

https://dspace.org/

Purchase Decision Criteria for

Rein, Neil

2011-06-08
http://hdl.handle.net/10539/10047

Downloaded from a DSpace repository. https://dspace.org/

Purchase Decision Criteria for Industrial Projects in South Africa

Neil Rein

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2010

-

ABSTRACT

The research was undertaken to determine the critical success factors in the marketing of industrial projects by assessing the rating of these factors by project purchasers and project suppliers in South Africa.

Potential critical success factors were identified from literature from the fields of business to business marketing, organisational purchasing, marketing and purchasing of professional services, relationship marketing and project marketing itself.

A questionnaire was compiled to assess the rating of the factors by both project purchasers and project suppliers. Responses were received from 38 individuals representing project purchasing companies and 34 individuals representing project supplying companies. Responses to the questionnaires were analysed and compared using a distribution fitting algorithm approach.

Twelve of the 15 factors identified from the literature were found to be significantly important critical success factors and a generic project marketing mix consisting of the following factors was proposed:

- Product and solution offering
- Price
- Physical evidence
- People
- Processes
- Productivity and time - related issues
- Reputation
- Relationships
- Previous experience
- References and referrals
- General capacity
- Quality

-

Some differences were found in the rating of constructs underlying these factors by project purchasers compared to project suppliers in South Africa.

-

DECLARATION

I, Neil Berthold Rein, declare that this research report is my own work except as indicated in the references and acknowledgements. 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.

_____

Neil Berthold Rein

Signed at Johannesburg

On the 23rd day of February 2010

-

ACKNOWLEDGEMENTS

I would like to acknowledge and thank my supervisors, Professor Geoff Bick and Doctor Anthony Stacey for their assistance and input to this research report. My sincerest thanks to Professor Bick for his patience and clear and incisive guidance, on the marketing side, given during the completion of the report. Thank you to Doctor Anthony Stacey for his inputs and guidance on the quantitative issues encountered in compiling the report.

Lastly I'd like to acknowledge and thank my wife, Jenny, who endured the "divorce course" with me and supported me throughout the duration of the MBA.

-

TABLE OF CONTENTS

ABSTRACT II

DECLARATION IV

ACKNOWLEDGEMENTS V

LIST OF TABLES VIII

1 INTRODUCTION 1

1.1 PURPOSE OF THE STUDY 1

1.2 CONTEXT OF THE STUDY 1

1.3 PROBLEM STATEMENT 2

1.3.1 MAIN PROBLEM 2

1.3.2 SUB-PROBLEM ONE: KEY BUYING CRITERIA 2

1.3.3 SUB-PROBLEM TWO: KEY BUYING CRITERIA: RELATIVE IMPORTANCE 2

1.3.4 SUB-PROBLEM THREE: COMPANY PERFORMANCE 2

1.3.5 SUB-PROBLEM FOUR: MARKETING STRATEGIES 3

1.4 SIGNIFICANCE OF THE STUDY 3

1.5 DELIMITATIONS AND LIMITATIONS 4

1.5.1 DELIMITATIONS 4

1.5.2 LIMITATIONS 4

1.6 DEFINITION OF TERMS 4

2 LITERATURE REVIEW 6

2.1 BUSINESS- TO- BUSINESS MARKETING 6

2.2 ORGANISATIONAL PURCHASING 8

2.3 MARKETING AND PURCHASING OF PROFESSIONAL SERVICES 12

2.3.1 PROFESSIONAL SERVICES PROVIDER SELECTION CRITERIA 14

2.4 RELATIONSHIP-MARKETING-NETWORK PERSPECTIVE 15

2.5 PROJECTS AND PROJECT MARKETING. 20

2.6 BLACK ECONOMIC EMPOWERMENT 30

2.7 RESEARCH PROPOSITIONS 32

2.7.1 PROPOSITION ONE: BUYER DECISION CRITERIA 32

2.7.2 PROPOSITION 2: DIFFERENCES IN RATING OF FACTORS BY PROJECT PURCHASERS AND PROJECT SUPPLIERS 35

3 RESEARCH METHODOLOGY 36

3.1 RESEARCH METHODOLOGY /PARADIGM 36

3.2 RESEARCH DESIGN 36

-

3.3 POPULATION AND SAMPLE 36
3.3.1 POPULATION 36
3.3.2 SAMPLE AND SAMPLING METHOD 37
3.4 PROCEDURE FOR DATA COLLECTION 37
3.5 DATA ANALYSIS AND INTERPRETATION 37
3.6 VALIDITY AND RELIABILITY 38
3.6.1 EXTERNAL VALIDITY 38
3.6.2 INTERNAL VALIDITY 38
3.6.3 RELIABILITY 39

4 RESULTS 40

4.1 RESULTS AND ANALYSIS OF RESPONSES FROM INDUSTRIAL PROJECT PURCHASERS IN SOUTH AFRICA 44
4.2 RESULTS AND ANALYSIS OF RESPONSES FROM INDUSTRIAL PROJECT PURCHASERS IN SOUTH AFRICA 59
4.3 COMPARING PROJECT-PURCHASER AND PROJECT-SUPPLIER RESPONSES 73

5 DISCUSSION OF RESULTS 77

5.1 PROJECT PURCHASER RESPONDENTS 77
5.2 PROJECT PURCHASER FACTOR RATINGS 79
5.3 PROJECT PURCHASER - SIGNIFICANCE OF DIFFERENCE IN CONSTRUCT RATINGS 79
5.4 PROJECT SUPPLIER RESPONDENTS 82
5.5 PROJECT SUPPLIER FACTOR RATINGS 84
5.6 PROJECT SUPPLIER - SIGNIFICANCE OF DIFFERENCES IN CONSTRUCT RATINGS .. 85
5.7 DIFFERENCES BETWEEN PROJECT PURCHASER AND SUPPLIER (CONSTRUCT RATINGS) 86
5.8 RESULTS PERTAINING TO PROPOSITION 1 87
5.9 RESULTS PERTAINING TO PROPOSITION 2 88

6 CONCLUSIONS AND RECOMMENDATIONS 91

6.1 INTRODUCTION 91
6.2 CONCLUSIONS OF THE STUDY 91
6.3 GENERIC MARKETING MIX FOR MARKETING OF INDUSTRIAL PROJECTS IN SOUTH AFRICA 93
6.4 RECOMMENDATIONS FOR FURTHER RESEARCH 95
6.4.1 CONSOLIDATION OF FACTORS 95
6.4.2 SECTOR-SPECIFIC RESEARCH 95
6.4.3 COMPARISON OF IMPORTANCE OF FACTORS BETWEEN SECTORS 96
6.4.4 RATING OF PERCEPTION BASED ON POSITION IN COMPANY 96
6.4.5 BBBEE IN THE PROJECT-PURCHASING DECISION 96

REFERENCES..... 97

APPENDIX A: QUESTIONNAIRE A AND COVERING LETTER... 101

APPENDIX B: QUESTIONNAIRE B AND COVERING LETTER... 105

APPENDIX C: QUESTIONNAIRE C AND COVERING LETTER... 108

APPENDIX D: QUESTIONNAIRE D AND COVERING LETTER... 111

APPENDIX E: DETAILED BREAKDOWN OF PROJECT PURCHASER RESPONDENTS..... 114

APPENDIX F: DETAILED BREAKDOWN OF PROJECT SUPPLIER RESPONDENTS..... 116

LIST OF TABLES

Table 1: Criteria of choice for selecting professional service providers 14

Table 2: Customer benefits and sacrifices from literature (Ahola et al. 2008)..... 26

Table 3: Mnemonics assigned to factors..... 40

Table 4: Mnemonics assigned to constructs and combined factor-construct mnemonics 41

Table 5: Summary of project purchasers respondents by: company and questionnaire answered..... 44

Table 6: Constructs rated as potentially very important by project purchasers in South Africa 45

-

Table 7: Factor occurrences of underlying constructs rated as potentially very important by project purchasers in South Africa 46

Table 8: Significance of difference of means of responses rated potentially very important by project purchasers..... 47

Table 9: Constructs rated as indifferent by project purchasers in South Africa.... 49

Table 10: Factor occurrences of underlying constructs rated as indifferent by project purchasers in South Africa 50

Table 11: Significance of difference of means of responses rated indifferent by project purchasers. 52

Table 12: Constructs rated as potentially unimportant by project purchasers in South Africa 53

Table 13: Factor occurrences of underlying constructs rated as potentially unimportant by project purchasers in South Africa 54

Table 14: Significance of difference of means of responses rated potentially unimportant by project purchasers..... 55

Table 15: Summary of project purchaser factor and associated underlying construct rating 56

Table 16: Summary of project supplier respondents by company and questionnaire answered.....**Error! Bookmark not defined.**

Table 17: Constructs rated as potentially very important by project suppliers in South Africa 60

Table 18: Factor occurrences of underlying constructs rated as potentially very important by project suppliers in South Africa..... 61

Table 19: Significance of difference of means of responses rated potentially very important by project suppliers. 62

-

Table 20: Constructs rated as indifferent by project suppliers in South Africa 64

Table 21: Factor occurrences of underlying constructs rated as indifferent by project suppliers in South Africa 65

Table 22: Significance of difference of means of responses rated indifferent by project suppliers..... 66

Table 23: Constructs rated as potentially unimportant by project suppliers in South Africa..... 67

Table 24: Factor occurrences of underlying constructs rated as potentially unimportant by project suppliers in South Africa..... 68

Table 25: Significance of difference of means of responses rated potentially unimportant by project suppliers. 69

Table 26: Summary of project supplier factor and associated underlying construct rating..... 70

Table 27: Comparison of means of responses by project purchasers and project suppliers 73

Table 28: Sectors serviced by project supplier respondents (sectors serviced marked in black) 83

Table 29: Summary of project purchaser vs supplier factor and associated underlying construct rating..... 89

-

1 INTRODUCTION

1.1 Purpose of the study

The purpose of the study was to understand the marketing of industrial projects in South Africa. The objective was to identify and rate the relative importance of critical success factors in the marketing of industrial projects in South Africa. By identifying and rating these factors, the study aimed to provide guidelines to companies that operate in project businesses to enable them to better focus their resources in marketing project-based solutions to potential clients.

1.2 Context of the study

South Africa as a country is currently faced with the need for a number of large scale infrastructure projects to be undertaken in the short-to-medium term. In addition to this South Africa's economy is underpinned by the following sectors – mining, minerals, metallurgical, manufacturing, paper and pulp and petrochemical industries. All of these industries typically achieve expansions of operations, refurbishment of existing facilities by purchasing and executing projects at these new or existing facilities.

Günter and Bonaccorsi (1996), in reviewing work conducted on project marketing and systems selling, noted that managers and decision makers do not have any well accepted frameworks for solving marketing problems in project-based industries. Furthermore, these authors noted that project marketing, being a highly sophisticated practice, is mostly managed by market sensitive, professionally mature engineers. The authors went on to note that most of the existing literature at the time they were writing emanated from Germany and the Scandinavian countries, with a small amount from France and that there was no solid theoretical basis to many of the studies conducted on project marketing and systems selling.

Cova and Salle (2007), in reviewing the available literature on project marketing, ponder why the majority of work conducted on this topic originates almost

exclusively in Europe and suggest that the lack of North American research in project marketing is due to the body of North American research being done under the topic of solution marketing. By implication it would seem that the need exists to expand the body of knowledge in this sphere within the South African context.

1.3 Problem statement

1.3.1 *Main problem*

The purpose of the research was to better understand the purchasing of projects in South Africa in order to assist companies marketing such projects to develop appropriate marketing strategies.

1.3.2 *Sub-problem One: Key Buying Criteria*

The first sub-problem was to identify key buying criteria in the procurement of industrial projects.

1.3.3 *Sub-problem Two: Key Buying Criteria: Relative Importance*

The second sub-problem was to determine the relative importance of these key buying decision criteria in the procurement of industrial projects in South Africa by companies *procuring* industrial projects.

1.3.4 *Sub-problem Three: Company performance*

The third sub-problem was to determine the relative importance of these key buying decision criteria in the procurement of industrial projects in South Africa as rated by companies *supplying* industrial projects.

-

1.3.5 *Sub-problem Four: Marketing Strategies*

The fourth sub-problem was to determine appropriate marketing strategies to address the key buying decision criteria of individuals involved in the procurement of industrial projects in South Africa.

1.4 Significance of the study

The study aimed to provide guidance to the following parties:

- Marketing practitioners in South Africa, because the factors that influence project marketing in South Africa may be very different from those in other countries.

- Marketing practitioners from countries other than South Africa, as international companies wanting to market projects in South Africa (directly or through “agent” type relationships) may benefit from a study such as this since the study aimed to provide insight into the specific factors associated with project marketing in South Africa

- Senior managers in South Africa responsible for strategy formation could potentially benefit from the study. The identification and rating of factors in project marketing in South Africa potentially informs strategy formulation for senior managers responsible for strategy formulation for companies involved in project business in South Africa.

- Senior managers of international companies responsible for strategy formation could benefit from the study. The identification and rating of factors in project marketing in South Africa might potentially inform strategy formulation for senior managers responsible for strategy formation for companies either involved or wanting to tackle project business in South Africa.

- Project managers may benefit from the study as it aims to give project managers an appreciation of the specific factors and challenges associated

-

with project marketing in South Africa. This may provide some "downstream" context for project managers during the execution stage of a project that has been successfully marketed.

- Academics in the marketing field could benefit from a study potentially this type as it adds to the currently small body of documented knowledge available on this particular topic in South Africa.

1.5 Delimitations and limitations

1.5.1 *Delimitations*

The following delimitations applied to this study:

- The research was conducted on industrial engineering-based project-marketing factors only.
- The study applied only to companies that engage in industrial activities and seek to procure services from companies on a project basis
- Respondents were asked to rate the factors as well as company performance related to companies that have done projects with a capital value of over R20 million.

1.5.2 *Limitations*

Responses were sought only from engineering managers, engineers, plant operators, project managers and procurement managers.

1.6 Definition of terms

The following terms are relevant to this study:

Professional services: Are intangible in nature and are provided to an end customer. Professional services focus on customer processes and require a great

-

deal of input during service delivery. Owing to the intangible nature of the service, its outcome cannot be predetermined and the success of the service can only be determined upon completion of the task. As services are provided by individuals, the service delivery is dependent on the individuals involved in the service delivery and no two services result in identical results

Relationship marketing: All activities employed by an organisation in developing relationships with prospective customers, with the view that these relationships could lead to a customer/supplier relationship. After a relationship has been fostered, the concept of relationship management is focussed on maintaining the relationship, such that the goals of both parties are achieved.

Industrial Project: For the purposes of this study the Cova and Ghauri (1996) definition of a project was used:

“A complex transaction covering a discrete package of products, services and other actions designed to create capital assets for the buyer over a certain period of time”

Furthermore, industrial projects for the purposes of this research are defined as projects undertaken in the mining, metallurgical, minerals processing, petrochemical and power generation (Eskom) industries in South Africa.

-

2 LITERATURE REVIEW

Project marketing over the last 10 years has begun to develop its own theoretical background and frameworks. These frameworks, it can be argued, are based on various other marketing approaches. A literature review of project marketing needs to incorporate aspects of all these disciplines, which include aspects of business-to-business marketing, industrial marketing and the work of the IMP, industrial and business-to-business purchasing, services marketing, relationship marketing and, of course, project marketing itself.

2.1 Business- to- business marketing

Industrial marketing is the process of marketing goods or services from one business to another. The execution of an industrial project by one company either for or on behalf of another company indicates that business to business transactions take place before, during and after such project execution. It stands to reason then that some aspects of project marketing are potentially entrenched in the theory surrounding business-to-business or industrial marketing.

Often referred to as business-to-business markets, industrial markets differ from customer (or consumer) markets in a number of ways. The key differences (amongst others) that have been identified are (Kotler 1994):

- Fewer but larger buyers that are often geographically concentrated;
- A derived demand – the demand for industrial products is derived from the ultimate demand for consumer products;
- Fluctuating demand – the derived demand requiring the business marketer to carefully monitor demand patterns and changing buying preferences in household consumer markets; and
- A relatively inelastic demand;

-

- Many participants in the buying process, professional buyers, closer relationships, absence of middlemen, reciprocity, and technological links.

The industrial marketing selling process is typically characterised by the following:

- Marketing is one-to-one in nature. It is relatively easy for the seller to identify a prospective customer and to build a face-to-face relationship.
- Often the buying/selling process is complex and includes many stages. The stages may include: request for expression of interest, request for tender, selection process, awarding of tender, contract negotiations, and signing of final contract.
- Selling activities involve long processes of prospecting, qualifying, wooing, making representations, preparing tenders, developing strategies and contract negotiations.

Table 1: Differences between Industrial Marketing and Consumer Goods Marketing (Hutt and Speh 1985)

Criterion	**Industrial Marketing**	**Consumer Goods Marketing**
Product	Technical in nature; exact form often variable; accompanying services very important.	Standardised form; service important but less so.
Price	Competitive bidding for unique items; list prices	List prices
Promotion	Emphasis on personal selling	Emphasis on advertising
Distribution	Shorter, more direct channels to market	Passes through a number of intermediate links en route to consumer
Customer relations	More enduring and complex	Less frequent contact; relationship of a shorter

-

		duration
Consumer decision making process	Involvement of a diverse group of organizational members in the decision	Individual or household unit makes the decision.

(Morris et al. 1999) contend that an industrial marketer is not simply concerned with determining the name and position of the individual who makes the final buying decision, but rather aims to work with, influence and then become part of a dynamic group decision process as it unfolds.

From the discussion above it is apparent that a number of individuals may be involved in the industrial project purchasing decision and often the way an industrial project is purchased is determined by the particular organisation. For this reason, a review of industrial project purchasing would not be complete without some understanding of the theory developed on organisational purchasing.

2.2 Organisational Purchasing

Industrial purchasing may be seen as a situation in which buying is not undertaken for personal account or consumption, but rather for organisational purposes (Morris et al. 1999), industrial purchasing has been formally defined as the performance of business activities that facilitate exchange processes between producers and organisational customers (Morris 1992). A single individual does not typically make a purchasing decision; multiple people get involved in both formal and informal ways to come to a final decision – a decision which may take many months or even years to make. Projects are purchased by organisations from other businesses or organisations. It stands to reason then that at least some of the theory related to organisational buying is relevant to the project-marketing context.

Johnston and Bonoma (1981) found that to describe industrial buying behaviour as a chronological process with predetermined stages of decision processes taking place distorts operating reality in many instances. Although certain buying

-

tasks occur with regularity, they do not always follow the same order. Often the process is iterative or even recursive, with certain tasks being repeated more than once.

Johnston and Bonoma (1981) also propose that industrial buying behaviour is essentially a system composed of many dyadic (two-person) interactions among individuals within the context of a formal organisation.

In reviewing organisational buying theories, Tanner (1999) proposes that 3 general approaches have been taken to explaining organisational buying behaviour:

- **Role theory** recognises that complex political and social processes are part of buying decisions and explores how individuals interact during the buying process. This approach focuses on the functional areas that participate in a buying decision and what roles they play.
- **The BuyGrid Analytic Framework** attempts to describe the process through which buyers pass as they make a purchase decision and argues that the buying process and, consequently, buying behaviour vary based on experience in purchasing the product or service. The BuyGrid Framework proposes that three types of buying situations exist (Hutt and Speh 2001):
    - **New Task –** the problem or need is perceived as being completely different from previous experiences and requires significant problem solving and information gathering prior to a decision being made.
    - **Straight Rebuy –** Continuing or recurring requirement, so buyers have substantial experience in dealing with the need and require little or no need for new information.
    - **Modified Rebuy –** In this case organisational decision makers feel that significant benefits may be derived from a reevaluation of alternatives.

-

It could be argued that the procurement of an industrial project is most likely to be most similar to a new-task buying situation, as it is unlikely that two projects are going to be identical in terms of their input and output requirements. Hutt and Speh (2001) suggest that strategically a business marketer confronting a new task buying situation can gain differential advantage by actively participating in the initial stages of the procurement process. Specifically, it is suggested that the marketer should gather information on the specific problems faced by the buyer, isolate specific requirements and offer proposals to meet the requirements.

A key limitation identified as part of the BuyGrid Framework is that dimensions other than just experience play a role in organisational buying behaviour. Other dimensions that have been proposed are the complexity and importance of the buying decision.

In attempting to elucidate the processes associated with the purchase of capital equipment and services, Johnston and Bonoma (1981) identify the following generic steps in the buying of capital goods and services:

- Need recognition;
- Specification – specifying the solution and preparing written specifications as well as the approval of the purchase;
- Search – searching for suppliers, acquiring proposals, evaluating proposals and selecting suppliers;
- Formalisation – negotiation, contract negotiation and execution, payment;
- Evaluation of performance and satisfaction.

The researchers found that members of a variety of departments participated in each of the steps. Participants often included members from the following departments:

- Purchasing
- Engineering

-

- Manufacturing
- Accounting and Finance
- Sales and marketing
- Top management
- Board members
- Shipping and receiving
- Vendors themselves

The long list of participants highlights the complexity of both the industrial marketing process as well as the purchase process.

A review of industrial marketing and, by implication, project marketing and purchasing would not be complete without at least a brief overview of buying centres. As has been mentioned already, industrial marketing often involves the marketing to a group comprising multiple people that get involved in the purchasing decision (in both formal and informal ways). These groups have been called buying centers. Buying centers were defined by Webster and Wind (2001:15) as “all (of) the individuals and groups who participate in the purchasing decision process” and as “an informal, cross-sectional decision unit, in which the primary objective is the acquisition, importation and processing of purchasing related information”.

In attempting to classify buying centre behavior, Bunn (1993) identifies and classifies six prototypical buying-decision approaches amongst organisational buyers, which are then further classified according to four underlying buying activities. The underlying buying activities of buyers as defined by Bunn (1993:38) are set out below.

1. Search for information: The buyer’s effort to scan the internal and external business environment to identify and monitor information sources relevant to the focal buying situation;

-

2. Use of analysis techniques: The extent to which the buyer makes use of formal and or quantitative tools to objectively evaluate aspects of the buying situation;

3. Proactive focusing: The extent to which decision making related to the focal purchase is prospective and thus considers the strategic objectives and long-range needs of the firm; and

4. Procedural control: The extent to which the evaluation of a buying decision is guided by established policies and procedures, or transaction precedents.

Classification of buying-decision approaches is useful for managers because it provides a framework for focusing marketing efforts.

