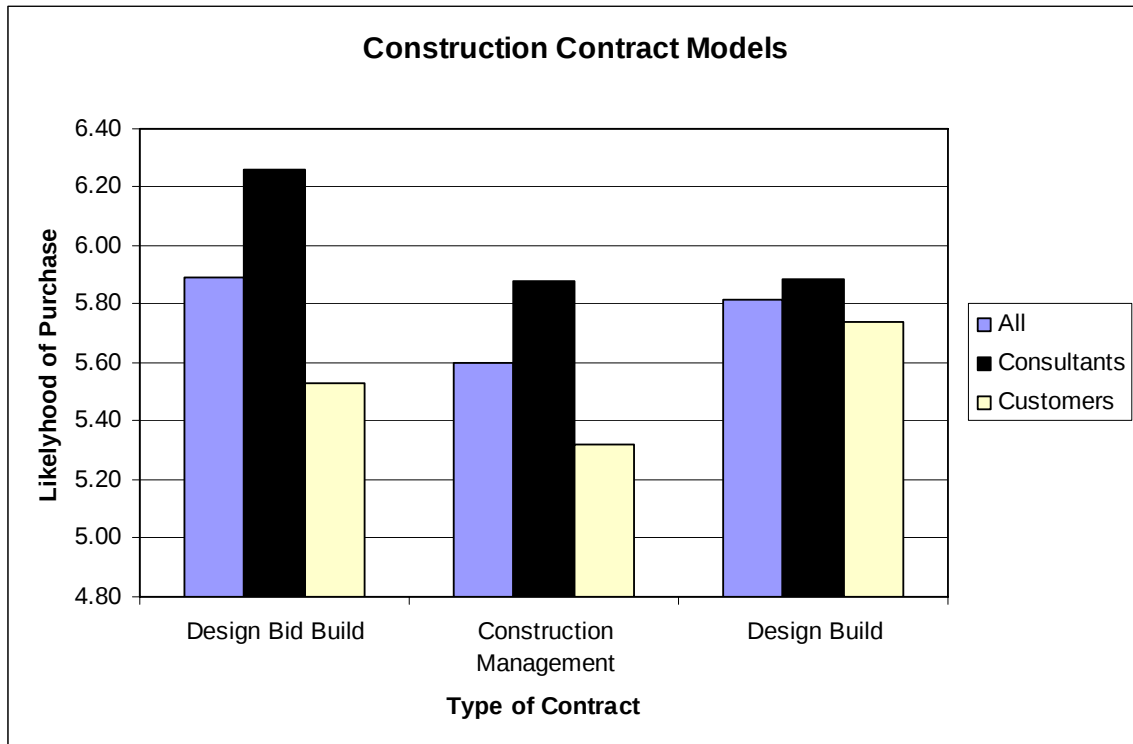
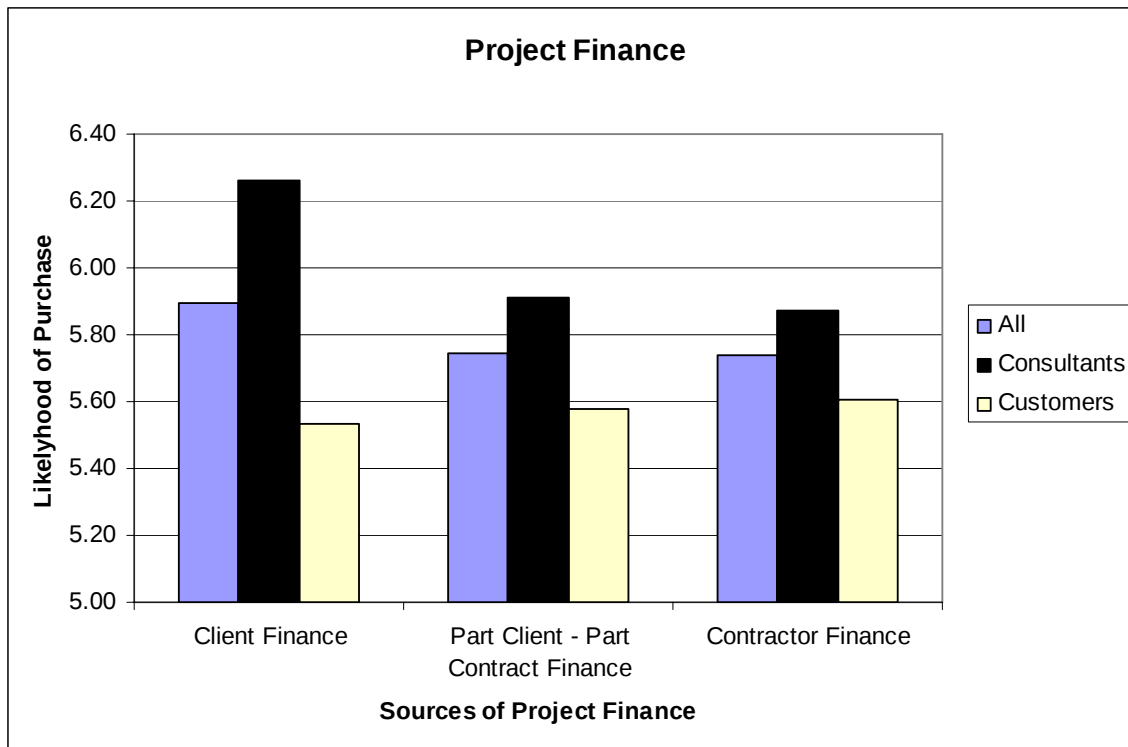