2.3 Marketing and Purchasing of Professional Services

The delivery of an industrial project consists of both tangible product (the physical installation at the completion of the project) and intangible services (engineering design, procurement services and expediting). The fact that industrial projects have a services aspect to their delivery implies that aspects of services marketing are of relevance when the marketing of industrial projects is being considered.

Services, in contrast with products are intangible, perishable and variable (Lovelock 2001). In the case of an engineering design the output may be captured on paper in the form of drawings and specifications and may be utilised again, but the output may be generally regarded as intangible. The service is generally delivered by people (not machines or an automated process). Dependence on people for service delivery accounts for the variability associated with service delivery. At the end of a project or once a service has been delivered there is little evidence of the actual delivery. This accounts for the perishable nature of services.

Marketing frameworks associated with marketing of physical products have traditionally concentrated on the 4Ps of marketing:

-

Product: the offering to the market

Place: where the service is made available from

Price: the price at which the product is made available and how it compares to alternative offerings.

Promotional information: information about the product that is made known to prospective buyers or consumers.

It has been suggested that in the case of services marketing the traditional 4P model be expanded to an 8P model (Lovelock 2001). The extra 4Ps represent:

Physical evidence: in a strict service environment, in the complete absence of a tangible product service providers make use of physical evidence such as dress codes, established and well furnished office space, displayed certificates or awards intended to allay fears regarding the experience, credibility or trustworthiness of the service provider.

People: ultimately it is the people or employees of the service providing company that deliver the service. The company therefore attempts to attract the most highly skilled individuals to the company. These people interact proactively and directly with the client.

Processes: in order to try and standardise offerings service organisations typically develop processes to manage the service-delivery process. The processes are typically generic in nature and do not always conform to client specification. Consequently, these processes may require client-specific modification. Processes are also introduced in order to manage the inherent variability of services. Marketing of such services is intended to reassure the client that services of consistent quality be delivered.

Productivity: refers specifically to the client's perception of consistent service, service quality and acceptable quantity of service for the price**.**

-

2.3.1 *Professional Services Provider Selection Criteria*

Legoete (2007) in reviewing the criteria for selecting professional service providers identified the following criteria that buyers use in their selection. The criteria are adapted from Gallouj (1997):

Table 1: Criteria of choice for selecting professional service providers

Source	Pertinent Selection Criteria	
Dawes, Dowling & Patterson (1992)	General reputation of the firm Reputation of the firm in specific areas Past experience of the firm	Characteristics of the specific consultant Client's sphere of activity
Day and Barksdale (1992)	Experience, expertise and competence (reputation, qualifications of personnel, capacity for innovation) Understanding the client's problems and needs	Interaction, relations, communication (presentation, listening, teamwork) Contractual and administrative compliance (price, efficiency, capacity to honour)
Gallouj (1997)	Proposed approach and planned action Method of work, procedures and possible alterations Characteristics of the consultancy form Consultancy team and its skill levels Project control – complete mission within time and budgetary limits	Experience and references of the consultants in the field concerned Background knowledge, possible references Attitude of consultants Availability, involvement and personal commitment of the consultants
Day and Barksdale (2003)	Relevant experience: firm and team members Competence: "Hard" criteria Capacity: "Hard" criteria	Trust in firm: "soft" criteria Commitment of firm: "soft" criteria "Personal" chemistry as a deciding factor

-

In assessing a client's selection criteria for consulting engineering services Tracey (1989) compared how the service provider rated the criteria compared to how clients did. The criteria and the ratings (supplier, client) were:

Quality of staff (4,4); Staff experience in similar work (2,2); Size of practice and number of staff (15,15); experts available outside own field of expertise (11,13); supplier staff empathy with client staff (8.5,8); high-level professionals involved in project (3,3); project seller involved in actual project execution (6,6); practice recognised by the profession (8.5,8); resources available to complete project (1,1); degree of specialisation of the practice (7,7); location of the practice (12.5, 11); practice's extent of repeat clients and ongoing business (5,9); premises and offices of practice (14,14); computers, software etc. (10,12); and willingness to negotiate fees (12.5,10).

2.4 Relationship-Marketing-Network Perspective

The main body of research on industrial marketing over the last 20 years has concentrated on providing a relationship framework for an activity that had previously been understood to be essentially transactional (Cova and Salle 2000). Andersen and Kumar (2006) identified, based on business-to-business literature, that interpersonal relationships determine the fate of a number of selling opportunities within a business-to-business context. It stands to reason then that project marketing and purchasing, which is a business-to-business activity, requires regular personal interaction between individuals from both the company providing the project and the company procuring the project. In other words, the activity has some theoretical base in the realm of relationship marketing.

Andersen and Kumar (2006) reiterate that compared to one-off transactions, business relationships are reliant on recurring personal interaction between individuals from both the organization that is purchasing a product or service and from the company that is selling the product or service.

More recently, the importance of networks within the industrial-marketing context has become of interest to some researchers. The term "network" refers to a set of

-

nodes and the relationships that connect them (Fombrun 1982). A business network is a set of two or more connected business relationships, in which each exchange relation is between business firms that are conceptualized as collective actors (Emerson 1976). Networks can be seen as evolving organisms and the dynamics within a network are influenced by, amongst other things, the actors, the relationships, the needs, the problems, the capabilities and resources changing over time.

In reviewing relationships and networks with respect to project marketing, Tikkanen et al. (2007), contend that at least three partially overlapping perspectives have emerged from the literature. These perspectives are the Anglo-American Relationship Marketing, The Nordic School of Services and Relationship Marketing and the Industrial Marketing and Purchasing (IMP) Group Tikkanen et al. (2007) argue that despite some conceptual language and methodological discrepancies between the perspectives, central to all the perspectives are:

- The creation of cooperative and trust-based relationships with both customers and other stakeholders (Hunt and Morgan 1995);
- Marketing based on inter-unit collaboration within a company (Grönroos 1997); and
- Building and leveraging firms' and networks' key resources and capabilities through inter-organisational cooperation and joint technological development (Hakansson and Snehota 1995).

In reviewing the literature on project marketing and systems selling (Günter and Bonaccorsi 1996) suggested that at the time, managers and decision makers had no well accepted framework for solving marketing problems in the project providing industries. Günter and Bonaccorsi (1996) note that issues surrounding project marketing had been tackled from the perspective of the problems of cooperation between various suppliers. Factors that were mentioned included: the importance of network building in project marketing, the personal element of project marketing (namely the role of sales engineers and or key account managers); and the difficulties faced by persons in this position that are

-

specifically related to being at the interface of marketing and engineering. Another factor was the legal know how and social skills required during project negotiations. The implied buying decision criteria therefore are:

- Strong interpersonal relationships between individuals in the project procuring organisation and the project selling organisation;
- Sales engineers'/key account managers' ability to deal with the combined engineering, legal and social skills required during project negotiations.

Filiatrault and Lapierre (1997), in reviewing the management of business-to-business marketing relationships in consulting engineering firms, recognise the importance of managing relationships in the business-to-business context. In conducting an empirical study on the practices of consulting engineering firms in North America, Filiatrault and Lapierre propose a four-phase model of the relationship-management process. The four-phases are before the project, at the beginning of the project, during the project and after the project. The four-phase model proposed by Filiatrault and Lapierre (1997) is summarised in the table below (Table 1):

-

Table 1: Four-phase model for the management of relationships in consulting engineering firms (Filiatrault and Lapierre 1997)

Before the project	**At beginning of the project**	**During the project**	**After the project**
Evaluate quality and precision of answer to bid	Seek customer participation early	Assign sufficient authority to project manager	Ensure customer satisfaction and nurture relationship through guarantees, follow-up, visits training of technicians and operators, and maintenance contracts
Evaluate past experience and distinctive technical competence and ability to work with people	Clearly define needs	Replace incompetent project manager quickly	Foster customer participation a posteriori
Use referrals	Assign project responsibility to only one person for both the client and the consultant	Manage steering committee tightly	Conduct surveys
Improve linking capabilities	Define steering committee formalities and procedures,	Closely control schedule and costs	Facilitate the transfer of responsibilities of project manager to

-

	modification, and follow-up procedures		operations manager within the firm by more thorough start-up procedures and extended presence of specialists and technicians
	Approve procedures "Train" customer	Give and get feedback	
		Encourage customer participation	
		Discourage over-participation	
		Ensure quick and efficient recovery of errors	
		Formalise termination procedure	

By implication and based on Table 1 above, the following could be seen as key buyer decision criteria in procuring projects:

- Quality and precision of the written bid;

-

- Ability to match previous experience and technical competence to the particular project; and

- Referrals.

This empirical work therefore suggested that there were managerial implications in the management of business-to-business relationships for consulting engineering firms in North America. These relationships needed to be actively managed before, during and after project implementation. Management practices need to be developed for each stage of the project and these need to be measured. Particular attention needs to be paid to the post-project phase since this is where customer satisfaction and loyalty are most influenced. This is in line with Artto's (2001) contention that "the project concept must be redefined to include the activities from the very early pre-project phases to the very late post-project phases". Filiatrault and Lapierre (1997)also identify the issue of quality and the management of quality issues before during and after a project as being an important factor impacting on client satisfaction and the overall relationship. Filiatrault and Lapierre (1997) argue that quality can be defined as both technical quality (the "what") and functional quality (the "how"), with technical quality being covered by factors such as having quality assurance systems (for example ISO9000) in place and the "how" being issues such as the competence and professionalism of the engineers.

2.5 Projects and Project Marketing.

Projects are becoming one of the dominating modes of international business (Günter and Bonaccorsi 1996), (Hadjikhani 1996). Artto and Wikström (2005) employed a bibliometric study to try and identify the relevant characteristics of the concept. Based on their work Artto and Wikström (2005) proposed the following definition of project business:

"Project business is the part of business that relates directly or indirectly, with a purpose to achieve objectives of a firm or several firms"

-

In reviewing projects and project marketing, Skaates and Tikkanen (2003) suggest that although there are a number of definitions for a project, a good definition for the purpose of project marketing is “a transaction concerning a functioning whole which is delivered to the buyer’’ and covers ‘‘a discrete package of products, services and other actions designed to create (capital) assets for the buyer over a certain period of time’’ (Cova and Ghauri 1996). Skaates and Tikkanen (2003) are careful to point out that a key difference exists between project marketing and systems selling according to the definition of Cova and Ghauri (1996), where only capital assets are essentially delivered with little or no service component associated with the delivery in project marketing, whereas systems selling incorporates a large service component.

A number of authors have noted the increasing tendencies or pressures on firms to procure projects from companies. Cova and Salle (2007) suggest the following four reasons for why there is an increasing tendency to procure projects or integrated solutions:

- Globalisation – there is ease of access to information especially regarding seeking out competitive suppliers;
- Deregulation of markets – privatisation and liberalisation of markets have made integrated project type solutions more favourable to customers;
- Behaviour of firms – many firms are re-focusing on core activities, preferring to outsource the provision of goods and services in the form of projects to suppliers; and
- Technology – technology has allowed remote support of finished projects or integrated solutions, allowing firms to be more confident of not being left in the lurch by suppliers.

Backhaus (1995) suggests that systems selling and project marketing are characterised by the following:

- Customised production;

-

- Long-term character;
- High value of the single order;
- Bidder/supplier coalitions;
- Increasing share of service;
- Know how differences between supplier and customer;
- Variability of scope of supplies and content of the contract;
- Internationality;
- Order financing (“financial engineering”); and
- Discontinuity of incoming orders.

In their review of the literature on project management and project marketing Cova and Salle (2005) contend that there are in fact only four common characteristics of a project, these being: finite budget and schedule constraints; complex and interrelated activities; clearly defined objectives; and lastly, uniqueness.

The nature of projects results in some specific challenges surrounding the marketing of these projects. The purchasing of a project has been described by Cova and Holstius (1993) as a “long lasting, negotiated and interactive process”, which may consist of multiple phases. Cova and Holstius (1993) see these phases being project preparation, which entails delineating the scope and specifications of the project; supplier evaluation, selection and contract negotiation; and project implementation. This is obviously a lengthy buying process, which implies that the marketing process is likely to be lengthy as well (Cova and Holstius 1993), (Hadjikhani 1996).

In order to distinguish project marketing from other forms of business-to-business marketing the D-U-C framework was created (Mandják and Veres 1998). The three distinguishing features of project marketing are now generally accepted to be:

-

D – discontinuity of demand for projects (as opposed to other industrial or business-related products or services);

U – uniqueness of each project. from a variety of perspectives including technically perspectives, financial perspectives and/or from a socio-political point of view; and

C – complexity of each individual project in terms of the number of actors involved throughout the supply process.

Hadjikhani (1996) concentrates on the management of discontinuity as a key factor in successful project marketing. In this case the author contends that a strategic problem exists due to the discontinuity in the selling of projects to the same buyer and that a major question that project sellers need to ask is how to manage the relationship between buyer and seller after a project's completion. Hadjikhani (1996) suggests that marketing actions in managing this sleeping relationship may take one of two forms, which are referred to as "inward actions" and "outward actions".

Inward actions involve the project buyer and seller and are directly focused on the focal sleeping relationship. An example of this may, for instance, be the selling of spare parts for a project to the buyer, where the project buyer is forced to buy spare parts from the project seller. Inward actions are aimed at increasing the interdependencies between buyer and seller and the marketing problem then become the management of resource adaptation between buyer and seller. The implied critical success factor here, therefore, is increasing dependency of the project buyer on the project seller in the long term.

Hadjikhani (1996) defines outward actions as the influence that other actors within a network may have on a particular focal sleeping relationship. The author in this case quotes the example of Indian firms refusing to procure projects from Swedish firms due to a bribery scandal that a Swedish firm was involved in. Examples of outward actions include access to or relations with other players in the network; e.g. financiers. This observation suggests that the firm's reputation is a key criterion on which a buying decision is made.

-

Cova and Salle (2005) contend that the development of the field of project marketing over the last three decades has moved from focusing on a specific project through what is referred to as a competitive bidding strategy to multi-project focusing on the same customer in order to win follow up projects. The marketing activity implication from this is that project marketers should concentrate on getting repeat business - marketing to customers for whom the company has done projects for in the past.

Based on the discussion above, the key factors associated with project marketing as identified by the literature may be seen as:

1. The international nature of the business;
2. The long term nature of the business relationships;
3. The process nature of project business;
4. The discontinuous nature of the business relationship;
5. The unique nature of each project;
6. The complexity of the business;
7. The dynamic nature of the business.

Ahola et al (2008) in a case study on a Finnish shipyard that purchases turnkey projects found that when selecting a supplier price was the most important criterion, but that in addition to this, other criteria included:

- Experience from previous projects;
- Investments in product development made by the turnkey supplier;
- People involved from the turnkey supplier;
- Sub-suppliers used by the turnkey supplier;
- Financial situation of the turnkey supplier;

-

- Client's preferences; and
- Risk carrying ability and risk willingness of the turnkey supplier.

In comparing the project marketing approach of IS/IT firms and engineering firms, Blomquist and Wilson (2007) suggest key tactical factors in successful marketing of projects:

1. Thorough analysis and understanding of the potential client. The understanding should include appreciation of the client's needs, options and alternatives, ability to influence design parameters, tolerance in cost, time and performance and political support within the organisation.
2. Projects are not developed in a vacuum. Therefore, a thorough understanding of the milieu is essential to success.
3. There should be less focus on the "triple constraint of cost, time and performance". Instead there should be a broader focus on understanding and meeting client expectations.

Buyer's decision criteria that can be derived from these observations, therefore, are:

- The ability to supply options and alternatives; and
- The supplier taking part or influencing the project design parameters.

Cova and Salle (2007) refer to the following key success factors of project marketing activities:

1. Structural efficiency – especially the capacity to make special financial arrangements and developing local presence;
2. Entrepreneurial culture, including risk management;
3. Adequacy of personnel and especially the ability to develop relations and set up strategic or opportunistic cooperation; and

-

4. The role of references (Salminen and Möller 2006)

Ahola et al. (2008) reviewed purchasing strategies and value creation in industrial turnkey projects. In the paper the authors evaluate how turnkey project deliveries create value for their customers and how the purchasing strategy of the buyer may affect value creation of the project. The findings suggest that there are a number of both short term and long-term value elements that are emphasised in the delivery of turnkey projects. Interestingly, Ahola et al (2008) propose that competitive tendering-based strategies (employed by purchasers of projects) tend to emphasise short-term value creation while purchasing strategies relying on close inter-organisational relationship between the buyer and seller emphasise long-term value creation. Customer benefits and sacrifices that Ahola et al (2008) identify from the literature are presented in Table 3 below:

Table 2: Customer benefits and sacrifices from literature (Ahola et al. 2008)

<table>
<tr><th></th><th>Benefits</th><th>Sacrifices</th></tr>
<tr><td rowspan="2">Short term</td><td>Product related
<table><tr><td>Product performance</td></tr><tr><td>Product reliability</td></tr><tr><td>Product consistency</td></tr><tr><td>Product quality</td></tr><tr><td>Product customisation</td></tr></table></td><td>Direct cost
Price</td></tr>
<tr><td>Delivery efficiency</td><td>Indirect cost of poor performance</td></tr>
</table>

-

	On-time delivery	Delayed deliveries	
	Delivery flexibility	Repair and maintenance	
	Accuracy of delivery		
	Efficient delivery		
	Problem solving		
	Additional support services	**Operational transaction costs**	
	Product-related services	Inventory management	
	Training programmes	Order handling	
	Service flexibility	Incoming inspections	
	Product testing and validation	Manufacturing	
		Time/effort/energy	
		Conflicts	
		Information collection about suppliers	
		Negotiations	
		Drawing up the contact	
		Establishing delivery	

-

		procedures	
		Logistics	
		Installation	
		Ordering costs	
		Monitoring supplier performance	
		Coordinating and communicating with supplier	
		Internal coordination	
	Access to resources		
	Customer information		
	Outsourcing of activities		
	Communication (business critical information)		
	Innovation		
	Support for customer in early project definition phase to create optimal outcome		
	Incremental innovation enhancing efficiency		

-

<table>
<tr>
<td rowspan="3">Long term</td>
<td>Relationship between customer and supplier

Image

Trust

Solidarity

Mutual goals</td>
<td>Strategic transaction costs

Risk that the supplier will lose its competitiveness

Risk that the supplier will behave opportunistically</td>
</tr>
<tr>
<td>Innovation

Prototype development

Innovations and new solutions supporting customer’s business

Radical innovations opening up new business opportunities

Design tasks

Alternative solutions</td>
<td>Customer capabilities

Customer’s R&D function may suffer</td>
</tr>
<tr>
<td>After sales services

Warranties</td>
<td></td>
</tr>
</table>

-

	After-purchase services	

Cova and Hoskins (1997) highlight the fact that successful project marketing is contingent on a firm's ability to manage the firm's relationships with a local network of both business and non-business actors (referred to as the "milieu"). Furthermore, it is suggested that a twin track approach can be taken in order to achieve this. The approach is broken down into a deterministic approach where the firm anticipates the competitive arena and rules of the game and a constructivist approach where the firm becomes actively involved in shaping the competitive arena and the rules of the game.

The deterministic approach assumes that the potential customer defines the project in its entirety and that the firm intending to tender on the project must make every effort to anticipate the requirements in order to be in the best position to win the business (project). The success of such an approach is directly related to the ability of the company bidding to gather, consolidate and disseminate intelligence pertaining to the specific potential project.

The constructivist approach on the other hand suggests that the potential customer and stakeholders in a project should work together to define the optimum solution. The potential contractor then becomes one of the stakeholders. This approach is based on using creative offers to initiate a project. A creative offer may be seen as a speculative proposal presented to the customer to reinforce the contractor's credibility and encourage the customer to become engaged in interactive dialogue early on in the concept development process or project-process.

2.6 Black Economic Empowerment

Black economic empowerment in South Africa seeks to address the inequalities of the past with respect to meaningful participation of the black majority in South Africa's economy. Apartheid formalised, through legislation; that was passed in

-

1948, the systematic and purposeful restriction of black participation in the South African economy.

Black economic empowerment in South Africa seeks to bring about economic transformation by dismantling all structural mechanisms and de-racialising the economy, in the interest of all its citizens.

The state defines BEE as an "…integrated and coherent socio-economic process that directly contributes to the economic transformation of South Africa and brings about significant increases in the number of black people that manage, own and control the country's economy, as well as significant decreases in income inequalities" (dTi 2003)

The South African government has introduced a number of policy instruments to achieve its objectives with regard to BEE. These include legislation and regulation, preferential procurement, institutional support, partnerships with the private sector, financial and other incentives (dTi 2003).

In order to determine the level of BEE that a certain company has reached the state advocates the use of a balanced "scorecard", which incorporates all the elements contained in the BEE definition, namely: equity ownership, management composition, employment equity, skills development, preferential procurement and enterprise development (dTi 2003).

A number of major industry sectors with either a significant commercial relationship with the state or operated under state regulation have developed transformation or empowerment charters. These charters are essentially agreements covering industry sectors, committing signatories in the sector to a range of BEE objectives over a certain period of time. Charters have been constructed by the petroleum and liquid fuels industry sector, the mining sector as well as the mining sector.

The mining and liquid fuels sectors both procure projects from the private sector and have commitments with regard to BEE. The current study assesses in general what role BEE plays in the purchasing of projects in general.

-

2.7 Research Propositions

The main purpose of the literature review was to address the first sub-problem of the study which was to identify the factors that purchasers use to choose a supplier of industrial projects in South Africa. The literature review identified a number of factors that are used to make this decision, those factors are presented below:

2.7.1 *Proposition One: Buyer Decision Criteria*

Purchasers of industrial projects assess the following factors when choosing a supplier of industrial projects in South Africa:

Product and solution offering – This refers to the range of products offered within a single project, the variety of solutions that can be offered, product range, investments in product development made by the project supplier, product superiority and innovativeness, how the product or solution meets the clients problems and needs, and the supplier's ability and willingness to supply options and alternatives. Product and solution offering also includes risk-carrying ability and willingness of the turnkey supplier, creative offering/s offered by the supplier, provision of technical adaptations, and the degree to which the client's preferences are met.

***Literature*:** (Ahola et al. 2008); (Gallouj 1997); (Blomquist and Wilson 2007); (Cova et al. 1994)

Price - The price at which the project is made available and how it compares to alternative offerings. This may also refer to the total cost of ownership and lifecycle costs of the specific project offering.

***Literature*:** (Gallouj 1997); (Ahola et al. 2008); (Moon and Tikoo 2002)

Promotional information - This may take the form of advertising through various channels as well as in publications (technical) by the supplier.

***Literature*:** (Gallouj 1997)

-

Physical Evidence – This refers to the accuracy and precision of the written bid or tender and the completeness of information supplied at tender stage.

***Literature*:** (Dawes et al. 1992); (Filiatrault and Lapierre 1997)

People – This refers to the qualifications and technical competence of the people likely to be involved in a project, attitudes of the people involved, accessibility of key staff and aspects such as sales engineer's/key account manager's ability to deal with the combined engineering, legal and social skills required.

***Literature*:** (Gallouj 1997); (Günter and Bonaccorsi 1996); (Ahola et al. 2008)

Processes – Methodologies employed, contractual and administrative compliance, method of work procedures and possible alterations, project controls.

***Literature*:** (Gallouj 1997)

Productivity and time-related Issues - Sense of responsibility (ability to keep deadlines), ability and track record of completing projects within time and budgetary limits, and lead times on equipment.

***Literature*:** (Gallouj 1997); (Blomquist and Wilson 2007); (Verma and Pullman 1998).

Reputation – This refers to issues such as all aspects related to a company's reputation or brand and encompasses issues such as professional affiliations, reputation, image and reputation of consultant in specific functional area

***Literature*:** (Gallouj 1997); (Hadjikhani 1996); (Dawes et al. 1992)

Relationships – This refers to issues such as the ability to establish a good interpersonal relationship with the client, personal contacts, client and marketing fit, closeness of buyer-seller relationship. The supplier taking part in or influencing the project design parameters, customer participation, management of the sleeping relationship.

-

***Literature*:** (Tikkanen et al. 2007); Lyer et al. (2006); de Brentani and Ragot (1996); (Gallouj 1997); (Nielson 1998); (Blomquist and Wilson 2007); (Hadjikhani 1996)

Previous Experience – This refers to the purchasing company's past experience of the suppliers firm, quality of past service and the amount of effort spent by a firm on gaining repeat business with customers for whom projects have been completed in the past.

***Literature*:** Dawes et al. (1992); (Ahola et al. 2008); (Cova and Salle 2005)

References and referrals – This refers to evidence of completion of similar projects as well as referrals by other satisfied clients for similar work performed.

***Literature*:** (Salminen and Möller 2004; Salminen and Möller 2006) (Ahola et al. 2008); (Gallouj 1997)

General Capacity – This refers to the financial situation and stability of the project supplier as well as capacity issues, such as number of people available to execute the project as well as issues such as the parent firm of the project supplier

***Literature*:** (Ahola et al. 2008); (Cova and Salle 2007)

Sub-Suppliers Used – The quality of the sub suppliers used by the project provider.

***Literature*:** (Tikkanen et al. 2007); (Ahola et al. 2008)

Black Economic Empowerment – This refers to the BEE credentials of the project supplier

***Literature*:** (dTi 2003)

Quality – This refers to technical quality and in particular aspects such as quality assurance, including technical quality control and ISO standards.

Literature: (Filiatrault and Lapierre 1997)

-

2.7.2 *Proposition 2: Differences in rating of factors by project purchasers and project suppliers*

There are significant differences in the rating of the importance of these factors by project purchasers and project suppliers in South Africa.

-

3 RESEARCH METHODOLOGY

3.1 Research methodology /paradigm

A key focus of this research was to convert the factors associated with project marketing in the literature into a potentially useable strategy for managers in the realm of project marketing. The methodology employed needed to be able to deliver the key pointers for strategy formulation for marketing practitioners in the area of industrial project marketing but not lose the complexity of the topic.

3.2 Research Design

According to Leedy and Ormrod (2001), a quantitative research methodology is used to answer questions derived from the relationships of variables that have been measured. The relationships are used to explain or predict underlying phenomena.

3.3 Population and sample

3.3.1 *Population*

The population for this research was individuals involved in the procurement of industrial projects in South Africa. It is estimated that there are fewer than 300 to 400 individuals who are directly involved in the direct decision-making process and marketing of industrial projects in South Africa. The population was limited to individuals actively involved in industrial project procurement in the mining, metallurgical, minerals processing industries, and petrochemical and power-generation (Eskom) industries in South Africa.

-

3.3.2 *Sample and sampling method*

The sample frame was key decision makers involved in the purchase of capital equipment and Individuals involved in the marketing of industrial projects. Since the number of key decision makers and individuals involved in project marketing within any organisation is relatively small it was unlikely to be able to identify any differences in behaviour within an organisation. The research sample was convenience based. Major organisations in South Africa were selected and attention given to identifying key people within the organizations.

3.4 Procedure for data collection

A major risk of the research approach is that the sample size may be too small to derive meaningful conclusions. Significant effort was spent on ensuring that as many respondents as possible responded. The respondents identified for the convenience-based sampling were contacted telephonically by the researcher personally, advised of the topic of the research and asked if they were willing to participate in the study. Upon acceptance by the respondents, an e-mail containing an explanation of the purpose of the study and a questionnaire were sent to the participants.

3.5 Data analysis and interpretation

A distribution-fitting algorithmic approach (Stacey. 2005) was used to analyse data collected. This method is an accepted method for the appropriate analysis of ordinal-level data. For the purposes of this study ordinal level data was collected as part of the responses to the questionnaire questions where respondents were asked to rate the importance of various factors. Other typical approaches to analysing this form of data include approaches that simply assume that ordinal level data can be viewed on an interval level scale as well as a rescaling approach that uses correspondence analysis. (Stacey. 2005) has found that a distribution fitting algorithmic approach has higher accuracy and validity than these two alternative approaches.

-

3.6 Validity and reliability

Validity and reliability are important in determining whether an error has occurred during the data collection and interpretation.

The term “validity” refers to a researcher’s ability in conducting research to measure what the research is designed to measure. A number of key questions need to be answered to determine validity and these include:

- Has sufficient control been exercised during the research to ensure that the conclusions reached are truly reflected by the data collected?
- Are the observations made during the research a true reflection of the environment or phenomenon? (Leedy and Ormrod 2001)

“Reliability” of a research instrument refers to the consistency of results achieved by the research instrument when there has been no change in the entity being measured (Leedy and Ormrod 2001)

3.6.1 *External validity*

External validity is the ability of the research to be generalised across persons, settings and times. Sample choice plays an important role. The sample chosen in this case is specific to the general marketing of projects and represents people involved with this aspect on virtually a day to day basis. Bearing this in mind, the outcome of the research can only be assumed to be valid to this particular sub-set of marketing.

3.6.2 *Internal validity*

Internal validity is the extent to which the measuring instrument provides adequate coverage of the topic under study. The current design of the proposed questionnaire takes a number of factors into account and tries to elucidate activities that may address each of these factors.

-

3.6.3 *Reliability*

Reliability is composed of four factors these being:

- Accuracy and precision;
- Stability;
- Equivalence; and
- Internal consistency;

Accuracy refers to how close a particular outcome is to the desired outcome and precision refers to how closely a number of repeats are to the same point.

An instrument is said to be stable if it secures consistent results with repeated measurements on the same subjects. Stability and precision in this case were closely associated with each other.

Equivalence considers how much error may be introduced by different investigators in observation or different samples of items in the scales or questions.

Reliability was addressed by thorough planning of the make-up of the research questionnaire and by ensuring that as many respondents as possible were interviewed using the questionnaire.

-

4 RESULTS

Responses to the four questionnaires were received from thirty-eight (38) individuals employed by companies that purchase industrial projects in South Africa and thirty-four (34) individuals employed by companies that supply industrial projects in South Africa. Responses were received over a period of approximately 10 months from January 2009 to October 2009. A summary of the number of respondents and companies which they represent is presented in the tables below.

In order to evaluate the responses (and their relative importance as rated by both project suppliers and project purchasers) according to the initial factors a factor key was constructed in which constructs associated with the underlying factors identified in the literature was assigned Mnemonic identifier. The factor key is presented in the Table 3 below:

Table 3: Mnemonics assigned to factors

Factor Description	Factor Mnemonic
Product and solution offering	Prod
Price	Price
Promotional information	Promo
Physical evidence	Phys
People	Peop
Processes	Proc
Productivity and time	Time
Reputation	Rep
Relationships	Rel
Previous experience	PreExp
References and referrals	Ref
General capacity	Cap
Sub-suppliers	S/S
BEE	BEE
Quality	Quality

-

To further assist in the evaluation of the responses received from project purchasers and project suppliers in South Africa, each of the constructs was assigned a Mnemonic. The constructs with their assigned Mnemonics are presented in Table 4. Combined mnemonics (factor mnemonic-construct mnemonic) are also presented in the Table 4 below.

Table 4: Mnemonics assigned to constructs and combined factor-construct mnemonics

Qu	Constructs	Construct Pnemonic	Factor-Construct Pnemonic	Combined Pnemonic
1	The technology proposed by a potential project supplier	Tech	Prod	Prod-Tech
2	A potential project supplier having successfully executed work for a client	Exec	PreExp	PreExp-Exec
3	Attitudes of the people involved from a potential project supplier	Att	Peop	Peop-Att
4	A potential project supplier's ability and willingness to hold spares on your behalf	Spares	Prod	Prod-Spares
5	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001	ISO	Quality	Quality-ISO
6	The accuracy and precision of the written bid or tender from a potential project supplier.	TendAcc	Phys	Phys-TendAcc
7	Employment equity credentials of the potential project supplier	EE	BEE	BEE-EE
8	Training offered by a potential project supplier	Train	Prod	Prod-Train
9	The interpersonal relationships with a potential project supplier	Rel	Rel	Rel-Rel
10	The branding of a potential project supplier	Brand	Rep	Rep-Brand
11	Value-added services such as operational contracts offered by a potential project supplier	VAS	Prod	Prod-VAS
12	Regular personal meetings and calls from a potential project supplier	Meet	Rel	Rel-Meet
13	Adverts and advertising in trade magazines by a potential project supplier	Advert	Prom	Prom-Advert
14	The project execution methodology proposed by a potential project supplier	ProjMeth	Proc	Proc-ProjMeth
15	Black management composition of a potential project supplier	BM	BEE	BEE-BM
16	The qualifications of the people persons involved in project execution from a potential project supplier.	Qual	Peop	Peop-Qual
17	The degree to which a potential project supplier meets client technical specifications and preferences.	TechSpec	Prod	Prod-TechSpec

-

18	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.	Corrs	Prom	Prom-Corrs
19	Availability of human resources from a potential project supplier.	HR's	Cap	Cap-HR's
20	Word-of-mouth recommendations of a potential project supplier.	WofM	Ref	Ref-WofM
21	The ability of a potential project supplier to provide references of completion of similar projects.	Refs	Ref	Ref-Refs
22	A potential project supplier regularly taking part in tradeshows eg Electramining or similar.	T/S	Prom	Prom-T/S
23	The appearance of the offices from which a potential project supplier operates.	OffApp	Phys	Phys-OffApp
24	The project controls proposed by a potential project supplier.	ProjCon	Proc	Proc-ProjCon
25	Professional affiliations of a potential project supplier. Eg Engineering institutes	ProAff	Rep	Rep-ProAff
26	A potential project supplier using sub-suppliers or sub-contractors that have been used before.	Prev	S/S	S/S-Prev
27	Completeness of information supplied in a tender by a potential project supplier	TendComp	Phys	Phys-TendComp
28	The overall reputation of a potential project supplier.	Rep	Rep	Rep-Rep
29	A potential project supplier having an in house quality assurance system	IHQA	Quality	Quality-IHQA
30	A potential project supplier's ability to supply other services such as financing as part of the proposal	O/Serv	Prod	Prod-O/Serv
31	The technical experience of the people likely to be involved in a project from a potential project supplier	TechExP	Peop	Peop-TechExP
32	The potential project supplier's willingness to adapt to client systems eg. Software specified by a client.	ClientSys	Proc	Proc-ClientSys
33	The geographical location of the offices from which a potential project supplier operates.	GeoLoc	Phys	Phys-GeoLoc
34	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.	Client	S/S	S/S-Client
35	The warranties and performance guarantees offered by a potential project supplier.	Warr	Prod	Prod-Warr
36	Accessibility of key staff of a potential project supplier.	KeyStaff	Peop	Peop-KeyStaff
37	The financial strength of a potential project supplier.	FinanStr	Cap	Cap-FinanStr
38	The capital cost of the solution proposed by a potential project supplier.	C-Cost	Price	Price-C-Cost
39	Accessibility and quality of a potential project supplier's internet site.	WWW	Prom	Prom-WWW
40	The life cycle cost (total cost of ownership) of the solution proposed by a potential project supplier.	L/C-Cost	Price	Price-L/C-Cost
41	Black equity ownership of a potential	BEO	BEE	BEE-BEO

-

	project supplier.			
42	The quality reputation and relationship with sub-suppliers being proposed to execute a project	Rel-S/S	S/S	S/S-Rel-S/S
43	A potential project supplier supplying a project programme which conforms to client time frames	Prog-Cli	Time	Time-Prog-Cli
44	The reputation of the sub-suppliers used by a potential project supplier.	Rep-S/S	S/S	S/S-Rep-S/S
45	Corporate social investments made by a potential project supplier.	CSI	BEE	BEE-CSI
46	The degree to which you trust individuals from a potential project supplier.	Trust	Rel	Rel-Trust
47	A potential project supplier supplying a detailed project programme with reasonable assumptions	Prog-Reas	Time	Time-Prog-Reas

The collected data was captured in an Excel spreadsheet and the means and standard deviations of responses received from both suppliers and purchasers of industrial projects, for each of the constructs were determined by applying the distribution-fitting algorithm as described in (Stacey 2005). The potential importance of each question as rated by project purchasers and suppliers was determined by sorting each of the questions according to their mean response and determining whether the mean response differed significantly ($p<0.05$) from the population mean for all responses. On this basis the 47 questions posed in the questionnaires for both project suppliers and purchasers were classified as falling into one of the following categories:

1) **Potentially very important** criterion in industrial project purchasing in South Africa – mean response significantly greater than the population mean ($p<0.05$)

2) **Potentially indifferent** criterion in industrial project purchasing in South Africa – mean response equal to the population mean ($p>0.05$)

3) **Potentially unimportant** criterion in industrial project purchasing in South Africa – mean response was significantly lower than the population mean ($p<0.05$)

μ - Represents the average

σ – Represents the standard deviation, which is a measure of variability (the square root of the variance)

-

p – value – Represents the observed level of significance. A low p-value provides evidence for rejecting the null hypothesis and accepting the alternative hypothesis.

4.1 Results and analysis of responses from industrial project purchasers in South Africa

Thirteen companies that purchase industrial projects in South Africa were represented in the survey. Companies represented in the survey come from a number of different industrial sectors, including platinum producers, paper and pulp, electrical utilities, cement production, and mining.

Table 5: Summary of project-purchasers respondents by: Company and questionnaire answered

Company	No of Responses	Questionnaire			
		A	B	C	D
AngloCoal	1	1			
AngloGold Ashanti	1				1
BHP Billiton	2	2			
Eskom	3		2		1
Exxaro	1				1
Impala Platinum	3		1	2	
Lonmin	6	3	2		1
PPC	11	2	3	4	2
Sappi	1			1	
SASOL	5		3	2	
Toyota	2	1			1
Vanchem	1		1		
Xstrata	1		1		
Totals	**38**	**9**	**13**	**9**	**7**

A more detailed breakdown of project-purchaser respondents is presented in Appendix E.

-

The constructs, with the associated factor identified as being important from literature that was rated as **potentially very important** by project purchasers in South Africa, are presented in Table 6 below:

Table 6: Constructs rated as potentially very important by project purchasers in South Africa

Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
Prod-TechSpec	The degree to which a potential project supplier meets client's technical specifications and preferences.	0.94	0.43	38	13.61	0.00
Prod-Warr	The warranties and performance guarantees offered by a potential project supplier.	0.89	0.74	38	7.42	0.00
Price-L/C-Cost	The life cycle cost (Total cost of ownership) of the solution proposed by a potential project supplier.	0.82	0.95	38	5.28	0.00
Peop-TechExP	The technical experience of the people likely to be involved in a project from a potential project supplier	0.72	0.60	38	7.46	0.00
Ref-Refs	The ability of a potential project supplier to provide references of completion of similar projects.	0.72	0.92	38	4.81	0.00
Peop-KeyStaff	Accessibility of key staff of a potential project supplier.	0.70	0.67	38	6.46	0.00
Phys-TendComp	Completeness of information supplied in a tender by a potential project supplier.	0.61	0.77	38	4.93	0.00
Time-Prog-Cli	A potential project supplier supplying a project programme that conforms to client time frames	0.61	0.81	38	4.61	0.00
Prod-Tech	The technology proposed by a potential project supplier	0.58	0.81	38	4.41	0.00
Price-C-Cost	The capital cost of the solution proposed by a potential project supplier.	0.54	0.69	38	4.79	0.00
Peop-Att	Attitudes of the people involved from a potential project supplier	0.50	0.80	38	3.86	0.00
Proc-ProjMeth	The project execution methodology proposed by a potential project supplier	0.48	0.79	38	3.75	0.00
Rep-Rep	The overall reputation of a potential project supplier.	0.46	0.60	38	4.73	0.00
PreExp-Exec	A potential project supplier having successfully executed work for a client	0.43	0.73	38	3.68	0.00
Time-Prog-Reas	A potential project supplier supplying a detailed project programme with reasonable assumptions	0.41	0.69	38	3.68	0.00
Phys-TendAcc	The accuracy and precision of the written bid or tender from a potential project supplier.	0.40	0.58	38	4.31	0.00
Proc-ProjCon	The project controls proposed by a potential project supplier.	0.40	0.65	38	3.81	0.00
Rel-Trust	The degree to which you trust individuals from a potential project supplier.	0.37	0.80	38	2.82	0.01

-

Quality-IHQA	A potential project supplier having an in house quality assurance system	0.35	0.82	38	2.61	0.01
Cap-FinanStr	The financial strength of a potential project supplier.	0.26	0.61	38	2.59	0.01
Proc-ClientSys	The potential project supplier's willingness to adapt to client systems, e.g. Software specified by a client.	0.25	0.63	38	2.43	0.02

Twenty-two of the constructs were rated by project purchasers as being potentially very important in the purchasing of industrial projects in South Africa. Means for the most important construct as rated by respondents ranged from 0.94 (most important to 0.40).

The Table 7 presents a summary of the occurrence of each of the factors identified in the literature as indifferent in the purchasing of industrial projects within those constructs that were rated a very important by project purchasers in South Africa.

Table 7: Factor occurrences of underlying constructs rated as potentially very important by project purchasers in South Africa

Factor Mnemonic	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	3
B	Price	Price	2
D	Physical evidence	Phys	2
E	People	Peop	3
F	Processes	Proc	3
G	Productivity and time	Time	2
H	Reputation	Rep	1
I	Relationships	Rel	1
J	Previous experience	PreExp	1
K	References and referrals	Ref	1
L	General capacity	Cap	1
O	Quality	Quality	1

-

The following underlying factors as identified in literature did not appear to be underlying factors that project purchasers rated as potentially very important:

- Promo – Promotional Information
- S/S – Sub-Suppliers
- BEE – BEE

In order to determine if there were significant differences in the rating of each of the constructs rated, the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses was determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in the Table 8 below. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

Table 8: Significance of difference of means of responses rated potentially very important by project purchasers.