Table 19: Project Finance - Purchase likelihood of Levels

Levels of Price	Client Finance	Part Client - Part Contract Finance	Contractor Finance
Total	5.89	5.74	5.74
Consultants	6.26	5.91	5.87
Customers	5.53	5.58	5.61

Figure 16: Project Finance - Purchase likelihood of Levels



6. INTERPRETATION OF RESULTS

This chapter discusses the results as presented in the previous chapter and puts them into the context of the research propositions proposed in chapter three.

6.1 The Value Disciplines

This section refers to Table 4, Table 5, Table 6, Figure 1, Figure 2, and Figure 3. These tables refer to the relative importance of the value disciplines as perceived by the sample groups. Overall, operational excellence has the highest level of importance attached to it (44%). However, the interesting issue to note is that customers viewed customer intimacy as having the highest relative importance (41%). Consultants viewed operational excellence as having the highest relative importance (47%).

Although customers rated customer intimacy as having the highest relative importance, the difference between customer intimacy and the second highest rated value discipline (operational excellence) is only one percent. The statistical significance of this difference could not be tested because of the small sample size and because of the format of the conjoint data.

However, it would appear that the difference is more material to consultants where their highest rated value discipline (operational excellence) was 12% higher than their second highest rated value discipline (customer intimacy).

6.2 Attributes of the Value Disciplines

This section refers to Table 7, Table 8, Table 9, Figure 4, Figure 5, and Figure 6.

Overall, quality was rated with the highest level of relative importance at 17.43%. It was ranked with the highest level of importance (1st) by both customers and consultants. This appears to be consistent with views of the Department of Public Works (1999); Kotler, 2000; and Feigenbaum & Feigenbaum (2005).

Although the lowest tendered price is the key deciding factor in construction company selection (Hardy & Davies, 1983; Singh & Tiong, 2005), price ranked 7 out of 10 attributes overall with a relative importance of 9.17%. However, customers rank the importance of price lower than consultants (8th and 4th respectively). This could imply that it is consultants that drive the lowest tendered price perspective and not customers.

It is also interesting to note that despite the importance placed on brand by Mudambi *et al* (1997) and Knox (2004), it was ranked 9 out of 10 and had a relative importance rate of 8.08%. Customers and consultants ranked the relative importance of brand similarly (9th and 8th respectively).

Understanding customer needs was ranked 2nd by customers with a relative importance of 13.85% and was ranked 5th by consultants with a low relative importance of 9.44%. This represents a large difference in views between consultants and customers.

Customers and consultants had similar perceptions of the reputation of the project team (ranked 3rd by both); health and safety (ranked 10th and 9th respectively); and project finance (ranked 7th by both)

Timeous delivery was ranked lower by customers (5th) than it was by consultants (2nd). The fact that this attribute has the second highest relative importance to consultants reflects another large difference between the perception of consultants and customers.

Cultural fit was ranked higher by customers (6th) and was ranked lowest by consultants (10th).

Therefore, customers and consultants have similar perceptions of the relative importance of the attributes of Quality, Brand, Reputation of the Project Team, Health and Safety, and Project Finance.

Customer's perceptions of the relative importance of Understanding Customer Needs, Cultural Fit, and Contract types were higher than consultants.

Consultant's perceptions of the relative importance of Price and Timeous Delivery were higher than customers.

6.3 Likelihood of Purchase

This section examines the series of tables and figures from Table 10 to Table 19 and from Figure 7 to Figure 16.

The relative importance of attributes and value disciplines must be viewed together with the likelihood of purchase simulations. When they are considered together, they give a clearer perspective of what construction companies should concentrate on to create customer value.

The relative importance results indicate how customers and consultants perceive value in terms of the different attributes of the value disciplines. The likelihood of

purchase results indicate to what extent construction companies can achieve competitive advantage (other than by lowest tendered price) in terms of the different attributes of the value disciplines.

For most of the attributes in operational excellence and customer intimacy, there is a close correlation between the likelihood of purchase for customers and consultants. However, the likelihood of purchase in both attributes for product leadership differs for customers and consultants.

6.3.1 Operational Excellence

In terms of the attributes of quality, delivery time, and health & safety, as the levels improve the likelihood of purchase increases too. However, the curves for quality and health & safety are steeper than for delivery time. This indicates that the likelihood of purchase increases at a faster rate for quality and health & safety, as the levels improve, than for delivery time. Quality has an overall likelihood of purchase ranking of 1, delivery time 3, and health and safety 10. Therefore quality and delivery time are potentially more important as bases of competitive advantage than health & safety.

The likelihood of purchase decreases as price increases. However, the slope of the price curve is relatively flat indicating that the likelihood of purchase decreases at a rate slower than the increase in price.

6.3.2 Customer Intimacy

There is a higher likelihood of purchase for a construction company that understands customer needs as opposed to a construction company that does not understand customer needs. As the curve is relatively steep, there is a large impact on the likelihood of purchase between the two levels. Coupled with the high overall relative importance of understanding customer needs (2nd), this is a very important basis of competitive advantage for construction companies.

The cultural fit curve is the steepest curve in the results indicating that a customer who perceives a good cultural fit with a construction company has a high likelihood of selecting that company. However, the lower relative importance ranking means that is not necessarily a basis of competitive advantage to a construction company.

The likelihood of purchase increases as the reputation of a construction company's project team improves. Coupled with the high relative importance ranking for customers and contractors, this is potentially an important differentiator for construction companies.

Overall, the purchase likelihood based on brand perception is highest for Group 5 (1st) followed by Murray & Roberts (2nd). However, because the overall relative importance brand ranked second lowest (9th), brand value is unlikely to be a key competitive differentiator.

6.3.3 Product Leadership

The purchase likelihood for the type of contract differed for customers and consultants. Design and Build had the highest likelihood of purchase rating by customers. Whereas, Design-Bid-Build had the highest likelihood of purchase rating by consultants. However, the overall relative importance ranking for contract type was five which means that it could have some impact on the perception of construction companies' offerings.