		Mnemonic	Prod-TechSpec	Prod-Warr	Price-L/C-Cost	Peop-TechExP	Ref-Refs	Peop-KeyStaff	Phys-TendComp	Time-Prog-Cli	Prod-Tech	Price-C-Cost	Peop-Att	Time-ProjMeth	Rep-Rep	PreExp-Exec	Time-Prog-Reas	Phys-TendAcc	Time-ProjCon	Rel-Trust	Quality-IHQA	Cap-FinanStr	Prod-ClientSys
n=	**34**	**μ**	0.94	0.89	0.82	0.72	0.72	0.70	0.61	0.61	0.58	0.54	0.50	0.48	0.46	0.43	0.41	0.40	0.40	0.37	0.35	0.26	0.25
Mnemonic	**μ**	**σ**	0.43	0.74	0.95	0.60	0.92	0.67	0.77	0.81	0.81	0.69	0.80	0.79	0.60	0.73	0.69	0.58	0.65	0.80	0.82	0.61	0.63
Prod-TechSpec	0.94	0.43	0.00	-0.30	-0.67	-1.69	-1.26	-1.78	-2.15	-2.13	-2.32	-2.90	-2.85	-2.99	-3.79	-3.50	-3.76	-4.34	-4.05	-3.69	-3.72	-5.33	-5.27
Prod-Warr	0.89	0.74	0.30	0.00	-0.36	-1.03	-0.86	-1.15	-1.52	-1.53	-1.69	-2.06	-2.12	-2.23	-2.65	-2.59	-2.75	-3.03	-2.92	-2.82	-2.87	-3.86	-3.85
Price-L/C-Cost	0.82	0.95	0.67	0.36	0.00	-0.48	-0.44	-0.60	-0.97	-0.99	-1.13	-1.40	-1.50	-1.59	-1.85	-1.87	-2.00	-2.16	-2.11	-2.12	-2.18	-2.89	-2.89
Peop-TechExP	0.72	0.60	1.69	1.03	0.48	0.00	-0.03	-0.18	-0.66	-0.70	-0.86	-1.21	-1.33	-1.45	-1.82	-1.81	-1.98	-2.25	-2.15	-2.10	-2.16	-3.19	-3.18
Ref-Refs	0.72	0.92	1.26	0.86	0.44	0.03	0.00	-0.11	-0.51	-0.54	-0.68	-0.93	-1.06	-1.15	-1.37	-1.42	-1.54	-1.68	-1.65	-1.69	-1.75	-2.43	-2.45
Peop-KeyStaff	0.70	0.67	1.78	1.15	0.60	0.18	0.11	0.00	-0.48	-0.51	-0.68	-0.99	-1.12	-1.23	-1.55	-1.57	-1.72	-1.94	-1.87	-1.86	-1.93	-2.84	-2.84
Phys-TendComp	0.61	0.77	2.15	1.52	0.97	0.66	0.51	0.48	0.00	-0.05	-0.20	-0.45	-0.61	-0.71	-0.92	-1.00	-1.13	-1.27	-1.24	-1.31	-1.38	-2.12	-2.14
Time-Prog-Cli	0.61	0.81	2.13	1.53	0.99	0.70	0.54	0.51	0.05	0.00	-0.15	-0.38	-0.55	-0.65	-0.84	-0.92	-1.05	-1.18	-1.15	-1.23	-1.30	-2.00	-2.02
Prod-Tech	0.58	0.81	2.32	1.69	1.13	0.86	0.68	0.68	0.20	0.15	0.00	-0.22	-0.40	-0.50	-0.68	-0.77	-0.89	-1.01	-0.99	-1.08	-1.16	-1.84	-1.86
Price-C-Cost	0.54	0.69	2.90	2.06	1.40	1.21	0.93	0.99	0.45	0.38	0.22	0.00	-0.21	-0.31	-0.48	-0.60	-0.73	-0.85	-0.83	-0.94	-1.02	-1.76	-1.78
Peop-Att	0.50	0.80	2.85	2.12	1.50	1.33	1.06	1.12	0.61	0.55	0.40	0.21	0.00	-0.10	-0.22	-0.35	-0.47	-0.55	-0.55	-0.68	-0.77	-1.40	-1.42
Time-ProjMeth	0.48	0.79	2.99	2.23	1.59	1.45	1.15	1.23	0.71	0.65	0.50	0.31	0.10	0.00	-0.11	-0.25	-0.37	-0.45	-0.45	-0.59	-0.67	-1.30	-1.33
Rep-Rep	0.46	0.60	3.79	2.65	1.85	1.82	1.37	1.55	0.92	0.84	0.68	0.48	0.22	0.11	0.00	-0.17	-0.30	-0.39	-0.39	-0.55	-0.64	-1.38	-1.41
PreExp-Exec	0.43	0.73	3.50	2.59	1.87	1.81	1.42	1.57	1.00	0.92	0.77	0.60	0.35	0.25	0.17	0.00	-0.11	-0.18	-0.20	-0.36	-0.45	-1.08	-1.11
Time-Prog-Reas	0.41	0.69	3.76	2.75	2.00	1.98	1.54	1.72	1.13	1.05	0.89	0.73	0.47	0.37	0.30	0.11	0.00	-0.06	-0.08	-0.26	-0.36	-0.99	-1.02
Phys-TendAcc	0.40	0.58	4.34	3.03	2.16	2.25	1.68	1.94	1.27	1.18	1.01	0.85	0.55	0.45	0.39	0.18	0.06	0.00	-0.03	-0.23	-0.33	-1.02	-1.05
Time-ProjCon	0.40	0.65	4.05	2.92	2.11	2.15	1.65	1.87	1.24	1.15	0.99	0.83	0.55	0.45	0.39	0.20	0.08	0.03	0.00	-0.20	-0.29	-0.94	-0.97
Rel-Trust	0.37	0.80	3.69	2.82	2.12	2.10	1.69	1.86	1.31	1.23	1.08	0.94	0.68	0.59	0.55	0.36	0.26	0.23	0.20	0.00	-0.09	-0.63	-0.66
Quality-IHQA	0.35	0.82	3.72	2.87	2.18	2.16	1.75	1.93	1.38	1.30	1.16	1.02	0.77	0.67	0.64	0.45	0.36	0.33	0.29	0.09	0.00	-0.52	-0.55
Cap-FinanStr	0.26	0.61	5.33	3.86	2.89	3.19	2.43	2.84	2.12	2.00	1.84	1.76	1.40	1.30	1.38	1.08	0.99	1.02	0.94	0.63	0.52	0.00	-0.05
Prod-ClientSys	0.25	0.63	5.27	3.85	2.89	3.18	2.45	2.84	2.14	2.02	1.86	1.78	1.42	1.33	1.41	1.11	1.02	1.05	0.97	0.66	0.55	0.05	0.00

Based on the analysis above the following can be noted:

-

Construct with combined mnemonic: **Prod - Tech Spec** (rated as most important based on mean) was found to not have a significantly different mean from the five (5) constructs (with lower overall response means) with combined mnemonics **Prod - Warr**, **Price L/C Cost**, **Peop – TechExp**, **Ref-Refs** and **Peop - Key Staff** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Peop - KeyStaff** were, however, found to have means that were significantly different from that of **Prod - Tech Spec**

Construct with combined mnemonic **Prod - Warr** (rated as second most important based on mean response) was found not to have a significantly different mean from the seven (7) constructs (with lower overall response means) with combined mnemonics: Price-L/C Cost, **Peop – TechExp**, **Ref - Refs, Peop - Key Staff, Phys - TendComp, Time - ProgCli** and **Prod – Tech** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Prod - Tech** were however found to have means that were significantly different to **Prod - Warr**

Constructs with combined mnemonics **Price – L/C Cost** and **Peop -Tech Exp** (rated as third and fourth most important based on mean response respectively), apart from having no significant differences between their means, were found to not have a significantly from those of different means from eleven (11) constructs (with lower overall response means) with combined mnemonics: **Ref - Refs, Peop - Key Staff, Phys - TendComp, Time - ProgCli, Prod – Tech, Price – C, Peop – Att, Time – ProjMeth, Rep – Rep, PreExp – Exec, Time – ProgReas,** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Time – ProgReas** were, however, found to have means that were significantly different from those of **Price – L/C Cost** and **Peop -Tech Exp**

Constructs with combined mnemonics **Refs-Refs**, **Peop - Key Staff** and **Phys – TendComp** (rated as third and fourth and fifth most important based on mean response), apart from having no significant differences between their means were found to not have a significantly different means from those of fourteen (14)

-

constructs (with lower overall response means) with combined mnemonics: **Time - ProgCli, Prod – Tech, Price – C, Peop – Att, Time – ProjMeth, Rep – Rep, PreExp – Exec, Time – ProgReas, Phys – TendAcc, Time - ProjCon, Rel - Trust, Qual - HQA** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Qual-HQA** were however found to have means that were significantly different from those of , **Refs-Refs**, **Peop - Key Staff** and **Phys – TendComp.**

No significant differences in the means for constructs rated below **Time Prog - Cli** were found indicating that in this study project purchasers potentially saw these as being equally important.

The constructs, with the associated factor identified as being important from the literature that were rated as **indifferent** by project purchasers in South Africa, are presented in the Table 9 below:

Table 9: Constructs rated as indifferent by project purchasers in South Africa

Construct	Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
44	S/S-Rep-S/S	The reputation of the sub-suppliers used by a potential project supplier.	0.22	0.70	38	1.94	0.06
16	Peop-Qual	The qualifications of the people persons involved in project execution from a potential project supplier.	0.20	0.72	38	1.68	0.10
5	Quality-ISO	A potential project supplier having a formal quality assurance system accreditation, e.g. ISO9001	0.19	1.06	38	1.12	0.27
26	S/S-Prev	A potential project supplier using sub-suppliers or sub-contractors that have been used before.	0.13	0.67	38	1.21	0.23
8	Prod-Train	Training offered by a potential project supplier	0.09	0.81	38	0.66	0.51
42	S/S-Rel-S/S	The quality reputation and relationship with sub-suppliers being proposed to execute a project	0.06	0.62	38	0.58	0.57

-

19	Cap-HR's	Availability of human resources from a potential project supplier.	0.02	1.02	38	0.11	0.91
9	Rel-Rel	The interpersonal relationships with a potential project supplier	-0.05	0.88	38	-0.37	0.72
11	Prod-VAS	Value added services such as operational contracts offered by a potential project supplier	-0.06	0.73	38	-0.52	0.61
12	Rel-Meet	Regular personal meetings and calls from a potential project supplier	-0.12	1.00	38	-0.72	0.47
34	S/S-Client	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.	-0.13	0.57	38	-1.40	0.17
20	Ref-WofM	Word-of-mouth recommendations of a potential project supplier.	-0.29	0.90	38	-1.98	0.05

Twelve of the constructs were rated by project purchasers as being indifferent in the purchasing of industrial projects in South Africa. Means for the most important construct as rated by respondents ranged from 0.22 (most important) to -0.29 (least important).

The Table 10 below summarises the occurrence of each of the factors identified in the literature as indifferent in the purchasing of industrial projects within those constructs that were rated as indifferent by project purchasers in South Africa.

Table 10: Factor occurrences of underlying constructs rated as indifferent by project purchasers in South Africa

Lit Factor	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	2
E	People	Peop	1
I	Relationships	Rel	2
K	References and referrals	Ref	1
L	General capacity	Cap	1
M	Sub-suppliers	S/S	4
O	Quality	Quality	1

-

The following underlying factors as identified in the literature did not appear to be underlying factors that project purchasers rated as indifferent:

- Price – Price
- Promo – Promotional information
- Phys – Physical Evidence
- Proc – Process
- Time – Productivity and Time
- Rep – Reputation
- PreExp – Previous Experience
- BEE – BEE

In order to determine if there were significant differences in the rating of each of the constructs, the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses were determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in the Table 11 below. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

-

Table 11: Significance of difference of means of responses rated as indifferent by project purchasers.

		Mnemonic	S/S-Rep-S/S	Peop-Qual	Quality-ISO	S/S-Prev	Prod-Train	S/S-Rel-S/S	Cap-HR's	Rel-Rel	Prod-VAS	Rel-Meet	S/S-Client	Ref-WofM
	34	**μ**	0.22	0.20	0.19	0.13	0.09	0.06	0.02	-0.05	-0.06	-0.12	-0.13	-0.29
Mnemonic	**μ**	**σ**	0.70	0.72	1.06	0.67	0.81	0.62	1.02	0.88	0.73	1.00	0.57	0.90
S/S-Rep-S/S	0.22	0.70	0.00	-0.13	-0.12	-0.53	-0.72	-1.00	-0.95	-1.41	-1.62	-1.61	-2.26	-2.61
Peop-Qual	0.20	0.72	0.13	0.00	-0.02	-0.39	-0.59	-0.85	-0.83	-1.28	-1.47	-1.49	-2.07	-2.46
Quality-ISO	0.19	1.06	0.12	0.02	0.00	-0.28	-0.46	-0.64	-0.69	-1.04	-1.15	-1.24	-1.55	-2.02
S/S-Prev	0.13	0.67	0.53	0.39	0.28	0.00	-0.25	-0.47	-0.54	-0.97	-1.14	-1.21	-1.73	-2.19
Prod-Train	0.09	0.81	0.72	0.59	0.46	0.25	0.00	-0.16	-0.31	-0.68	-0.79	-0.93	-1.27	-1.81
S/S-Rel-S/S	0.06	0.62	1.00	0.85	0.64	0.47	0.16	0.00	-0.19	-0.60	-0.73	-0.87	-1.29	-1.85
Cap-HR's	0.02	1.02	0.95	0.83	0.69	0.54	0.31	0.19	0.00	-0.31	-0.37	-0.55	-0.73	-1.32
Rel-Rel	-0.05	0.88	1.41	1.28	1.04	0.97	0.68	0.60	0.31	0.00	-0.04	-0.28	-0.42	-1.10
Prod-VAS	-0.06	0.73	1.62	1.47	1.15	1.14	0.79	0.73	0.37	0.04	0.00	-0.27	-0.42	-1.15
Rel-Meet	-0.12	1.00	1.61	1.49	1.24	1.21	0.93	0.87	0.55	0.28	0.27	0.00	-0.05	-0.74
S/S-Client	-0.13	0.57	2.26	2.07	1.55	1.73	1.27	1.29	0.73	0.42	0.42	0.05	0.00	-0.89
Ref-WofM	-0.29	0.90	2.61	2.46	2.02	2.19	1.81	1.85	1.32	1.10	1.15	0.74	0.89	0.00

Based on the analysis above the following can be noted:

Significant differences were found between the means of the responses to the following constructs:

S/S – Rep – S/S and **S/S – Client** and **Ref – WofM**

Peop-Qual and **S/S-Client** and **Ref-WofM**

S/S-Prev and **Ref-WofM**

This indicates that in this study project purchasers potentially perceive all other constructs classified as indifferent to be equally important

The constructs, with the associated factors identified as being important from the literature that were rated as **potentially unimportant** by project purchasers in South Africa, are presented in the Table 12:

-

Table 12: Constructs rated as potentially unimportant by project purchasers in South Africa

Construct	Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
25	Rep-ProAff	Professional affiliations of a potential project supplier, e.g. Engineering institutes.	-0.45	0.89	38	-3.08	0.00
10	Rep-Brand	The branding of a potential project supplier.	-0.46	0.81	38	-3.49	0.00
41	BEE-BEO	Black equity ownership of a potential project supplier.	-0.54	0.94	38	-3.52	0.00
4	Prod-Spares	A potential project supplier's ability and willingness to hold spares on your behalf.	-0.60	0.80	38	-4.59	0.00
7	BEE-EE	Employment equity credentials of the potential project supplier .	-0.66	0.86	38	-4.73	0.00
33	Phys-GeoLoc	The geographical location of the offices from which a potential project supplier operates.	-0.73	0.69	38	-6.52	0.00
23	Phys-OffApp	The appearance of the offices from which a potential project supplier operates.	-0.78	0.67	38	-7.16	0.00
15	BEE-BM	Black management composition of a potential project supplier.	-0.79	0.84	38	-5.79	0.00
30	Prod-O/Serv	A potential project supplier's ability to supply other services such as financing as part of the proposal.	-0.94	0.84	38	-6.87	0.00
45	BEE-CSI	Corporate social Investments made by a potential project supplier.	-1.07	0.86	38	-7.69	0.00
18	Promo-Corrs	Regular correspondence from a potential project supplier in the form of newsletters, updates etc..	-1.08	0.95	38	-7.00	0.00
22	Promo-T/S	A potential project supplier regularly taking part in tradeshows eg Electramining or similar..	-1.17	0.81	38	-8.88	0.00
39	Promo-WWW	Accessibility and quality of a potential project supplier's internet site..	-1.19	0.98	38	-7.47	0.00
13	Promo-Advert	Adverts and advertising in trade magazines by a potential project supplier.	-1.25	0.62	38	-12.43	0.00

Fourteen of the constructs were rated by project purchasers as being potentially unimportant in the purchasing of industrial projects in South Africa.

The Table 13 below summarises the occurrence of each of the factors identified in the literature as potentially unimportant in the purchasing of industrial projects within those constructs that were rated as potentially unimportant by project purchasers in South Africa.

-

Table 13: Factor occurrences of underlying constructs rated as potentially unimportant by project purchasers in South Africa

Lit Factor	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	2
C	Promotional information	Promo	4
D	Physical evidence	Phys	2
H	Reputation	Rep	2
N	BEE	BEE	4

The following underlying factors as identified in literature did not appear to be underlying factors that project purchasers rate as potentially not important:

- Price – Price
- Peop – People
- Proc – Processes
- Time – Productivity and time
- Rel – Relationships
- PreExp – Previous experience
- Ref – References and referrals
- Cap – General capacity
- S/S – Sub-suppliers
- Qual – Quality

In order to determine if there were significant differences in the rating of each of the constructs, the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses were determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in the Table 14 below. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

-

Table 14: Significance of difference of means of responses rated potentially unimportant by project purchasers.

		Mnemonic	Rep-ProAff	Rep-Brand	BEE-BEO	Prod-Spares	BEE-EE	Phys-GeoLoc	Phys-OffApp	BEE-BM	Prod-O/Serv	BEE-CSI	Prom-Corrs	Prom-T/S	Prom-WWW	Prom-Advert
n=	**34**	**μ**	-0.45	-0.46	-0.54	-0.60	-0.66	-0.73	-0.78	-0.79	-0.94	-1.07	-1.08	-1.17	-1.19	-1.25
Mnemonic	**μ**	**σ**	0.89	0.81	0.94	0.80	0.86	0.69	0.67	0.84	0.84	0.86	0.95	0.81	0.98	0.62
Rep-ProAff	-0.45	0.89	0.00	-0.04	-0.41	-0.73	-0.99	-1.46	-1.75	-1.63	-2.32	-2.93	-2.82	-3.50	-3.25	-4.30
Rep-Brand	-0.46	0.81	0.04	0.00	-0.39	-0.73	-1.00	-1.50	-1.81	-1.68	-2.40	-3.04	-2.90	-3.65	-3.36	-4.55
BEE-BEO	-0.54	0.94	0.41	0.39	0.00	-0.28	-0.55	-0.95	-1.23	-1.16	-1.83	-2.43	-2.34	-2.97	-2.78	-3.67
Prod-Spares	-0.60	0.80	0.73	0.73	0.28	0.00	-0.30	-0.72	-1.03	-0.97	-1.70	-2.35	-2.24	-2.93	-2.71	-3.75
BEE-EE	-0.66	0.86	0.99	1.00	0.55	0.30	0.00	-0.38	-0.67	-0.65	-1.35	-1.98	-1.91	-2.54	-2.37	-3.26
Phys-GeoLoc	-0.73	0.69	1.46	1.50	0.95	0.72	0.38	0.00	-0.33	-0.34	-1.11	-1.81	-1.73	-2.42	-2.23	-3.27
Phys-OffApp	-0.78	0.67	1.75	1.81	1.23	1.03	0.67	0.33	0.00	-0.05	-0.83	-1.54	-1.47	-2.15	-1.98	-2.97
BEE-BM	-0.79	0.84	1.63	1.68	1.16	0.97	0.65	0.34	0.05	0.00	-0.71	-1.35	-1.31	-1.90	-1.78	-2.55
Prod-O/Serv	-0.94	0.84	2.32	2.40	1.83	1.70	1.35	1.11	0.83	0.71	0.00	-0.66	-0.64	-1.18	-1.14	-1.75
BEE-CSI	-1.07	0.86	2.93	3.04	2.43	2.35	1.98	1.81	1.54	1.35	0.66	0.00	-0.02	-0.50	-0.52	-0.99
Prom-Corrs	-1.08	0.95	2.82	2.90	2.34	2.24	1.91	1.73	1.47	1.31	0.64	0.02	0.00	-0.45	-0.48	-0.90
Prom-T/S	-1.17	0.81	3.50	3.65	2.97	2.93	2.54	2.42	2.15	1.90	1.18	0.50	0.45	0.00	-0.07	-0.44
Prom-WWW	-1.19	0.98	3.25	3.36	2.78	2.71	2.37	2.23	1.98	1.78	1.14	0.52	0.48	0.07	0.00	-0.31
Prom-Advert	-1.25	0.62	4.30	4.55	3.67	3.75	3.26	3.27	2.97	2.55	1.75	0.99	0.90	0.44	0.31	0.00

Based on the analysis above the following can be noted:

Constructs with combined mnemonics **Rep - ProAff** and **Rep - Brand** (rated as 34th and 35th most important based on mean response respectively), apart from having no significant differences between their means were found to not have a significantly different means from those five (5) constructs (with lower overall response means) with combined mnemonics: **BEE - BEO, Prod - Spares, Phys - GeoLoc, Phys - OffApp, BEE – BM,** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **BEE - BM** were, however, found to have means that were significantly different from those of **Rep - ProAff** and **Rep - Brand.**

Constructs with combined mnemonics **BEE - BEO** and **Prod - Spares** (rated as 36th and 37th most important based on mean response respectively), apart from having no significant differences between their means were found to not have a significantly different means from those of four (4) constructs (with lower overall

-

response means) with combined mnemonics: **BEE - EE, Phys - GeoLoc, Phys - OffApp, BEE - BM** and **Prod – O/serv,** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Prod – O/serv** were however found to have means that were significantly different from those of **BEE - BEO** and **Prod - Spares.**

Constructs with combined mnemonics **BEE - EE**, **Phys - GeoLoc, Phys - OffApp** and **BEE - BM** (rated as 38th , 39th and 40th most important based on mean response respectively), apart from having no significant differences between their means, were found to not have a significantly different means from those of four (4) constructs (with lower overall response means) with combined mnemonics: **Prod – O/serv, BEE - CSI, Promo – Corrs,** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Promo – Corrs** were, however, found to have means that were significantly different from those of **BEE - EE**, **Phys - GeoLoc, Phys - OffApp** and **BEE - BM.**

The table below summarises the results obtained from the surveying of project purchasers with respect to which factors, and more specifically which constructs fell into the potentially very important, indifferent and potentially not important categories respectively.

Table 15: Summary of project purchaser factor and associated underlying construct rating

Factor Mnemonic	Factor Description	Potentially Very Important	Indifferent	Potentially Unimportant
Prod	Product and solution offering	Prod-TechSpec	Prod-Train	Prod-Spares
		Prod-Warr	Prod-VAS	Prod-O/Serv
		Prod-Tech		
Price	Price	Price-L/C-Cost		
		Price-C-Cost		
Phys	Physical evidence	Phys-TendComp		Phys-GeoLoc
		Phys-TendAcc		Phys-OffApp
Peop	People	Peop-TechExP	Peop-Qual	

-

		Peop-KeyStaff		
		Peop-Att		
Proc	Processes	Proc-ProjMeth		
		Proc-ProjCon		
		Proc-ClientSys		
Time	Productivity and Time	Time-Prog-Cli		
		Time-Prog-Reas		
Rep	Reputation	Rep-Rep		Rep-ProAff
				Rep-Brand
Rel	Relationships	Rel-Trust	Rel-Meet	
			Rel-Rel	
PreExp	Previous Experience	PreExp-Exec		
Ref	References and Referrals	Ref-Refs	Ref-WofM	
Cap	General Capacity	Cap-FinanStr	Cap-HR's	
Quality	Quality	Quality-IHQA	Quality-ISO	
S/S	Sub-Suppliers		S/S-Rep-S/S	
			S/S-Prev	
			S/S-Rel-S/S	
			S/S-Client	
Prom	Promotional Information			Prom-Corrs
				Prom-T/S
				Prom-WWW
				Prom-Advert
BEE	BEE			BEE-BEO
				BEE-EE
				BEE-BM
				BEE-CSI

From the table above the following specific pertinent issues are noted with respect to the some the factors listed below:

- Product and solution offering – Project purchasers rated the technology, how it meets client specifications and performance warranties higher (potentially very important), than either value added services including training (indifferent) and augmented services such as spares holding and financing (potentially unimportant)

-

- Physical evidence - Project purchasers rated the completeness and accuracy of tender documentation higher (potentially very important) than the appearance and location of project supplier offices (potentially unimportant)

- People – Project purchasers rated the technical experience, accessibility of key staff and their attitudes higher (potentially very important) than the qualifications of project supplier's staff (indifferent)

- Processes – Project purchasers rated all associated constructs as potentially very important.

- Time – Project purchasers rated all associated constructs as potentially very important.

- Productivity and time – Project purchasers rated all associated constructs as potentially very important.