The likelihood of purchase for project finance also differed for customers and consultants. Customers are more likely to purchase if there is contractor project finance whereas consultants preferred client project finance. However, an overall relative importance rating of six means that it is unlikely to be an important differentiator.

7. CONCLUSION

In this chapter, the research results which are applicable to the research propositions are summarised. Limitations in terms of the results are taken into account as well. Furthermore, recommendations are made based on the major results together with suggestions for future research.

7.1 Summary

This research report sought to answer the following research problem:

To what extent do customer's views of value disciplines create a broader platform on which construction companies can compete by delivering offerings other than lowest price?

The research problem was addressed with three research propositions.

Proposition one:

Construction companies should focus on understanding their customers' needs beyond the formal work specification.

This proposition was derived through the literature review and the preliminary survey.

The research determined that as depicted in Table 8, the top three attributes perceived by customers as having the highest relative importance ratings are Quality (17.16%), Understanding customer needs (13.85%), and Reputation of the project team (9.98%).

Proposition one is deemed to be inconclusive. Customers ranked the relative importance of quality as the highest out of 10 attributes. However, the fact that understanding customer needs ranked 2nd out of 10 attributes implies that it cannot be completely ignored. Therefore proposition one can be neither accepted nor rejected conclusively.

Proposition two:

Construction customers value Customer Intimacy in construction companies above the other value disciplines.

This proposition was derived out of the literature review and preliminary survey. The value disciplines were identified from the work of Treacy & Wiersema (1993, 1995a, 1995b) and are operational excellence, customer intimacy, and product leadership.

The research determined that as depicted in Table 5, the value discipline perceived by customers as having the highest ranking of relative importance is Customer Intimacy (41%).

Proposition two is therefore accepted based on this finding.

Proposition three

Construction consultants' views of value disciplines are consistent with those of construction customers.

This proposition was derived out of the literature review and preliminary survey. Construction consultants were identified by Hardy & Davis (1983) as being important influencers in the process to select construction companies.

As depicted in Table 5 and Table 6, and summarised in Table 20, the views of construction consultants on value disciplines are not consistent with the views of construction customers. Construction customers attach a marginally higher relative importance to customer intimacy whereas consultants attach a considerably higher level of relative importance to operational excellence.

Table 20: Relative Importance of Value Disciplines – Customers vs Consultants

Value Discipline	Relative Importance % Customers	Relative Importance % Consultants
Operational Excellence	40	47
Customer Intimacy	41	35
Product Development	19	18
	100	100

Therefore proposition three is rejected based on these grounds.

7.2 Limitations

Although adaptive conjoint analysis (ACA) is an appropriate tool for conducting surveys through the conjoint analysis techniques when there are large numbers of attributes and a small sample size (Orme, 1998) it does have limitations when compared to full profile conjoint analysis. Green & Srinivasan (1990) conducted two empirical studies comparing ACA to full profile conjoint analysis. They found that in both studies, ACA performed slightly worse in terms of predictive outcomes and longer interview times.

In this research, due to the relatively long interview time, interviewees grew weary of the interview and were less willing to provide more detailed demographic information which would have helped to further determine representivity of the sample.

A further limitation of ACA is that, unlike other conjoint tools such as conjoint value analysis, ACA does not allow for the bundling of attributes so that the optimum bundle of attributes for customers and consultants could be determined.

7.3 Recommendations

The literature on value disciplines advocated by Treacy & Wiersema (1993, 1995a, 1995b) recommend focusing on one value discipline while meeting industry standards in the other two. The research found that customers and consultants had different views on value disciplines. Customers placed a higher relative importance on customer intimacy and consultants placed a higher relative importance on operational excellence.

Overall though, the combined customer and consultants views placed the highest relative importance on operational excellence as depicted in Table 4.

In light of this overall view, it is recommended that construction companies focus on the value discipline of operational excellence and the attributes that have been categorised as part of it.

The views of customers and consultants do have some differences but are largely similar and it is not necessary to adopt completely different strategies for each of them. However, there are specific attributes where construction companies should try to segment their approach to customers and consultants.

One such attribute is where customers rated the relative importance of understanding customer needs very highly compared to consultants. Because of this, construction companies should pay particular attention to this attribute in meeting industry standards in the value discipline of customer intimacy. It also had a high likelihood of purchase and is therefore expected to be an important element of creating customer value and therefore competitive advantage other than lowest price.

It is also recommended that construction companies pay close attention to the reputation of their project teams. This is another attribute in customer intimacy. However, it was rated highly by both customers and consultants. Construction companies have a higher likelihood of purchase the better their project teams are.

By leveraging these attributes within the value disciplines, construction companies may also be in a position to secure sole sourcing contracts with construction customers. The construction customers interviewed in this research are organisational buyers whose business is to develop non residential buildings. As outlined in the literature review, a current trend in many organisations is sole sourcing. As outlined by Peter & Donnelly (2000) sole sourcing is advantageous to the buying organisation because it increases quality and allows buyers to work closely with suppliers to develop superior products. It is advantageous to

suppliers because buyers are less likely to buy only on the basis of price and suppliers have a predictable and profitable demand.

It is also recommended that construction firms develop their customer relationship management systems to be able to communicate directly with clients. By communicating directly with clients, construction firms will be able to accomplish two things. Firstly, they will be able to glean first-hand information about what their customers' needs really are. As determined in this research, understanding customer needs is a key attribute in creating customer value. Secondly, by communicating directly with customers, construction firms will be able to achieve disintermediation of the industry where consultants act as the agents of the customer, sometimes without the customer even meeting the contractor (Hardy & Davies, 1983).

7.4 Suggestions for Further Research

This research focused very narrowly on creating customer value in the non residential building sector of the construction industry. Future research could extend this to the civil engineering and residential building sectors as well.

Furthermore, research could be undertaken to segment the different types of customers and construction sectors (residential building, non residential building, civil engineering) to determine if different strategies could be adopted for creating customer value in each of the different segments.

In terms of the value disciplines, this research determined a process for construction firms to deliver customer value i.e. which value discipline construction firms should focus on and which attributes within the value disciplines construction firms should focus on. Future research could build on these findings to determine which levels of the attributes construction firms should focus on e.g. what is the affect on purchase likelihood if construction firms move from one attribute level to another level.

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Appendix 1: Research Constructs

Attributes		Levels				
Operational Excellence	Quality	Acceptable – 20%	Acceptable – 10%	Acceptable	Acceptable + 10%	Acceptable + 20%
	Delivery	On-time – 20%	On-time – 10%	On-Time	On-time + 10%	On-time + 20%
	Health, Safety, & Environment	HSE performance as per legislated requirements	HSE performance at levels of best-in-class			
	Price	Lowest Price	Lowest price + 2.5%	Lowest price + 5%	Lowest price + 7.5%	Lowest price + 10%
Customer Intimacy	Project Team	Project team with average reputation	Project team with above average reputation	Project team with best reputation		
	Cultural Fit	Poor cultural fit with client organisations	Good cultural fit with client organisations			
	Customer Needs	Does not understand customer requirements beyond formal work specification	Understands customer requirements beyond formal work specification			
	Brand	Murray & Roberts	Grinaker-LTA	Group 5	WBHO	Concor
Product Leadership	Contract Types	Design-Bid-Build construction contract	Construction management contr.	Design & Build contract		
	Project Finance	Traditional client finance	Part client – part contractor finance	Contractor project finance		

Appendix 2: Preliminary Questionnaire

Preliminary Questionnaire

A brief explanation is given of each of the three Value Disciplines before the questionnaire is administered.

- How do you rate the following value disciplines on a scale of 1 to 3? 1 being least important and 3 being most important.

Operational Excellence	
Customer Intimacy	
Product Leadership	

- How do rate the relative importance of the following sub levels on a scale of 1 to 5? 1 being least important and 5 being most important.