- Reputation – Project purchasers rated overall reputation higher (potentially very important) than a project supplier's professional affiliations and brand (potentially unimportant)

- Relationships – Project purchasers rated trust higher (potentially very important) than regular meetings and interpersonal relationships (indifferent)

- Previous experience – Project purchasers rated the associated construct as potentially very important

- References and referrals – Project purchasers rated references of completion of similar projects higher (potentially very important) than word of mouth referrals (indifferent)

-

- General capacity – Project purchasers rated financial strength of a potential project supplier higher (potentially very important) than availability of human resources (indifferent)

- Quality – Project purchasers rated evidence of an inhouse quality system higher (potentially very important) than having an accredited quality system such as IS9001 (indifferent)

- Promotional information - Project purchasers rated all the associated constructs as potentially unimportant

- BEE – Project purchasers rated all the associated constructs as potentially unimportant

4.2 Results and analysis of responses from industrial project purchasers in South Africa

Fifteen companies that supply industrial projects in South Africa were represented in the survey.

Table 16: Summary of project-supplier Respondents by Company and Questionnaire Answers

Company	No of Responses	Questionnaire			
		A	B	C	D
A&E Consulting Engineers	2			1	1
AI2SA	1				1
Bateman	1			1	
Clyde Bergemann	3	1	1		1
Enzani Technologies	3	1	1	1	
HATCH	7	1	2	3	1
Hitachi	1		1		

-

Larox	1		1		
Lodestone	1				1
M&L Consulting Engineers	1				1
MECS	1	1			
Powertech IST	6	2	2	1	1
SAM KZN	3		1		2
Siemens	2		1	1	
Solo Resources	1	1			
Totals	**34**	**7**	**10**	**8**	**9**

A more detailed breakdown of project-purchaser respondents is presented in Appendix F.

The constructs, with the associated factor identified as being important from the literature that were rated as **potentially very important** by project suppliers in South Africa, are presented in the table below:

Table 17: Constructs rated as potentially very important by project suppliers in South Africa

Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
Prod-TechSpec	The degree to which a potential project supplier meets client's technical specifications and preferences.	1.03	0.43	34	13.83	0.00
Rep-Rep	The overall reputation of a potential project supplier.	0.78	0.61	34	7.40	0.00
Prod-Tech	The technology proposed by a potential project supplier	0.77	0.82	34	5.44	0.00
Phys-TendComp	Completeness of information supplied in a tender by a potential project supplier	0.72	0.78	34	5.36	0.00
PreExp-Exec	A potential project supplier having successfully executed work for a client	0.72	0.74	34	5.65	0.00
Price-C-Cost	The capital cost of the solution proposed by a potential project supplier.	0.71	0.70	34	5.92	0.00
Prod-Warr	The warranties and performance guarantees offered by a potential project supplier.	0.69	0.76	34	5.32	0.00
Peop-TechExP	The technical experience of the people likely to be involved in a project from a potential project supplier	0.69	0.61	34	6.53	0.00
Price-L/C-Cost	The life cycle cost (total cost of ownership) of the solution proposed by a potential project supplier.	0.63	0.97	34	3.79	0.00
Ref-Refs	The ability of a potential project supplier to provide references of completion of similar projects.	0.62	0.94	34	3.86	0.00
Peop-Att	Attitudes of the people involved from a potential project	0.56	0.81	34	4.02	0.00

-

	supplier					
Rel-Trust	The degree to which you trust individuals from a potential project supplier.	0.52	0.82	34	3.73	0.00
Phys-TendAcc	The accuracy and precision of the written bid or tender from a potential project supplier.	0.51	0.59	34	5.02	0.00
Proc-ProjCon	The project controls proposed by a potential project supplier.	0.40	0.66	34	3.56	0.00
Cap-FinanStr	The financial strength of a potential project supplier.	0.32	0.62	34	2.97	0.01
Peop-KeyStaff	Accessibility of key staff of a potential project supplier.	0.30	0.68	34	2.56	0.02
Quality-IHQA	A potential project supplier having an in-house quality assurance system	0.29	0.84	34	2.04	0.0499
Time-Prog-Reas	A potential project supplier supplying a detailed project programme with reasonable assumptions	0.28	0.71	34	2.34	0.03

Eighteen of the constructs were rated by project suppliers as being potentially very important in the purchasing of industrial projects in South Africa.

The Table 17 presents a summary of the occurrence of each of the factors identified in the literature as being indifferent in the purchasing of industrial projects within those constructs that were rated a potentially very important by project suppliers in South Africa.

Table 18: Factor occurrences of underlying constructs rated as potentially very important by project suppliers in South Africa

Factor Mnemonic	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	3
B	Price	Price	2
D	Physical evidence	Phys	2
E	People	Peop	3
F	Processes	Proc	1
G	Productivity and time	Time	1
H	Reputation	Rep	1
I	Relationships	Rel	1
J	Previous experience	PreExp	1
K	References and referrals	Ref	1
L	General capacity	Cap	1
O	Quality	Quality	1

-

The following underlying factors as identified in the literature did not appear to be underlying factors that project suppliers rated as potentially very important:

- Promo– Promotional Information
- S/S – Sub-Suppliers
- BEE – BEE

In order to determine if there were significant differences in the rating of each of the constructs, the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses were determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in Table 18. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

Table 19: Significance of difference of means of responses rated as potentially very important by project suppliers.

		Mnemonic	Prod-TechSpec	Rep-Rep	Prod-Tech	Phys-TendComp	PreExp-Exec	Price-C-Cost	Prod-Warr	Peop-TechExP	Price-L/C-Cost	Ref-Refs	Peop-Att	Rel-Trust	Phys-TendAcc	Time-ProjCon	Cap-FinanStr	Peop-KeyStaff	Quality-IHQA	Time-Prog-Reas
n=	34	**μ**	1.03	0.78	0.77	0.72	0.72	0.71	0.69	0.69	0.63	0.62	0.56	0.52	0.51	0.40	0.32	0.30	0.29	0.28
Mnemonic	**μ**	**σ**	0.43	0.61	0.82	0.78	0.74	0.70	0.76	0.61	0.97	0.94	0.81	0.82	0.59	0.66	0.62	0.68	0.84	0.71
Prod-TechSpec	1.03	0.43	0.00	-1.96	-1.64	-2.00	-2.12	-2.22	-2.25	-2.67	-2.17	-2.28	-2.96	-3.19	-4.15	-4.61	-5.45	-5.28	-4.54	-5.23
Rep-Rep	0.78	0.61	1.96	0.00	-0.05	-0.32	-0.36	-0.39	-0.50	-0.61	-0.73	-0.80	-1.23	-1.45	-1.84	-2.41	-3.06	-3.05	-2.71	-3.07
Prod-Tech	0.77	0.82	1.64	0.05	0.00	-0.24	-0.26	-0.28	-0.39	-0.47	-0.61	-0.67	-1.04	-1.23	-1.49	-2.01	-2.54	-2.56	-2.35	-2.60
Phys-TendComp	0.72	0.78	2.00	0.32	0.24	0.00	-0.02	-0.04	-0.16	-0.21	-0.41	-0.47	-0.83	-1.02	-1.27	-1.81	-2.35	-2.38	-2.17	-2.41
PreExp-Exec	0.72	0.74	2.12	0.36	0.26	0.02	0.00	-0.01	-0.14	-0.19	-0.40	-0.46	-0.83	-1.03	-1.29	-1.84	-2.40	-2.43	-2.21	-2.46
Price-C-Cost	0.71	0.70	2.22	0.39	0.28	0.04	0.01	0.00	-0.13	-0.18	-0.40	-0.45	-0.83	-1.04	-1.31	-1.88	-2.46	-2.48	-2.24	-2.51
Prod-Warr	0.69	0.76	2.25	0.50	0.39	0.16	0.14	0.13	0.00	-0.04	-0.28	-0.33	-0.69	-0.89	-1.12	-1.67	-2.22	-2.25	-2.06	-2.29
Peop-TechExP	0.69	0.61	2.67	0.61	0.47	0.21	0.19	0.18	0.04	0.00	-0.27	-0.32	-0.71	-0.93	-1.22	-1.82	-2.45	-2.47	-2.20	-2.50
Price-L/C-Cost	0.63	0.97	2.17	0.73	0.61	0.41	0.40	0.40	0.28	0.27	0.00	-0.04	-0.33	-0.51	-0.64	-1.14	-1.59	-1.64	-1.54	-1.69
Ref-Refs	0.62	0.94	2.28	0.80	0.67	0.47	0.46	0.45	0.33	0.32	0.04	0.00	-0.29	-0.47	-0.60	-1.11	-1.58	-1.63	-1.53	-1.68
Peop-Att	0.56	0.81	2.96	1.23	1.04	0.83	0.83	0.83	0.69	0.71	0.33	0.29	0.00	-0.19	-0.31	-0.88	-1.38	-1.44	-1.34	-1.50
Rel-Trust	0.52	0.82	3.19	1.45	1.23	1.02	1.03	1.04	0.89	0.93	0.51	0.47	0.19	0.00	-0.09	-0.66	-1.16	-1.23	-1.14	-1.29
Phys-TendAcc	0.51	0.59	4.15	1.84	1.49	1.27	1.29	1.31	1.12	1.22	0.64	0.60	0.31	0.09	0.00	-0.69	-1.29	-1.36	-1.22	-1.41
Time-ProjCon	0.40	0.66	4.61	2.41	2.01	1.81	1.84	1.88	1.67	1.82	1.14	1.11	0.88	0.66	0.69	0.00	-0.55	-0.65	-0.60	-0.72
Cap-FinanStr	0.32	0.62	5.45	3.06	2.54	2.35	2.40	2.46	2.22	2.45	1.59	1.58	1.38	1.16	1.29	0.55	0.00	-0.12	-0.14	-0.21
Peop-KeyStaff	0.30	0.68	5.28	3.05	2.56	2.38	2.43	2.48	2.25	2.47	1.64	1.63	1.44	1.23	1.36	0.65	0.12	0.00	-0.03	-0.09
Quality-IHQA	0.29	0.84	4.54	2.71	2.35	2.17	2.21	2.24	2.06	2.20	1.54	1.53	1.34	1.14	1.22	0.60	0.14	0.03	0.00	-0.05
Time-Prog-Reas	0.28	0.71	5.23	3.07	2.60	2.41	2.46	2.51	2.29	2.50	1.69	1.68	1.50	1.29	1.41	0.72	0.21	0.09	0.05	0.00

Based on the analysis above the following can be noted:

-

The construct with combined mnemonic: **Prod - Tech Spec** (rated as most important based on mean) was found to not have a significantly different mean from those of the three (3) constructs (with lower overall response means) with combined mnemonics **Rep - Rep**, **Prod - Tech**, **Phys – TendComp,** indicating that in this study project suppliers potentially saw these as being equally important. All constructs rated lower than **Phys - TendComp** were, however, found to have means that were significantly different from those of **Prod - Tech Spec**

The construct with combined mnemonic: **Rep - Rep** (rated as second most important based on mean) was found to not have a significantly different mean from those of the eleven (11) constructs (with lower overall response means) with combined mnemonics **Prod - Tech**, **Phys - TendComp, PreExp - Exec, Price –C - Cost, Prod - Warr, Peop - TechExp, Price - L/C - Cost, Ref - Refs, Peop - Att, Rel - Trust, Phy – Tend– Acc,** indicating that in this study project suppliers potentially saw these as being equally important. All constructs rated lower than **Phys - TendComp** were, however, found to have means that were significantly different from those of **Rep - Rep**

Constructs with combined mnemonics **Prod - Tech**, **Phys - TendComp, PreExp - Exec, Price - C-Cost, Prod - Warr** (rated as third, fourth, fifth, sixth, seventh, eighth and ninth most important based on mean response respectively), apart from having no significant differences between their means were found to not have a significantly different means to Six (6) constructs (with lower overall response means) with combined mnemonics: **Ref - Refs, Peop - Att, Rel - Trust, Phy - Tend-Acc, Time – ProjCon,** indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Time - ProjCon** were, however, found to have means that were significantly different from those of **Prod - Tech**, **Phys - TendComp, PreExp - Exec, Price - C-Cost, Prod - Warr.**

-

Table 20: Constructs rated as indifferent by project suppliers in South Africa

Construct	Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
43	Time-Prog-Cli	A potential project supplier supplying a project programme which conforms to client time frames	0.27	0.83	34	1.92	0.06
14	Proc-ProjMeth	The project execution methodology proposed by a potential project supplier	0.27	0.80	34	1.95	0.06
16	Peop-Qual	The qualifications of the people involved in project execution from a potential project supplier.	0.23	0.74	34	1.83	0.08
32	Proc-ClientSys	The potential project supplier willingness to adapt to client systems eg. Software specified by a client.	0.17	0.65	34	1.51	0.14
42	S/S-Rel-S/S	The quality reputation and relationship with sub-suppliers being proposed to execute a project	0.10	0.64	34	0.95	0.35
44	S/S-Rep-S/S	The reputation of the sub-suppliers used by a potential project supplier.	0.07	0.71	34	0.56	0.58
9	Rel-Rel	The interpersonal relationships with a potential project supplier	0.03	0.90	34	0.17	0.86
26	S/S-Prev	A potential project supplier using sub-suppliers or sub-contractors that have been used before.	0.01	0.68	34	0.11	0.91
5	Quality-ISO	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001	0.01	1.09	34	0.04	0.97
20	Ref-WofM	Word-of-mouth recommendations of a potential project supplier.	-0.03	0.92	34	-0.21	0.84
34	S/S-Client	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.	-0.08	0.58	34	-0.78	0.44
19	Cap-HR's	Availability of human resources from a potential project supplier.	-0.11	1.05	34	-0.60	0.55
12	Rel-Meet	Regular personal meetings and calls from a potential project supplier	-0.18	1.02	34	-1.02	0.32
8	Prod-Train	Training offered by a potential project supplier	-0.20	0.83	34	-1.40	0.17

Fourteen of the constructs were rated by project suppliers as being indifferent in the purchasing of industrial projects in South Africa.

The Table 20 presents a summary of the occurrence of each of the factors identified in the literature as indifferent in the purchasing of industrial projects within those constructs that were rated a indifferent by project suppliers in South Africa.

-

Table 21: Factor occurrences of underlying constructs rated as indifferent by project suppliers in South Africa

Factor Mnemonic	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	1
E	People	Peop	1
F	Processes	Proc	2
G	Productivity and time	Time	1
I	Relationships	Rel	2
K	References and referrals	Ref	1
L	General capacity	Cap	1
M	Sub-suppliers	S/S	4
O	Quality	Quality	1

The following underlying factors as identified in literature did not appear to be underlying factors that project suppliers rate as indifferent:

- Price – Price
- Promo – Promotional Information
- Phys – Physical Evidence
- Rep – Reputation
- PreExp – Previous Experience
- BEE – BEE

In order to determine if there were significant differences in the rating of each of the constructs the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses were determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in Table 22. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

-

Table 22: Significance of difference of means of responses rated as indifferent by project suppliers

			Qu	43	14	16	32	42	44	9	26	5	20	34	19	12	8
			Mnemonic	Time-Prog-Cli	Time-ProjMeth	Peop-Qual	Prod-ClientSys	S/S-Rel-S/S	S/S-Rep-S/S	Rel-Rel	S/S-Prev	Quality-ISO	Ref-WofM	S/S-Client	Cap-HR's	Rel-Meet	Prod-Train
n=	n=	34	**μ**	0.27	0.27	0.23	0.17	0.10	0.07	0.03	0.01	0.01	-0.03	-0.08	-0.11	-0.18	-0.20
Qu	**Mnemonic**	**μ**	**σ**	0.83	0.80	0.74	0.65	0.64	0.71	0.90	0.68	1.09	0.92	0.58	1.05	1.02	0.83
43	Time-Prog-Cli	0.27	0.83	0.00	-0.01	-0.21	-0.58	-0.94	-1.08	-1.17	-1.40	-1.13	-1.43	-2.02	-1.66	-2.00	-2.34
14	Time-ProjMeth	0.27	0.80	0.01	0.00	-0.20	-0.58	-0.94	-1.09	-1.17	-1.41	-1.13	-1.44	-2.04	-1.67	-2.01	-2.36
16	Peop-Qual	0.23	0.74	0.21	0.20	0.00	-0.38	-0.76	-0.93	-1.02	-1.27	-1.00	-1.31	-1.92	-1.55	-1.90	-2.26
32	Prod-ClientSys	0.17	0.65	0.58	0.58	0.38	0.00	-0.41	-0.60	-0.74	-0.95	-0.74	-1.04	-1.64	-1.31	-1.67	-2.03
42	S/S-Rel-S/S	0.10	0.64	0.94	0.94	0.76	0.41	0.00	-0.22	-0.41	-0.56	-0.45	-0.71	-1.23	-1.01	-1.37	-1.69
44	S/S-Rep-S/S	0.07	0.71	1.08	1.09	0.93	0.60	0.22	0.00	-0.21	-0.33	-0.28	-0.51	-0.93	-0.81	-1.16	-1.43
9	Rel-Rel	0.03	0.90	1.17	1.17	1.02	0.74	0.41	0.21	0.00	-0.07	-0.08	-0.27	-0.57	-0.57	-0.88	-1.07
26	S/S-Prev	0.01	0.68	1.40	1.41	1.27	0.95	0.56	0.33	0.07	0.00	-0.03	-0.23	-0.59	-0.57	-0.91	-1.15
5	Quality-ISO	0.01	1.09	1.13	1.13	1.00	0.74	0.45	0.28	0.08	0.03	0.00	-0.16	-0.40	-0.44	-0.73	-0.88
20	Ref-WofM	-0.03	0.92	1.43	1.44	1.31	1.04	0.71	0.51	0.27	0.23	0.16	0.00	-0.24	-0.31	-0.62	-0.78
34	S/S-Client	-0.08	0.58	2.02	2.04	1.92	1.64	1.23	0.93	0.57	0.59	0.40	0.24	0.00	-0.15	-0.51	-0.70
19	Cap-HR's	-0.11	1.05	1.66	1.67	1.55	1.31	1.01	0.81	0.57	0.57	0.44	0.31	0.15	0.00	-0.28	-0.40
12	Rel-Meet	-0.18	1.02	2.00	2.01	1.90	1.67	1.37	1.16	0.88	0.91	0.73	0.62	0.51	0.28	0.00	-0.09
8	Prod-Train	-0.20	0.83	2.34	2.36	2.26	2.03	1.69	1.43	1.07	1.15	0.88	0.78	0.70	0.40	0.09	0.00

Based on the analysis above the following can be noted:

Significant differences were found between the means of the responses to the following constructs:

Time – Prog - Cli and **Prod - Train**

Time - ProjMeth and **Prod - Train**

Peop - Qual and **Prod-Train**

The constructs, with the associated factors identified as being important from the literature that were rated as **potentially unimportant** by project suppliers in South Africa, are presented in Table 22:

-

Table 23: Constructs rated as potentially unimportant by project suppliers in South Africa

Construct	Combined Mnemonic	Items	μ	σ	n	t-stat	p-value
11	Prod-VAS	Value-added services such as operational contracts offered by a potential project supplier	-0.38	0.74	34	-2.98	0.01
41	BEE-BEO	Black equity ownership of a potential project supplier.	-0.43	0.96	34	-2.60	0.01
10	Rep-Brand	The branding of a potential project supplier	-0.51	0.82	34	-3.62	0.00
30	Prod-O/Serv	A potential project supplier's ability to supply other services such as financing as part of the proposal	-0.53	0.86	34	-3.59	0.00
7	BEE-EE	Employment equity credentials of the potential project supplier	-0.55	0.87	34	-3.66	0.00
25	Rep-ProAff	Professional affiliations of a potential project supplier. e.g. Engineering institutes	-0.56	0.91	34	-3.56	0.00
15	BEE-BM	Black management composition of a potential project supplier	-0.58	0.86	34	-3.92	0.00
23	Phys-OffApp	The appearance of the offices from which a potential project supplier operates.	-0.59	0.69	34	-4.97	0.00
33	Phys-GeoLoc	The geographical location of the offices from which a potential project supplier operates.	-0.66	0.70	34	-5.46	0.00
4	Prod-Spares	A potential project supplier's ability and willingness to hold spares on your behalf	-0.67	0.82	34	-4.76	0.00
22	Promo-T/S	A potential project supplier regularly taking part in tradeshows e.g. electramining or similar.	-0.95	0.83	34	-6.64	0.00
18	Promo-Corrs	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.	-1.06	0.97	34	-6.41	0.00
45	BEE-CSI	Corporate social investments made by a potential project supplier.	-1.10	0.88	34	-7.32	0.00
13	Promo-Advert	Adverts and advertising in trade magazines by a potential project supplier	-1.20	0.63	34	-11.08	0.00
39	Promo-WWW	Accessibility and quality of a potential project supplier's internet site.	-1.36	1.00	34	-7.90	0.00

Fifteen of the constructs were rated by project suppliers as being potentially unimportant in the purchasing of industrial projects in South Africa.

Table 23 summarises the occurrence of each of the factors identified in the literature as potentially unimportant in the purchasing of industrial projects within those constructs that were rated as potentially unimportant by project suppliers in South Africa.

-

Table 24: Factor occurrences of underlying constructs rated as potentially unimportant by project suppliers in South Africa

Factor Mnemonic	Factor Description	Factor Mnemonic	No. of Occurrences
A	Product and solution offering	Prod	3
C	Promotional information	Promo	4
D	Physical evidence	Phys	2
H	Reputation	Rep	2
N	BEE	BEE	4

The following underlying factors as identified in literature did not appear to be underlying factors that project suppliers rate as potentially unimportant:

- Price – Price
- Peop – People
- Proc – Processes
- Time – Productivity and time
- Rel – Relationships
- PrevExp – Previous experience
- Ref – References and referrals
- Cap – General capacity
- S/S – Sub-suppliers

In order to determine if there were significant differences in the rating of each of the constructs the means of the responses were compared using a commonly used parametric test to determine the difference of means. Differences in the mean responses were determined at $p<0.05$, $t = 2.042$. The results of this analysis are presented in the Table. Where significant differences in the means of the responses to the constructs were not calculated the cells are marked in red. If significant differences were calculated cells are marked in green.