Operational Excellence	
Quality and Productivity Improvement	
Health & Safety track record and programmes	
Environmental programmes	
On-time delivery	
On budget delivery	
Little or no defects	
Customer Intimacy	
Reputation of the project team (track record of individuals)	
Partnering capability	
Willing and able to implement Alternative Dispute Resolution	

Product Leadership	
Ability to integrate Design and Build	
Ability to facilitate and structure project finance	

- Are there any other sub levels to the Value Disciplines that you consider important?
- Which Value Discipline/s does it/they fall under?
- How do you rate its/their relative importance in terms of the above.

Appendix 3: Extracts from each section of the ACA questionnaire

Cover Page of the ACA Questionnaire

Quit	Previous	Next	
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Before we begin, we need to get your respondent number.

Please enter your pre-assigned respondent number in the space below.

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(If you did not already receive a respondent number,
we will automatically provide one for you.)

Section One of the ACA Questionnaire

ACA Ranking Questions

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Please rate the following in terms of their desirability.

	Not Desirable		Somewhat Desirable		Very Desirable		Extremely Desirable
	1	2	3	4	5	6	7
Concor	☐	☐	☐	☐	☐	☐	☐
Murray & Roberts	☐	☐	☐	☐	☐	☐	☐
WBHO	☐	☐	☐	☐	☐	☐	☐
Group 5	☐	☐	☐	☐	☐	☐	☐
Grinaker-LTA	☐	☐	☐	☐	☐	☐	☐

For each alternative, click the button that best describes your opinion.

Sections Two of the ACA Questionnaire

ACA Importance Questions

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If two construction offerings were acceptable in all other ways, how important would this difference be in your purchase decision?

Quality at a level of 20%
above your expected level

instead of

Quality at a level of 20%
below your expected level

Not Important	Somewhat Important		Very Important		Extremely Important	
1	2	3	4	5	6	7

Click the number that best describes your opinion.

Section Three of the ACA Questionnaire

Paired Comparison Trade-off questions

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If these two construction offerings were identical in all other ways, which would you prefer?

Quality at a level of 10% above your expected level

Poor cultural fit with client organisations

or

Quality at a level of 10% below your expected level

Good cultural fit with client organisations

Strongly Prefer Left		Somewhat Prefer Left		Indifferent		Somewhat Prefer Right		Strongly Prefer Right
1	2	3	4	5	6	7	8	9

Click the number that best describes your opinion.

Section Four of the ACA Questionnaire

ACA Calibration Questions

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How likely would you be to buy this construction offering?

10% above the lowest price
Poor cultural fit with client organisations
Contractor project finance
20% longer than the expected time
Group 5
Quality at a level of 20% below your expected level

Definitely Would Not Buy

Definitely Would Buy

5

On this scale, "0" means "Definitely would not buy" and "10" means "Definitely would buy."

Appendix 4: Demographics Questionnaire

Demographics Questionnaire

A brief explanation of the study, its objectives, and format of the ACA questionnaire is explained to each respondent before the questionnaire is administered.

- Is your organisation:

A customer of construction firms?	
A consultant to customers of construction firms?	

- If your organisation is a consultant, is it:

An architectural practice?	
A quantity surveying practice?	

- In which province of RSA is your head office located?

Province	
Gauteng	
Western Cape	
Kwazulu-Natal	
Northern Cape	
Eastern Cape	
Limpopo	
Mpumalanga	
Free State	
North West Province	

- What is the estimated total value of projects implemented in RSA over the three year period from 2002 to 2004 (restricted to Non-residential building construction projects only)?

- What is the provincial spread (estimated percent) of the above projects over the same period?

Province	Estimated % Spread
Gauteng	
Western Cape	
Kwazulu-Natal	
Northern Cape	
Eastern Cape	
Limpopo	
Mpumalanga	
Free State	
North West Province	