-

Table 25: Significance of difference of means of responses rated potentially unimportant by project suppliers

		Mnemonic	Prod-VAS	BEE-BEO	Rep-Brand	Prod-O/Serv	BEE-EE	Rep-ProAff	BEE-BM	Phys-OffApp	Phys-GeoLoc	Prod-Spares	Prom-T/S	Prom-Corrs	BEE-CSI	Prom-Advert	Prom-WWW
n=	34	μ	-0.38	-0.43	-0.51	-0.53	-0.55	-0.56	-0.58	-0.59	-0.66	-0.67	-0.95	-1.06	-1.10	-1.20	-1.36
Mnemonic	**μ**	**σ**	0.74	0.96	0.82	0.86	0.87	0.91	0.86	0.69	0.70	0.82	0.83	0.97	0.88	0.63	1.00
Prod-VAS	-0.38	0.74	0.00	-0.23	-0.68	-0.76	-0.86	-0.87	-1.01	-1.18	-1.58	-1.52	-2.95	-3.26	-3.65	-4.91	-4.56
BEE-BEO	-0.43	0.96	0.23	0.00	-0.38	-0.45	-0.54	-0.56	-0.68	-0.78	-1.12	-1.11	-2.37	-2.71	-3.00	-3.91	-3.89
Rep-Brand	-0.51	0.82	0.68	0.38	0.00	-0.09	-0.19	-0.22	-0.33	-0.41	-0.80	-0.79	-2.17	-2.53	-2.86	-3.88	-3.80
Prod-O/Serv	-0.53	0.86	0.76	0.45	0.09	0.00	-0.10	-0.13	-0.24	-0.31	-0.68	-0.69	-2.04	-2.41	-2.72	-3.69	-3.66
BEE-EE	-0.55	0.87	0.86	0.54	0.19	0.10	0.00	-0.03	-0.14	-0.19	-0.57	-0.58	-1.91	-2.29	-2.59	-3.53	-3.54
Rep-ProAff	-0.56	0.91	0.87	0.56	0.22	0.13	0.03	0.00	-0.10	-0.15	-0.51	-0.53	-1.84	-2.22	-2.50	-3.39	-3.44
BEE-BM	-0.58	0.86	1.01	0.68	0.33	0.24	0.14	0.10	0.00	-0.04	-0.42	-0.44	-1.79	-2.18	-2.47	-3.40	-3.43
Phys-OffApp	-0.59	0.69	1.18	0.78	0.41	0.31	0.19	0.15	0.04	0.00	-0.43	-0.45	-1.94	-2.34	-2.69	-3.84	-3.70
Phys-GeoLoc	-0.66	0.70	1.58	1.12	0.80	0.68	0.57	0.51	0.42	0.43	0.00	-0.06	-1.54	-1.97	-2.29	-3.35	-3.32
Prod-Spares	-0.67	0.82	1.52	1.11	0.79	0.69	0.58	0.53	0.44	0.45	0.06	0.00	-1.38	-1.81	-2.09	-3.00	-3.10
Prom-T/S	-0.95	0.83	2.95	2.37	2.17	2.04	1.91	1.84	1.79	1.94	1.54	1.38	0.00	-0.53	-0.74	-1.43	-1.84
Prom-Corrs	-1.06	0.97	3.26	2.71	2.53	2.41	2.29	2.22	2.18	2.34	1.97	1.81	0.53	0.00	-0.17	-0.71	-1.23
BEE-CSI	-1.10	0.88	3.65	3.00	2.86	2.72	2.59	2.50	2.47	2.69	2.29	2.09	0.74	0.17	0.00	-0.55	-1.12
Prom-Advert	-1.20	0.63	4.91	3.91	3.88	3.69	3.53	3.39	3.40	3.84	3.35	3.00	1.43	0.71	0.55	0.00	-0.76
Prom-WWW	-1.36	1.00	4.56	3.89	3.80	3.66	3.54	3.44	3.43	3.70	3.32	3.10	1.84	1.23	1.12	0.76	0.00

Based on the analysis above the following can be noted:

Constructs with combined mnemonics **Prod - VAS, BEE - BEO and Rep - Brand** (rated 33rd, 34th and 35th most important based on mean response respectively), apart from having no significant differences between their means, were found to not have a significantly different means from those of seven (7) constructs (with lower overall response means) with combined mnemonics: **Prod - O/S**, **BEE - EE**, **Rep - ProAff**, **BEE - BM**, **Phys - OffApp**, **PhysGeoLoc**, **Prod – Spares,**. indicating that in this study project purchasers potentially saw these as being equally important. All constructs rated lower than **Prod - Spares** were, however, found to have means that were significantly different to **Prod - VAS, BEE - BEO and Rep - Brand.**

Constructs with combined mnemonics **Prod - O/Serv, BEE - EE and Rep - ProAff, BEE - BM, Phys - OffApp** (rated 36th, 37th and 38th, 39th and 40th most important based on mean response respectively), apart from having no significant differences between their means were found to not have a significantly different means from those of seven (7) constructs (with lower overall response means)

-

with combined mnemonics: **PhysGeoLoc**, **Prod - Spares**, and **Promo - T/S** indicating that in this study project purchasers potentially saw these constructs as being equally important. All constructs rated lower than **Promo - T/S** were, however, found to have means that were significantly different to **Prod - O/Serv, BEE - EE and Rep - ProAff, BEE - BM, Phys - OffApp.**

Table 26 summarises the results obtained from the surveying of project purchasers with respect to which factors, and more specifically which constructs fell into the potentially very important, indifferent and potentially not important categories respectively.

Table 26: Summary of project supplier factor and associated underlying construct rating

Factor Mnemonic	Factor Description	Potentially Very Important	Indifferent	Potentially Unimportant
Prod	Product and solution offering	Prod-TechSpec	Prod-Train	Prod-VAS
		Prod-Tech		Prod-O/Serv
		Prod-Warr		Prod-Spares
Price	Price	Price-C-Cost		
		Price-L/C-Cost		
Phys	Physical evidence	Phys-TendComp		Phys-OffApp
		Phys-TendAcc		Phys-GeoLoc
Peop	People	Peop-TechExP	Peop-Qual	
		Peop-Att		
		Peop-KeyStaff		
Proc	Processes	Proc-ProjCon	Proc-ProjMeth	
			Proc-ClientSys	
Time	Productivity and time	Time-Prog-Reas	Time-Prog-Cli	
Rep	Reputation	Rep-Rep		Rep-Brand
				Rep-ProAff
Rel	Relationships	Rel-Trust	Rel-Rel	
			Rel-Meet	

-

PreExp	Previous experience	PreExp-Exec		
Ref	References and referrals	Ref-Refs	Ref-WofM	
Cap	General capacity	Cap-FinanStr	Cap-HR's	
Quality	Quality	Quality-IHQA	Quality-ISO	
S/S	Sub-suppliers		S/S-Rel-S/S	
			S/S-Rep-S/S	
			S/S-Prev	
			S/S-Client	
Prom	Promotional information			Prom-T/S
				Prom-Corrs
				Prom-Advert
				Prom-WWW
BEE	BEE			BEE-BEO
				BEE-EE
				BEE-BM
				BEE-CSI

From Table 26 the following specific pertinent issues are noted with respect to some of the factors listed below:

- Product and solution offering – Project suppliers rated the technology, how it meets client specifications and performance warranties higher (potentially very important), than training (indifferent) and value added and augmented services such as spares holding and financing (potentially unimportant)

- Physical evidence - Project suppliers rated the completeness and accuracy of tender documentation higher (potentially very important) than the appearance and location of project supplier offices (potentially unimportant)

- People – Project suppliers rated the technical experience, accessibility of key staff and their attitudes higher (potentially very important) than the qualifications of staff (indifferent)

-

- Processes – Project suppliers rated project controls higher (potentially very important) than either project methodologies employed and adaptation to client systems (indifferent)

- Time – Project suppliers rated providing a project programme based on reasonable assumptions higher (potentially very important) than providing a programme that conforms to client expectations (indifferent)

- Reputation – Project suppliers rated overall reputation higher (potentially very important) than professional affiliations and brand (potentially unimportant)

- Relationships – Project suppliers rated trust higher (potentially very important) than regular meetings and interpersonal relationships (indifferent)

- Previous experience – Project suppliers rated the associated construct as potentially very important

- References and referrals – Project suppliers rated references of completion of similar projects higher (potentially very important) than word of mouth referrals (indifferent)

- General capacity – Project suppliers rated financial strength of a potential project supplier higher (potentially very important) than availability of human resources (indifferent)

- Quality – Project suppliers rated evidence of an in-house quality system higher (potentially very important) than having an accredited quality system such as IS9001 (indifferent)

-

- Promotional information - Project purchasers rated all the associated constructs as potentially unimportant

- BEE – Project purchasers rated all the associated constructs as potentially unimportant

4.3 Comparing project-purchaser and project-supplier responses

In order to determine if there were any significant differences between the responses of project purchasers vs. project suppliers in South Africa the means of responses were compared ($p<0.05$, $-1.69<T<1.69$). The results of this comparison are summarised in Table 27. Table 27 was compiled by ordering the constructs according to what purchasers rated as most important to least important. In cases where significant differences between the means of responses of project suppliers were calculated the T value is highlighted in green. For comparison purposes, for each of the constructs the absolute mean of the responses was also compared and where suppliers' mean was higher the last column is marked in yellow. Where purchasers mean was higher, the last column is marked in blue (Note this does not indicate that the differences were significant, but merely compares the means in absolute terms).

Table 27: Comparison of means of responses by project purchasers and project suppliers

Mnemonic	Purchasers				Suppliers				Analysis			Rated Higher by:
	μ	σ	n	Rate	M	σ	n	Rate	Sp	T	P	
Prod-TechSpec	0.94	0.43	38	1	1.03	0.43	34	1	0.43	-0.90	0.37	Suppliers
Prod-Warr	0.89	0.74	38	2	0.69	0.76	34	7	0.75	1.14	0.26	Purchasers
Price-L/C-Cost	0.82	0.95	38	3	0.63	0.97	34	9	0.96	0.81	0.42	Purchasers
Peop-TechExP	0.72	0.60	38	4	0.69	0.61	34	8	0.61	0.28	0.78	Purchasers
Ref-Refs	0.72	0.92	38	5	0.62	0.94	34	10	0.93	0.43	0.67	Purchasers
Peop-KeyStaff	0.70	0.67	38	6	0.30	0.68	34	16	0.67	2.51	0.01	Purchasers
Phys-TendComp	0.61	0.77	38	7	0.72	0.78	34	4	0.78	-0.58	0.56	Suppliers
Time-Prog-Cli	0.61	0.81	38	8	0.27	0.83	34	19	0.82	1.73	0.09	Purchasers

-

Prod-Tech	0.58	0.81	38	9	0.77	0.82	34	3	0.81	-0.99	0.32	Suppliers
Price-C-Cost	0.54	0.69	38	10	0.71	0.70	34	6	0.70	-1.09	0.28	Suppliers
Peop-Att	0.50	0.80	38	11	0.56	0.81	34	11	0.80	-0.33	0.74	Suppliers
Time-ProjMeth	0.48	0.79	38	12	0.27	0.80	34	20	0.80	1.12	0.27	Purchasers
Rep-Rep	0.46	0.60	38	13	0.78	0.61	34	2	0.61	-2.21	0.03	Suppliers
PreExp-Exec	0.43	0.73	38	14	0.72	0.74	34	5	0.73	-1.64	0.10	Suppliers
Time-Prog-Reas	0.41	0.69	38	15	0.28	0.71	34	18	0.70	0.78	0.44	Purchasers
Phys-TendAcc	0.40	0.58	38	16	0.51	0.59	34	13	0.58	-0.75	0.45	Suppliers
Time-ProjCon	0.40	0.65	38	17	0.40	0.66	34	14	0.65	-0.02	0.98	Suppliers
Rel-Trust	0.37	0.80	38	18	0.52	0.82	34	12	0.81	-0.82	0.41	Suppliers
Quality-IHQA	0.35	0.82	38	19	0.29	0.84	34	17	0.83	0.28	0.78	Purchasers
Cap-FinanStr	0.26	0.61	38	20	0.32	0.62	34	15	0.62	-0.42	0.68	Suppliers
Prod-ClientSys	0.25	0.63	38	21	0.17	0.65	34	22	0.64	0.55	0.59	Purchasers
S/S-Rep-S/S	0.22	0.70	38	22	0.07	0.71	34	24	0.70	0.91	0.37	Purchasers
Peop-Qual	0.20	0.72	38	23	0.23	0.74	34	21	0.73	-0.20	0.84	Suppliers
Quality-ISO	0.19	1.06	38	24	0.01	1.09	34	27	1.07	0.73	0.47	Purchasers
S/S-Prev	0.13	0.67	38	25	0.01	0.68	34	26	0.68	0.74	0.46	Purchasers
Prod-Train	0.09	0.81	38	26	-0.20	0.83	34	32	0.82	1.48	0.14	Purchasers
S/S-Rel-S/S	0.06	0.62	38	27	0.10	0.64	34	23	0.63	-0.30	0.76	Suppliers
Cap-HR's	0.02	1.02	38	28	-0.11	1.05	34	30	1.03	0.52	0.61	Purchasers
Rel-Rel	-0.05	0.88	38	29	0.03	0.90	34	25	0.89	-0.38	0.71	Suppliers
Prod-VAS	-0.06	0.73	38	30	-0.38	0.74	34	33	0.74	1.84	0.07	Purchasers
Rel-Meet	-0.12	1.00	38	31	-0.18	1.02	34	31	1.01	0.26	0.80	Purchasers
S/S-Client	-0.13	0.57	38	32	-0.08	0.58	34	29	0.57	-0.38	0.71	Suppliers
Ref-WofM	-0.29	0.90	38	33	-0.03	0.92	34	28	0.91	-1.20	0.24	Suppliers
Rep-ProAff	-0.45	0.89	38	34	-0.56	0.91	34	38	0.90	0.52	0.61	Purchasers
Rep-Brand	-0.46	0.81	38	35	-0.51	0.82	34	35	0.81	0.28	0.78	Purchasers
BEE-BEO	-0.54	0.94	38	36	-0.43	0.96	34	34	0.95	-0.49	0.63	Suppliers
Prod-Spares	-0.60	0.80	38	37	-0.67	0.82	34	42	0.81	0.37	0.71	Purchasers
BEE-EE	-0.66	0.86	38	38	-0.55	0.87	34	37	0.87	-0.53	0.60	Suppliers
Phys-GeoLoc	-0.73	0.69	38	39	-0.66	0.70	34	41	0.70	-0.43	0.67	Suppliers
Phys-OffApp	-0.78	0.67	38	40	-0.59	0.69	34	40	0.68	-1.22	0.23	Suppliers
BEE-BM	-0.79	0.84	38	41	-0.58	0.86	34	39	0.85	-1.06	0.29	Suppliers
Prod-O/Serv	-0.94	0.84	38	42	-0.53	0.86	34	36	0.85	-2.03	0.05	Suppliers
BEE-CSI	-1.07	0.86	38	43	-1.10	0.88	34	45	0.87	0.14	0.89	Purchasers
Promo-Corrs	-1.08	0.95	38	44	-1.06	0.97	34	44	0.96	-0.06	0.95	Suppliers
Promo-T/S	-1.17	0.81	38	45	-0.95	0.83	34	43	0.82	-1.17	0.25	Suppliers
Promo-WWW	-1.19	0.98	38	46	-1.36	1.00	34	47	0.99	0.72	0.47	Purchasers
Promo-Advert	-1.25	0.62	38	47	-1.20	0.63	34	46	0.63	-0.32	0.75	Suppliers

Significant differences ($p<0.05$) were for three (3) of the constructs. Significant differences were calculated for the following constructs:

-

- **Peop - KeyStaff (p=0.01): Accessibility of key staff of a potential project supplier.** Project purchasers rated accessibility of key staff as being significantly more important than project suppliers did. **Peop - KeyStaff** fell into the **potentially very important category** (see tables 6 and 16 respectively) for both project purchasers and project suppliers, potentially further enhancing the significance in the difference in ratings.
- **Rep - Rep (p=0.03)**: **The overall reputation of a potential project supplier**. Project suppliers rated reputation as being significantly more important than project purchasers did. **Rep - Rep** fell into the **potentially very important category** (see tables 6 and 16 respectively) for both project purchasers and project suppliers, potentially further enhancing the significance in the difference in ratings.
- **Prod - O/Serv (p=0.05): A potential project supplier's ability to supply other services such as financing as part of the proposal.** Project suppliers rated a potential project supplier's ability to supply other services such as financing as part of the proposal as significantly more important than project purchasers did. **Prod - O/Serv** fell into the **potentially unimportant** category for both project purchasers and project suppliers.

Other constructs where potentially significant differences were found ($p<0.1$) were:

- **Time – Prog - Cli (p=0.09): A potential project supplier supplying a project programme which conforms to client time frames**. Project purchasers rated A potential project supplier supplying a project programme which conforms to client time frames as significantly more important than project suppliers did. **Time – Prog - Cli** fell into the **potentially very important** category for project purchasers, but only **indifferent** for project suppliers
- **Prod-VAS (p=0.07) : Value added services such as operational contracts offered by a potential project supplier.** Project purchasers rated value-added services such as operational contracts offered by a potential project supplier as significantly more important than project suppliers did**. Prod - VAS** fell into the **indifferent** category for project

-

purchasers, but only the **potentially unimportant category** for project suppliers

Furthermore, it is interesting to note that based on the absolute rating of the response means project purchasers seemed to be unanimous in rating **Prod-TechSpec - The degree to which a potential project supplier meets client technical specifications and preferences -** as the most important buying criterion. Project purchasers were also relatively unanimous in rating **Promo - Corrs**, **Promo - T/S**, **Promo - WWW** and **Promo - Advert** as the least important buying criterion**.**

-

5 DISCUSSION OF RESULTS

5.1 Project purchaser respondents

Thirty-eight responses were received from individuals representing 13 (thirteen) companies that purchased industrial project services in South Africa. A summary of respondents broken down by company represented and the specific questionnaire answered is shown in Table 5 of this research report. A more detailed breakdown of the individual respondents and their work description is presented in Appendix E. The companies represented in this research are by no means an exhaustive sample of all companies purchasing industrial projects as defined for the purposes of this research. The numbers of companies sampled do, however, represent a reasonable cross section of industrial project purchasers in South Africa. Companies represented can be classified into five broad categories representing different economic sectors. The categories are (total numbers of respondents from each sector are shown in brackets):

- Mining and metallurgical – AngloCoal, AngloGold Ashanti, BHP Billiton, Exxaro, Impala Platinum, Vanchem, XStrata (16)
- Utilities – Eskom (3)
- Paper and pulp – Sappi (1)
- Petrochemical – SASOL (5)
- Manufacturing – PPC and Toyota (13)

From the above list it is apparent that the sample included a large number of companies representing the mining and metallurgical sector, with only one or two companies from the other sectors being represented. The high number of mining and metallurgical companies sampled means that in interpreting the results of this research, one needs to be cautious in attempting to apply the conclusions to all industrial-project-purchasing companies.

-

It is apparent from an analysis of the number of responses per sector that the sample is biased in representation in terms of mining and metallurgical (16) and manufacturing (13), with very few responses from the other sectors. The strong representation of individuals from the mining and metallurgical and manufacturing sector needs to be considered when analysing the data and drawing conclusions.

As the sample was a convenience sample larger numbers of individuals were reachable from certain companies compared to others Lonmin (mining and metallurgical) returned six responses and PPC (manufacturing) returned 11. Potential for bias does exist based on the relatively large number of responses received from individuals from within these two companies and results should be interpreted accordingly.

Individual respondents fell into six (6) broad categories. (See Appendix E of this report). The six broad categories (with the number of respondents from each category shown in brackets) were:

- Operators (2)
- Project managers (17)
- Technical managers (8)
- Engineers (6)
- Consultants (1)
- Commercial managers (3)

A high proportion of technically orientated individuals were respondents in this research (operators, technical managers, engineers and consultants), with only three commercial managers responding. The researcher does, however, suggest that project managers, although often technically orientated, are often sensitive to and acutely aware of commercial implications associated with the purchasing of industrial projects.

-

5.2 Project purchaser factor ratings

The following factors as identified from the literature as being criteria in the purchasing of projects fell into the potentially very important category, but not into either the indifferent or potentially not important category:

- Price
- Processes
- Productivity and time
- Previous experience

This finding would suggest that these factors and their associated underlying criteria are regarded as very important by project purchasers

The following factors as identified from the literature as being criteria in the purchasing of projects fell into the potentially not important category, but not into either the potentially very important or indifferent category:

- Promotional information
- BEE

This finding would suggest that these factors and their associated underlying criteria are not regarded as important by project purchasers. The low rating of BEE as a factor requires further analysis, the large number of respondents with a technical bias may have resulted have resulted in the low rating of BEE as a purchasing criterion.

5.3 Project purchaser - significance of difference in construct ratings

Based on the data presented in Tables 6 and 8, the following six (6) constructs were rated as most important by project purchasers (in descending order of importance):

-

- The degree to which a potential project supplier meets client technical specifications and preferences;

- The warranties and performance guarantees offered by a potential project supplier;

- The life cycle cost (total cost of ownership) of the solution proposed by a potential project supplier;

- The technical experience of the people likely to be involved in a project from a potential project supplier;

- The ability of a potential project supplier to provide references of completion of similar projects; and

- Accessibility of key staff of a potential project supplier.

Although the rating of these constructs showed no significant difference statistically, these six constructs were found to be rated as significantly more important than any other of the constructs based on the research conducted as part of this study. The fact that these constructs rated significantly more important than any of the other constructs suggests that addressing these issues is key in formulating a successful marketing mix for the marketing of industrial projects in South Africa.

The constructs rated as most and second most important constructs relate to the product offering of an industrial project supplier and, although the survey had a high number of technically orientated respondents, the technical specification and guaranteed performance of a project package seemed to be intuitively important. Project suppliers should attempt to meet their clients technical specifications and preferences, by, firstly, selecting appropriate technology and, secondly, expending design effort to meet client specifications as far as is practically possible.

-

Project purchasers rated the total cost of ownership of a project as being significantly more important than the capital cost of a project, indicating that project suppliers should concentrate on solution offerings that have the lowest total cost of ownership for the project purchaser. The findings further suggests that effort should be expended at tender and pre-tender stage – firstly, in understanding a potential purchaser's cost drivers; secondly, in putting together a solution that is most effective from a total cost of ownership point of view; and, thirdly, in communicating the life cycle cost benefits of the solution to the purchaser.

The technical experience of staff likely to be involved in a potential project (rated fourth most important) as well as the accessibility of key staff from a potential project supplier were (rated sixth) appeared in this group. Project suppliers need to ensure that: firstly, the best staff with relevant experience, are employed; secondly, that the correct staff are deployed to the right projects; and, thirdly, that key staff are available for regular interaction with the project purchaser. This needs to be done at both pre-tender, tender and post tender stage.

The ability of project suppliers to supply references of completion of similar projects rated as fifth most important. It seems imperative therefore, that project suppliers strive to identify projects where a demonstrable track record is evident, or select technology or joint venture partners with references.

Possibly as a result of the relatively small sample population, clear, significant differences in ratings of other constructs, was not demonstrated. Notwithstanding this observation, and that significant differences in the ratings may not have been demonstrated, the following observations are worth noting:

- Project purchasers rated total cost of ownership as being more important than capital cost, as already mentioned and discussed;

- Project purchasers rated the ability of a potential project supplier to provide references of completion of similar projects higher than a potential project supplier having successfully executed work for a client. This finding implies that project suppliers should aim to identify other clients with similar project

-

requirements and that not having executed work for a client before is not a severe disadvantage;

- Project purchasers rated a potential project supplier supplying a project programme that conforms to client time frames higher than a potential project supplier supplying a detailed project programme with reasonable assumptions. This finding implies that a project supplier should - as far as is practical and cost effective - ensure that a project proposal is made that can meet client time frames. The project supplier should communicate the implications of meeting timeframes during both pre-tender and tender phases; and

- Project purchasers rated a potential project supplier having an in-house quality assurance system higher than a potential project supplier having a formal quality assurance system accreditation (e.g. ISO9001). This finding implies that having an accredited quality assurance system does not convey a competitive advantage over having an in-house developed quality system.

5.4 Project Supplier Respondents

Thirty-four responses were received from individuals representing twelve (12) companies supplying industrial project services in South Africa. A summary of respondents broken down by company represented and the specific questionnaire answered is shown in Table 15 of this research report and a more detailed break down of the individual respondents and their work description is presented in Appendix F. The companies represented in this research are by no means an exhaustive sample of all companies that purchase industrial projects as defined for the purposes of this research. The numbers of companies sampled do, however, represent a cross section of industrial project suppliers in South Africa.

A summary of the sectors to which companies represented supply industrial projects is presented in the Table 28 (The sectors serviced by each of the

-

companies is based on the researcher's knowledge of the companies surveyed and was not addressed in the questionnaires).

Table 28: Sectors serviced by project-supplier respondents (sectors serviced marked in black)

Company	Sectors Serviced				
	Mining and Metallurgy	Utilities	Paper and Pulp	Petrochemical	Manufacturing
A&E Consulting Engineers	■	■			
AI2SA					■
Bateman	■	■	■	■	■
Clyde Bergemann	■	■	■	■	■
Enzani Technologies	■	■			
HATCH	■	■			
Hitachi		■			
Larox	■		■	■	
Lodestone	■				
M&L Consulting Engineers	■			■	
MECS	■				
Powertech IST	■	■	■	■	■
SAM KZN	■	■	■		■
Siemens	■	■	■	■	■
Solo Resources	■				

Responses were received from companies that both service specific sectors as well as companies that service a broad range of sectors. Similarly to project-purchaser respondents a high proportion of these companies service the mining and metallurgical sector.

The use of a convenience sample meant that larger numbers of individuals were reachable from certain companies compared to others. Powertech IST and HATCH returned six (6) and seven (7) questionnaires respectively. As both

-

companies service a broad range of sectors within South Africa there is less chance of bias compared to the high number of responses received from a few individual project purchasers.

Individual respondents fell into seven (7) broad categories (see Appendix F of this report). The six broad categories with the (number of respondents from each category shown in brackets) were:

- Engineers (15)
- General managers (5)
- Consultants (2)
- Marketing managers (8)
- Financial directors (1)
- Operations managers (2)
- Managing directors (1)

A high proportion of technically orientated individuals were respondents in this research (engineers and consultants).

5.5 Project supplier factor ratings

The following factors as identified from literature as being criteria in the purchasing of projects fell into the potentially very important category but not into either the indifferent or potentially not important category:

- Price
- Previous experience

This finding would suggest that these factors and their associated underlying criteria are regarded as very important by project suppliers.

The following factors as identified from the literature as being criteria in the purchasing of projects fell into the potentially not important category, but not into either the potentially very important or indifferent category:

- Promotional information

-

- BEE

This finding would suggest that these factors and their associated underlying criteria are not regarded as important by project suppliers. The low rating of BEE as a factor requires further analysis, the large number of respondents with a technical bias may have resulted in the low rating of BEE as a purchasing criterion.

5.6 Project supplier - significance of differences in construct ratings

Based on the data presented in Tables 16 and 18, the following 4 (four) constructs were rated as most important by project suppliers (in descending order of importance):

- The degree to which a potential project supplier meets clients technical specifications and preferences;
- The overall reputation of a potential project supplier;
- The technology proposed by a potential project supplier; and
- Completeness of information supplied in a tender by a potential project supplier

Although the rating of these constructs showed no significant difference statistically, these four constructs were found to be rated as significantly more important than any other of the constructs by project suppliers, based on the research conducted as part of this study.

Interestingly, only one of these constructs coincides with those appearing in the most important group as for project purchasers. This finding may potentially be ascribed to the small sample sizes. Also, although significant differences between project supplier and project purchasers were only demonstrated for three of the constructs, it does suggest that there differences between what project purchasers and project suppliers regard as important.

-

Possibly as a result of the relatively small sample size, clear and significant differences in ratings of other constructs were difficult to demonstrate. Notwithstanding this observation, and that significant differences in the ratings may not have been demonstrated, the following observations are worth noting:

- Project suppliers rated capital cost as being more important than total cost of ownership.
- Project suppliers rated a potential project supplier having successfully executed work for a client higher than ability of a potential project supplier to provide references of completion of similar projects. This is opposite to project purchasers rating of the same two constructs.

5.7 Differences between project purchaser and supplier (construct ratings)

Statistically significant differences in the ratings of constructs by project suppliers and project purchasers (see Table 25) were found for the following three constructs:

- Accessibility of key staff of a potential project supplier: Project purchasers rated this as significantly more important than project suppliers did. This finding implies that in order to gain a competitive advantage project suppliers should endeavour to ensure accessibility of key staff throughout the project lifecycle.
- The overall reputation of a potential project supplier: Project suppliers rated this as significantly more important than project purchasers did. This finding implies that project suppliers should not rely on previous reputation as a key advantage. The finding ties in with the old adage: “You’re only as good as your last project.”
- A potential project supplier’s ability to supply other services such as financing as part of the proposal : Project suppliers rated this as significantly more important than project purchasers, indicating that perhaps this factor should only be addressed when specifically requested by the client.

-

5.8 Results pertaining to proposition 1

The findings based on Proposition 1 are presented below:

Proposition 1: Purchasers of industrial projects assess the following factors when choosing a supplier of industrial projects in South Africa:

- Product and solution offering
- Price
- Promotional information
- Physical evidence
- People
- Processes
- Productivity and time related issues
- Reputation
- Relationships
- Previous experience
- References and referrals
- General capacity
- Sub-suppliers used
- Black economic empowerment
- Quality

Partially Accepted

The research proposition is partially accepted because the following factors did not appear under the constructs rated as potentially very important (low p-value, high μ) by project purchasers in this research (see Tables 6 and 7):

- Promotional information
- Sub-suppliers used

-

- Black economic empowerment

5.9 Results pertaining to proposition 2

The findings based on Proposition 2 are presented below:

> **Proposition 2**: There are significant differences in the rating of the importance of these factors by project purchasers and project suppliers in South Africa.
>
> **Partially Accepted**

This research proposition is partially accepted because although the factors listed below appeared under the constructs rated by both project purchasers and project suppliers as potentially very important (low p-value, high μ) in this research (see Tables 6,7 and 16, 17):

- Product and solution offering
- Price
- Physical evidence
- People
- Processes
- Productivity and time related issues
- Reputation
- Relationships
- Previous experience
- References and referrals
- General capacity
- Quality

This finding implies that neither project purchasers nor suppliers take the following factors into account in the project-purchasing decision:

-

- Promotional information
- Sub-suppliers used
- Black economic empowerment

Notwithstanding this, differences were noted in the allocation of constructs (potentially very important vs. indifferent vs. potentially unimportant) by project purchasers compared to project suppliers associated with Product and Solution Offering, Processes, Productivity and Time as highlighted in the table below. (derived from Tables 15 and 26)

Table 29: Summary of project purchaser vs. supplier factor and associated underlying construct rating

	Potentially very important		Indifferent		Potentially unimportant	
Factor Description	**Purchasers**	**Suppliers**	**Purchasers**	**Suppliers**	**Purchasers**	**Suppliers**
Product and Solution Offering	Prod-TechSpec	Prod-TechSpec	Prod-Train	Prod-Train	Prod-Spares	Prod-VAS
	Prod-Warr	Prod-Tech	Prod-VAS		Prod-O/Serv	Prod-O/Serv
	Prod-Tech	Prod-Warr				Prod-Spares
Price	Price-L/C-Cost	Price-C-Cost				
	Price-C-Cost	Price-L/C-Cost				
Physical Evidence	Phys-TendComp	Phys-TendComp			Phys-GeoLoc	Phys-OffApp
	Phys-TendAcc	Phys-TendAcc			Phys-OffApp	Phys-GeoLoc
People	Peop-TechExP	Peop-TechExP	Peop-Qual	Peop-Qual		
	Peop-KeyStaff	Peop-Att				
	Peop-Att	Peop-KeyStaff				
Processes	Proc-ProjMeth	Proc-ProjCon		Proc-ProjMeth		
	Proc-ProjCon					
	Proc-ClientSys			Proc-ClientSys		
Productivity and Time	Time-Prog-Cli	Time-Prog-Reas		Time-Prog-Cli		
	Time-Prog-Reas					
Reputation	Rep-Rep	Rep-Rep			Rep-ProAff	Rep-Brand
					Rep-Brand	Rep-ProAff
Relationships	Rel-Trust	Rel-Trust	Rel-Meet	Rel-Rel		
			Rel-Rel	Rel-Meet		
Previous Experience	PreExp-Exec	PreExp-Exec				

-

References and Referrals	Ref-Refs	Ref-Refs	Ref-WofM	Ref-WofM		
General Capacity	Cap-FinanStr	Cap-FinanStr	Cap-HR's	Cap-HR's		
Quality	Quality-IHQA	Quality-IHQA	Quality-ISO	Quality-ISO		
Sub-Suppliers			S/S-Rep-S/S	S/S-Rel-S/S		
			S/S-Prev	S/S-Rep-S/S		
			S/S-Rel-S/S	S/S-Prev		
			S/S-Client	S/S-Client		
Promotional Information					Prom-Corrs	Prom-T/S
					Prom-T/S	Prom-Corrs
					Prom-WWW	Prom-Advert
					Prom-Advert	Prom-WWW
BEE					BEE-BEO	BEE-BEO
					BEE-EE	BEE-EE
					BEE-BM	BEE-BM
					BEE-CSI	BEE-CSI

It is apparent from the table above that there was a fair degree of alignment between what project purchasers and project suppliers rated as important purchasing factors. The differences in allocation of the seven constructs highlighted in the table above by project purchasers compared to project suppliers supports the partial acceptance of proposition 2.

Further supporting the partial acceptance of Proposition 2, significant differences were found between project purchasers and project suppliers rating of the following constructs:

- Accessibility of key staff of a potential project supplier: Project purchasers rated this as significantly more important than project suppliers did;
- The overall reputation of a potential project supplier: Project suppliers rated this as significantly more important than project purchasers did;
- A potential project supplier's ability to supply other services such as financing as part of the proposal: Project suppliers rated this as significantly more important than project purchasers.

-

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the findings of the research and suggests recommendations to companies and individuals involved in industrial-project marketing activities in South Africa to improve the effectiveness of these activities.

6.2 Conclusions of the Study

The research was undertaken to determine the critical success factors in the marketing of industrial projects in South Africa by assessing the rating of these factors by project purchasers and to attempt to determine if there were any differences in the rating of these factors between project purchasers and project suppliers.

Research Proposition 1 stated that purchasers of industrial projects assess the following factors when choosing a supplier of industrial projects in South Africa:

- Product and solution offering
- Price
- Promotional information
- Physical evidence
- People
- Processes
- Productivity and time related issues
- Reputation
- Relationships
- Previous experience
- References and referrals
- General capacity
- Sub-suppliers used
- Black economic empowerment

-

- Quality

This proposition was partially accepted because the following factors did not appear under the constructs rated as potentially very important by project purchasers in this research:

- Promotional information
- Sub-suppliers used
- Black economic empowerment

Research Proposition 2 stated that there are significant differences in the rating of the importance of these factors between project purchasers and project suppliers in South Africa.

This proposition was partially accepted because although the factors that were rated as potentially very important by project purchasers were found to be the same as those rated as potentially very important by project suppliers, differences were found in the allocation of seven constructs into the categories potentially very important, indifferent and potentially unimportant.

Further supporting the conclusion of partial acceptance was the finding that significant differences were found between project purchasers and project suppliers for the following constructs:

- Accessibility of key staff of a potential project supplier: Project purchasers rated this as significantly more important than project suppliers did;
- The overall reputation of a potential project supplier: Project suppliers rated this as significantly more important than project purchasers did; and
- A potential project supplier's ability to supply other services such as financing as part of the proposal: Project suppliers rated this as significantly more important than project purchasers did.

-

6.3 Generic Marketing Mix for Marketing of Industrial Projects in South Africa

On the basis of the research conducted a marketing mix is proposed for the marketing of industrial projects in South Africa. The marketing mix is presented as those issues that were found to be very important. This mix could be utilised by marketing managers in the allocation of time and resources in the marketing of industrial projects in South Africa.

Table summarises the factors, as well as the proposed areas of attention for the marketing mix:

Factor	Activity
Product and Solution Offering	Meeting client technical specifications and preferences
	Supplying performance warranties and guarantees
	Technology offering
	Adapting to client systems
Price	Total cost of ownership
	Capital cost
People	Technical experience

-

	Accessibility of key staff
	Attitudes of people
References	Supplying references of completion of similar projects
Physical Evidence	Completeness of information supplied in a tender
	Accuracy and precision of a written bid
Time related issues	Providing project programmes conforming to client expectations
	Providing client with project programmes based on reasonable assumptions
	Adequate project controls
Reputation	Protecting and managing reputation
Previous experience	Ensuring customer's experience on previous projects is good.
Relationships	Ensuring that customer trusts individuals from the project supplier
Quality	Developing strong in-house quality system
Capacity	Only quoting on projects for which the company has the

-

	balance sheet or cash flow to complete.

6.4 Recommendations for further research

On the basis of the research conducted the following potential areas for future research are proposed

6.4.1 *Consolidation of Factors*

The list of 15 factors identified from the literature could be consolidated. It is suggested that potential areas for consolidation could be:

- References be incorporated into physical evidence
- Relationships and people be classed together
- Quality be incorporated into processes

Although this would only decrease the number of factors by three it would potentially assist in analysis of factors.

6.4.2 *Sector-Specific Research*

Project-purchaser respondents to this research were drawn from a relatively broad cross section of firstly economic sectors within South Africa, including mining and metallurgical, utilities, paper and pulp, petrochemical and manufacturing. Project purchaser respondents also came from a broad range of companies, either serving one or many of the sectors mentioned. Research limited only to project purchasers from specific sectors and project suppliers servicing only that sector or those sectors would allow for sector-specific marketing strategies to be developed.

-

6.4.3 *Comparison of Importance of Factors between Sectors*

A comparison of the rating of factors between project purchasers and project suppliers between sectors could be carried out. This would be of particular interest to companies trying to formulate and implement strategies tackling a number of different sectors.

6.4.4 *Rating of Perception Based on Position in Company*

Research could be conducted into the differences in perception of factor importance based on job description or position within companies that purchase industrial projects in South Africa. This would give some insight into the differences of perceptions within the buying centre within project-purchasing companies.

6.4.5 *BBBEE in the Project-Purchasing Decision*

BEE rated low in terms of importance the research findings. The researcher believes that further research into the importance of BEE in the project-purchasing decision could be conducted. This research could potentially involve surveying - more respondents from the commercial portion of the project buying centre e.g. supply chain managers and commercial managers and, perhaps, surveying the parastatal / utilities sector.

-

REFERENCES

Ahola, T., Laitinen, E., Kujala, J. and Wikström, K. (2008) Purchasing strategies and value creation in industrial turnkey projects, *International Journal of Project Management,* 26(1), p. 87-94.

Andersen, P. H. and Kumar, R. (2006) Emotions, trust and relationship development in business relationships: A conceptual model for buyer–seller dyads, *Industrial Marketing Management,* 35(4), p. 522-535.

Artto, K. A. and Wikström, K. (2005) What is project business?, *International Journal of Project Management,* 23(5), p. 343-353.

Backhaus, K. (1995) Investitionsgütermarketing, 4., überarbeitete Auflage, München

Blomquist, T. and Wilson, T. L. (2007) Project marketing in multi-project organizations: A comparison of IS/IT and engineering firms, *Industrial Marketing Management,* 36(2), p. 206-218.

Bunn, M. D. (1993) Taxonomy of buying decision approaches, *Journal of marketing,* 57(1), pp. 38.

Cova, B. and Ghauri, P. (1996) Project marketing. Between mass marketing and networks, *European Seminar on Project Marketing and System Selling, Working Paper*.

Cova, B. and Holstius, K. (1993) How to create competitive advantage in project business, *Journal of Marketing Management,* 9(2), p. 105-121.

Cova, B. and Hoskins, S. (1997) A twin-track networking approach to project marketing, *European Management Journal,* 15(5), p. 546-556.

Cova, B., Mazet, F. and Salle, R. (1994) From competitive tendering to strategic marketing: an inductive approach for theory-building, *Journal of Strategic Marketing,* 2(1), p. 29-48.

Cova, B. and Salle, R. (2000) Rituals in managing extrabusiness relationships in international project marketing: a conceptual framework, *International Business Review,* 9(6), p. 669-685.

-

Cova, B. and Salle, R. (2005) Six key points to merge project marketing into project management, *International Journal of Project Management,* 23(5), p. 354-359.

Cova, B. and Salle, R. (2007) Introduction to the IMM special issue on 'Project marketing and the marketing of solutions' A comprehensive approach to project marketing and the marketing of solutions, *Industrial Marketing Management,* 36(2), p. 138-146.

Dawes, P. L., Dowling, G. R. and Patterson, P. G. (1992) Criteria used to select management consultants, *Industrial Marketing Management,* 21(3), p. 187-193.

Day, E. and Barksdale, H. C. (1992) How firms select professional services, *Industrial Marketing Management,* 21(2), p. 85 - 91.

Day, E. and Barksdale, H. C. (2003) Selecting a professional services provider from the shortlist. , *Journal of Business and Industrial Marketing,* 18(6/7), p. 564 - 579.

dTi (2003) South Africa's Economic Transformation: A Strategy for Broad Based Black Economic Empowerment, [http://www.dti.gov.za/bee/bee.htm], In Industry, D. o. T. a. (ed.),

Emerson, R. M. (1976) Social Exchange Theory, *Annual Reviews in Sociology,* 2(1), p. 335-362.

Filiatrault, P. and Lapierre, J. (1997) Managing business-to-business marketing relationships in consulting engineering firms, *Industrial Marketing Management,* 26(2), p. 213-222.

Fombrun, C. J. (1982) Strategies for network research in organizations, *Academy of Management Review,* 7(2), p. 280-291.

Gallouj, C. (1997) Assymetry of information and the service relationship:selection and evaluation of the service provider, *International Journal of Service Industry Management,* 8(1), p. 42-64.

Grönroos, C. (1997) Keynote paper from marketing mix to relationship marketing–towards a paradigm shift in marketing, *Management Decision,* 35(4), p. 322-339.

Günter, B. and Bonaccorsi, A. (1996) Project marketing and systems selling—in search of frameworks and insights, *International Business Review,* 5(6), p. 531-537.

-

Hadjikhani, A. (1996) Project marketing and the management of discontinuity, *International Business Review,* 5(3), p. 319-336.

Hakansson, H. and Snehota, I. (1995) Developing Relationships in Networks, Routledge, London

Hunt, S. D. and Morgan, R. M. (1995) The comparative advantage theory of competition, *Journal of marketing,* 59(2), pp. 1.

Hutt, M. D. and Speh, T. W. (1985) *Industrial Marketing Management,* Second Edition ed., The Dryden Press, Holt-saunders Japan.

Hutt, M. D. and Speh, T. W. (2001) Business Marketing Management, pp. 716, Harcourt College Publishers

Johnston, W. J. and Bonoma, T. V. (1981) Purchase Process for Capital Equipment and Services, *Industrial Marketing Management,* 10(4), p. 253-264.

Kotler, P. (1994) Marketing Management: Planning, Analysis, Implementation and Control, Prentice-Hall, New York, NY

Leedy, P. D. and Ormrod, J. E. (2001) *Practical Research: Planning and Design,* Seventh ed., Merrill Prentice Hall, Upper Saddle River.

Legoete, T. (2007) *Insurance Broker Selection Criteria in South Africa.* Unpublished MBA dissertation, University of the Witwatersrand, Johannesburg.

Lovelock, C. H. (2001) *Services Marketing - People, Technology, Strategy,* 4th ed., Prentis Hall, Upper Saddle River, New Jersey.

Mandják, T. and Veres, Z. (1998) The DUC Model and the Stages of Project Marketing Process, *14th Annual IMP Conference Proceedings,* 1, p. 471-490.

Moon, J. and Tikoo, S. (2002) Buying decision approaches of organizational buyers and users, *Journal of Business Research,* 55(4), p. 293-299.

-

Morris, M. H. (1992) *Industrial and Organizational Marketing*, MacMillan.

Morris, M. H., Berthon, P. and Pitt, L. F. (1999) Assessing the Structure of Industrial Buying Centers with Multivariate Tools, *Industrial Marketing Management,* 28(3), p. 263-276.

Nielson, C. C. (1998) An empirical examination of the role of closeness in industrial buyer-seller relationships, *European Journal of Marketing,* 32(5/6), p. 441-463.

Salminen, R. T. and Möller, K. (2006) Role of References in Business Marketing–Towards a Normative Theory of Referencing, *Journal of Business-to-Business Marketing,* 13(1), p. 1-52.

Salminen, R. T. and Möller, K. E. (2004) Use of References in Industrial Bidding-A Decision Process Analysis, *Journal of Marketing Management,* 20(1-2), p. 133-156.

Skaates, M. A. and Tikkanen, H. (2003) International project marketing: an introduction to the INPM approach, *International Journal of Project Management,* 21(7), p. 503-510.

Stacey, A. G. (2005) The reliability and validity of the item means and standard deviations of ordinal level response data, *Managment Dynamics,* 14(3).

Stacey., A. G. (2005) The reliability and validity of the item means and standard deviations of ordinal level response data, *Managment Dynamics,* 14(3).

Tanner, J. F. (1999) Organizational Buying Theories A Bridge to Relationships Theory, *Industrial Marketing Management,* 28(3), p. 245-255.

Tikkanen, H., Kujala, J. and Artto, K. (2007) The marketing strategy of a project-based firm: The Four Portfolios Framework, *Industrial Marketing Management,* 36(2), p. 194-205.

Tracey, F. N. (1989) *Client's Selection Criteria in Consulting Engineering Services.* Unpublished MBA dissertation, University of the Witwatersrand, Johannesburg.

Verma, R. and Pullman, M. E. (1998) An analysis of the supplier selection process, *Omega,* 26(6), p. 739-750.

-

Webster, F. E. and Wind, Y. (2001) A general model for understanding organizational buying behavior", *Marketing: Critical Perspectives on Business and Management,* 36, p. 12-19.

APPENDIX A: QUESTIONNAIRE A AND COVERING LETTER



The Graduate School of Business Administration
2 St Davids Place,
Parktown
Johannesburg,
2193, South Africa
PO Box 98, WITS, 2050
Telephone: +27 11 717 3600,
Facsimile +27 11 643 2336

10 May 2009

Prof/Dr/Mr/Ms…….

Purchasing of Industrial Projects in South Africa

As part of my Master of Business Administration Research Report, I am conducting research into the importance of various criteria in the purchasing of industrial projects in South Africa. Part of this research also aims to determine what factors are important when companies make a decision to procure a project from a supplier.

The title of my Research Report is *Purchase Decision Criteria for Industrial Projects in South Africa.*

The following questionnaire has been designed to measure the relative importance of factors involved in the purchasing decision for an industrial project. It is intended to take no more than 15 minutes of your time to complete.

I would greatly appreciate your taking the time to complete the questionnaire. All responses remain anonymous in the final analysis. I thank you in anticipation for the time you have taken to complete this questionnaire.

As a respondent you be entitled to a summary of the results of the research. Please indicate on submission of your completed questionnaire whether you would like a copy of these results or not.

-

Should you have any queries, please do not hesitate to contact the writer at 082 857 7344

Yours Sincerely,

_____

Neil Rein

-

Listed below are a number of criteria that have been identified as indifferent in the purchasing of Industrial Projects in South Africa. Please read through the statements provided. For each of the statements please rate them (on the scale of 0 to 5) in terms of your perception of how important they are in an industrial project purchasing decision. The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

No	Criteria	Rating					
		0	1	2	3	4	5
1	The technology proposed by a potential project supplier						
2	A potential project supplier having successfully executed work for a client previously						
3	Attitudes of the people involved from a potential project supplier						
4	A potential project supplier's ability and willingness to hold spares on your behalf						
5	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001						
6	The accuracy and precision of the written bid or tender from a potential project supplier.						
7	Employment equity credentials of the potential project supplier						
8	Training offered by a potential project supplier						
9	The interpersonal relationships with a potential project supplier						
10	The branding of a potential project supplier						
11	Value added services such as operational contracts offered by a potential project supplier						
12	Regular personal meetings and calls from a potential project supplier						
13	Adverts and advertising in trade magazines by a potential project supplier						
14	The project execution methodology proposed by a potential project supplier						
15	Black management composition of a potential project supplier						
16	The qualifications of the people persons involved in project execution from a potential project supplier.						
17	The degree to which a potential project supplier meets client technical specifications and preferences.						
18	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.						
19	Availability of human resources from a potential project supplier.						
20	Word of mouth recommendations of a potential project supplier.						
21	The ability of a potential project supplier to provide references of completion of similar projects.						
22	A potential project supplier regularly taking part in tradeshows eg Electramining or similar.						
23	The appearance of the offices from which a potential project supplier operates.						
24	The project controls proposed by a potential project supplier.						
25	Professional affiliations of a potential project supplier. Eg Engineering institutes						
26	A potential project supplier using sub-suppliers or sub-contractors that have been used before.						
27	Completeness of information supplied in a tender by a potential project supplier						
The rating should be done as follows:							

-

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

28	The overall reputation of a potential project supplier.						
29	A potential project supplier having an in house quality assurance system						
30	A potential project supplier's ability to supply other services such as financing as part of the proposal						
31	The technical experience of the people likely to be involved in a project from a potential project supplier						
32	The potential project supplier willingness to adapt to client systems eg. Software specified by a client.						
33	The geographical location of the offices from which a potential project supplier operates.						
34	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.						
35	The warranties and performance guarantees offered by a potential project supplier.						
36	Accessibility of key staff of a potential project supplier.						
37	The financial strength of a potential project supplier.						
38	The capital cost of the solution proposed by a potential project supplier.						
39	Accessibility and quality of a potential project supplier's internet site.						
40	The life cycle cost (Total cost of ownership) of the solution proposed by a potential project supplier.						
41	Black equity ownership of a potential project supplier.						
42	The quality reputation and relationship with sub-suppliers being proposed to execute a project						
43	A potential project supplier supplying a project programme which conforms to client time frames						
44	The reputation of the sub-suppliers used by a potential project supplier.						
45	Corporate social Investments made by a potential project supplier.						
46	The degree to which you trust individuals from a potential project supplier.						
47	A potential project supplier supplying a detailed project programme with reasonable assumptions						

-

APPENDIX B: QUESTIONNAIRE B AND COVERING LETTER

The Graduate School of Business Administration
2 St Davids Place,
Parktown
Johannesburg,
2193,
South Africa
PO Box 98, WITS, 2050
Telephone: +27 11 717 3600,
Facsimile +27 11 643 2336
10 May 2009

Prof/Dr/Mr/Ms…….

Purchasing of Industrial Projects in South Africa

As part of my Master of Business Administration Research Report, I am conducting research into the importance of various criteria in the purchasing of industrial projects in South Africa. Part of this research also aims to determine what factors are important when companies make a decision to procure a project from a supplier. The title of my Research Report is *Purchase Decision Criteria for Industrial Projects in South Africa.*

The following questionnaire has been designed to measure the relative importance of factors involved in the purchasing decision for an industrial project. It is intended to take no more than 15 minutes of your time to complete. I would greatly appreciate your taking the time to complete the questionnaire.

All responses remain anonymous in the final analysis. I thank you in anticipation for the time you have taken to complete this questionnaire.

As a respondent you be entitled to a summary of the results of the research. Please indicate on submission of your completed questionnaire whether you would like a copy of these results or not.

Should you have any queries, please do not hesitate to contact the writer at 082 857 7344

Yours Sincerely,

_____

Neil Rein

Listed below are a number of criteria that have been identified as indifferent in the purchasing of Industrial Projects in South Africa. Please read through the statements provided. For each of the statements please rate them (on the scale of 0 to 5) in

-

terms of your perception of how important they are in an industrial project purchasing decision. The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

No	Criteria	Rating					
		0	1	2	3	4	5
1	The warranties and performance guarantees offered by a potential project supplier.						
2	Accessibility of key staff of a potential project supplier.						
3	The financial strength of a potential project supplier.						
4	The capital cost of the solution proposed by a potential project supplier.						
5	Accessibility and quality of a potential project supplier's internet site.						
6	The life cycle cost (Total cost of ownership) of the solution proposed by a potential project supplier.						
7	Black equity ownership of a potential project supplier.						
8	The quality reputation and relationship with sub-suppliers being proposed to execute a project						
9	A potential project supplier supplying a project programme which conforms to client time frames						
10	The reputation of the sub-suppliers used by a potential project supplier.						
11	Corporate social Investments made by a potential project supplier.						
12	The degree to which you trust individuals from a potential project supplier.						
13	A potential project supplier supplying a detailed project programme with reasonable assumptions						
14	The technology proposed by a potential project supplier						
15	A potential project supplier having successfully executed work for a client previously						
16	Attitudes of the people involved from a potential project supplier						
17	A potential project supplier's ability and willingness to hold spares on your behalf						
18	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001						
19	The accuracy and precision of the written bid or tender from a potential project supplier.						
20	Employment equity credentials of the potential project supplier						
21	Training offered by a potential project supplier						
22	The interpersonal relationships with a potential project supplier						
23	The branding of a potential project supplier						
24	Value added services such as operational contracts offered by a potential project supplier						
25	Regular personal meetings and calls from a potential project supplier						
26	Adverts and advertising in trade magazines by a potential project supplier						
27	The project execution methodology proposed by a potential project supplier						

The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.

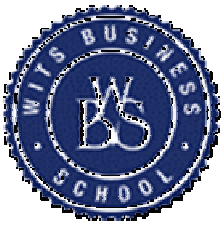
-

1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

28	Black management composition of a potential project supplier						
29	The qualifications of the people persons involved in project execution from a potential project supplier.						
30	The degree to which a potential project supplier meets client technical specifications and preferences.						
31	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.						
32	Availability of human resources from a potential project supplier.						
33	Word of mouth recommendations of a potential project supplier.						
34	The ability of a potential project supplier to provide references of completion of similar projects.						
35	A potential project supplier regularly taking part in tradeshows eg Electramining or similar.						
36	The appearance of the offices from which a potential project supplier operates.						
37	The project controls proposed by a potential project supplier.						
38	Professional affiliations of a potential project supplier. Eg Engineering institutes						
39	A potential project supplier using sub-suppliers or sub-contractors that have been used before.						
40	Completeness of information supplied in a tender by a potential project supplier						
41	The overall reputation of a potential project supplier.						
42	A potential project supplier having an in house quality assurance system						
43	A potential project supplier's ability to supply other services such as financing as part of the proposal						
44	The technical experience of the people likely to be involved in a project from a potential project supplier						
45	The potential project supplier willingness to adapt to client systems eg. Software specified by a client.						
46	The geographical location of the offices from which a potential project supplier operates.						
47	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.						

-

APPENDIX C: QUESTIONNAIRE C AND COVERING LETTER



The Graduate School of Business Administration
2 St Davids Place,
Parktown
Johannesburg,
2193, South Africa
PO Box 98, WITS, 2050
Telephone: +27 11 717 3600,
Facsimile +27 11 643 2336

10 May 2009

Prof/Dr/Mr/Ms…….

Purchasing of Industrial Projects in South Africa

As part of my Master of Business Administration Research Report, I am conducting research into the importance of various criteria in the purchasing of industrial projects in South Africa. Part of this research also aims to determine what factors are important when companies make a decision to procure a project from a supplier.

The title of my Research Report is *Purchase Decision Criteria for Industrial Projects in South Africa.*

The following questionnaire has been designed to measure the relative importance of factors involved in the purchasing decision for an industrial project. It is intended to take no more than 15 minutes of your time to complete.

I would greatly appreciate your taking the time to complete the questionnaire.

All responses remain anonymous in the final analysis.

I thank you in anticipation for the time you have taken to complete this questionnaire.

As a respondent you be entitled to a summary of the results of the research. Please indicate on submission of your completed questionnaire whether you would like a copy of these results or not.

Should you have any queries, please do not hesitate to contact the writer at 082 857 7344

Yours Sincerely,

_____

-

Neil Rein

Listed below are a number of criteria that have been identified as indifferent in the purchasing of Industrial Projects in South Africa. Please read through the statements provided. For each of the statements please rate them (on the scale of 0 to 5) in terms of your perception of how important they are in an industrial project purchasing decision. The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

No	Criteria	Rating					
		0	1	2	3	4	5
1	A potential project supplier regularly taking part in tradeshows eg Electramining or similar.						
2	The appearance of the offices from which a potential project supplier operates.						
3	The project controls proposed by a potential project supplier.						
4	Professional affiliations of a potential project supplier. Eg Engineering institutes						
5	A potential project supplier using sub-suppliers or sub-contractors that have been used before.						
6	Completeness of information supplied in a tender by a potential project supplier						
7	The overall reputation of a potential project supplier.						
8	A potential project supplier having an in house quality assurance system						
9	A potential project supplier's ability to supply other services such as financing as part of the proposal						
10	The technical experience of the people likely to be involved in a project from a potential project supplier						
11	The potential project supplier willingness to adapt to client systems eg. Software specified by a client.						
12	The geographical location of the offices from which a potential project supplier operates.						
13	The willingness of a potential project supplier to use client preferred or recommended sub-suppliers.						
14	The warranties and performance guarantees offered by a potential project supplier.						
15	Accessibility of key staff of a potential project supplier.						
16	The financial strength of a potential project supplier.						
17	The capital cost of the solution proposed by a potential project supplier.						
18	Accessibility and quality of a potential project supplier's internet site.						
19	The life cycle cost (Total cost of ownership) of the solution proposed by a potential project supplier.						
20	Black equity ownership of a potential project supplier.						
21	The quality reputation and relationship with sub-suppliers being proposed to execute a project						
22	A potential project supplier supplying a project programme which conforms to client time frames						
23	The reputation of the sub-suppliers used by a potential project supplier.						
24	Corporate social Investments made by a potential project supplier.						
25	The degree to which you trust individuals from a potential project supplier.						

-

26	A potential project supplier supplying a detailed project program with reasonable assumptions						

The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as “make or break” criteria

27	The technology proposed by a potential project supplier						
28	A potential project supplier having successfully executed work for a client previously						
29	Attitudes of the people involved from a potential project supplier						
30	A potential project supplier's ability and willingness to hold spares on your behalf						
31	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001						
32	The accuracy and precision of the written bid or tender from a potential project supplier.						
33	Employment equity credentials of the potential project supplier						
34	Training offered by a potential project supplier						
35	The interpersonal relationships with a potential project supplier						
36	The branding of a potential project supplier						
37	Value added services such as operational contracts offered by a potential project supplier						
38	Regular personal meetings and calls from a potential project supplier						
39	Adverts and advertising in trade magazines by a potential project supplier						
40	The project execution methodology proposed by a potential project supplier						
41	Black management composition of a potential project supplier						
42	The qualifications of the people persons involved in project execution from a potential project supplier.						
43	The degree to which a potential project supplier meets client technical specifications and preferences.						
44	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.						
45	Availability of human resources from a potential project supplier.						
46	Word of mouth recommendations of a potential project supplier.						
47	The ability of a potential project supplier to provide references of completion of similar projects.						

-

APPENDIX D: QUESTIONNAIRE D AND COVERING LETTER

The Graduate School of Business Administration
2 St Davids Place,
Parktown
Johannesburg,
2193, South Africa
PO Box 98, WITS, 2050
Telephone: +27 11 717 3600,
Facsimile +27 11 643 2336

10 May 2009

Prof/Dr/Mr/Ms…….

Purchasing of Industrial Projects in South Africa

As part of my Master of Business Administration Research Report, I am conducting research into the importance of various criteria in the purchasing of industrial projects in South Africa. Part of this research also aims to determine what factors are important when companies make a decision to procure a project from a supplier.

The title of my Research Report is *Purchase Decision Criteria for Industrial Projects in South Africa.*

The following questionnaire has been designed to measure the relative importance of factors involved in the purchasing decision for an industrial project.It is intended to take no more than 15 minutes of your time to complete.

I would greatly appreciate your taking the time to complete the questionnaire.All responses remain anonymous in the final analysis.

I thank you in anticipation for the time you have taken to complete this questionnaire.

As a respondent you be entitled to a summary of the results of the research. Please indicate on submission of your completed questionnaire whether you would like a copy of these results or not.

Should you have any queries, please do not hesitate to contact the writer at 082 857 7344

Yours Sincerely,

_____

Neil Rein

-

Listed below are a number of criteria that have been identified as indifferent in the purchasing of Industrial Projects in South Africa. Please read through the statements provided. For each of the statements please rate them (on the scale of 0 to 5) in terms of your perception of how important they are in an industrial project purchasing decision. The rating should be done as follows:

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

No	Criteria	Rating					
		0	1	2	3	4	5
1	The interpersonal relationships with a potential project supplier						
2	The branding of a potential project supplier						
3	Value added services such as operational contracts offered by a potential project supplier						
4	Regular personal meetings and calls from a potential project supplier						
5	Adverts and advertising in trade magazines by a potential project supplier						
6	The project execution methodology proposed by a potential project supplier						
7	Black management composition of a potential project supplier						
8	The qualifications of the people persons involved in project execution from a potential project supplier.						
9	The degree to which a potential project supplier meets client technical specifications and preferences.						
10	Regular correspondence from a potential project supplier in the form of newsletters, updates etc.						
11	Availability of human resources from a potential project supplier.						
12	Word of mouth recommendations of a potential project supplier.						
13	The ability of a potential project supplier to provide references of completion of similar projects.						
14	A potential project supplier regularly taking part in tradeshows eg Electramining or similar.						
15	The appearance of the offices from which a potential project supplier operates.						
16	The project controls proposed by a potential project supplier.						
17	Professional affiliations of a potential project supplier. Eg Engineering institutes						
18	A potential project supplier using sub-suppliers or sub-contractors that have been used before.						
19	Completeness of information supplied in a tender by a potential project supplier						
20	The overall reputation of a potential project supplier.						
21	A potential project supplier having an in house quality assurance system						
22	A potential project supplier's ability to supply other services such as financing as part of the proposal						
23	The technical experience of the people likely to be involved in a project from a potential project supplier						
24	The potential project supplier willingness to adapt to client systems eg. Software specified by a client.						
25	The geographical location of the offices from which a potential project supplier operates.						
26	The willingness of a potential project supplier to use client preferred sub-suppliers.						
The rating should be done as follows:							

-

0 – Plays no role in potential project supplier selection. Criteria can potentially be disregarded completely.
1 – Plays only a very minor role in potential project supplier selection. These criteria may be regarded as highly negotiable.
2 – Plays a minor role in potential project supplier selection. These criteria may be regarded as very negotiable.
3 – Plays an important role in potential project supplier selection. These criteria may be regarded as negotiable.
4 – Plays a very important role in potential project supplier selection. These criteria may be regarded as potentially negotiable
5 – Plays a major role in potential project supplier selection. These criteria are may be viewed as "make or break" criteria

27	The warranties and performance guarantees offered by a potential project supplier.						
28	Accessibility of key staff of a potential project supplier.						
29	The financial strength of a potential project supplier.						
30	The capital cost of the solution proposed by a potential project supplier.						
31	Accessibility and quality of a potential project supplier's internet site.						
32	The life cycle cost (Total cost of ownership) of the solution proposed by a potential project supplier.						
33	Black equity ownership of a potential project supplier.						
34	The quality reputation and relationship with sub-suppliers being proposed to execute a project						
35	A potential project supplier supplying a project programme which conforms to client time frames						
36	The reputation of the sub-suppliers used by a potential project supplier.						
37	Corporate social Investments made by a potential project supplier.						
38	The degree to which you trust individuals from a potential project supplier.						
39	A potential project supplier supplying a detailed project program with reasonable assumptions						
40	The technology proposed by a potential project supplier						
41	A potential project supplier having successfully executed work for a client previously						
42	Attitudes of the people involved from a potential project supplier						
43	A potential project supplier's ability and willingness to hold spares on your behalf						
44	A potential project supplier having a formal quality assurance system accreditation eg. ISO9001						
45	The accuracy and precision of the written bid or tender from a potential project supplier.						
46	Employment equity credentials of the potential project supplier						
47	Training offered by a potential project supplier						

-

APPENDIX E: DETAILED BREAKDOWN OF PROJECT PURCHASER RESPONDENTS

Name	Company	Position	Questionnaire
Yvonne Thabethe	AngloCoal	Operator	A
Greg Rehbok	AngloGold Ashanti	Project Manager	D
Wendy Mey	BHP Billiton	Technical Manager	A
Tribe Bengu	BHP Billiton	Technical Manager	A
Sam Reiners	Eskom	Electrical Engineer	B
Robbie Jansen van Rensburg	Eskom	Mechanical Engineer	D
Bailey Rencken	Eskom	Technical Manager	B
Nanne Vegter	Exxaro	Technical Manager	D
Grant Westcott	Impala Platinum	Project Manager	C
Janusz Warchol	Impala Platinum	Project Manager	B
Grant Cockburn	Impala Platinum	Project Manager	C
Buks Kruger	Lonmin	Technical Consultant	B
Rian Bezuidenhout	Lonmin	Process Engineer	A
Burger van Beek	Lonmin	Process Engineer	A
Rudolph du Preez	Lonmin	Process Engineer	D
Trevor Goff	Lonmin	Project Manager	A
Sam Lefume	Lonmin	Operator	B
Egmont Otterman	PPC	Technical Manager	C
Leon du Plessis	PPC	Project Manager	B
Dipeen Dama	PPC	Project Manager	A
Ronnel Rajkaran	PPC	Project Manager	B
Lize Welgemoed	PPC	Project Manager	C
Grant Skews	PPC	Project Manager	C
Arthur Shirley	PPC	Project Manager	A
Max Turner	PPC	Project Manager	B
Miguel Fara Leal	PPC	Project Manager	D
Henri van den Berg	PPC	Project Manager	D
Craig Belstead	PPC	Project Manager	C
Frans Matfield	Sappi	Technical	C
ie Enslin	SASOL	Commercial Manager	C
Roets Boshoff	SASOL	Commercial Manager	B
Stanley Nel	SASOL	Process Engineer	C
Hannes Smit	SASOL	Technical Manager	B
Du Toit Roux	SASOL	Technical Manager	B
Calvin Ramcharan	Toyota	Commercial Manager	D
Cobus van der Merwe	Toyota	Project Manager	A

-

Alex OehmEn	Vanchem	General Manager	B
Steph van Sittert	Xstrata	Project Manager	B

-

APPENDIX F: DETAILED BREAKDOWN OF PROJECT SUPPLIER RESPONDENTS

Name	Company	Position	Questionnaire
Louis Venter	A&E Consulting Engineers	Engineer	D
Abel Erasmus	A&E Consulting Engineers	General Manager	C
Petrus Klopper	AI2SA	Consultant	D
Ron Cridlan	Bateman	Engineer	C
Weyers van der Merwe	SAM KZN	Engineer	B
Jaco van der Westhuizen	Clyde Bergemann	General Manager	D
Remo Scheidegger	Clyde Bergemann	Engineer	A
Paul Hamilton	Clyde Bergemann	Engineer	B
Bheki Lembede	Enzani Technologies	Engineer	C
Tlaleng Moabi	Enzani Technologies	Marketing Manager	B
Landiwe Nene	Enzani Technologies	General Manager	A
Rose Picas	HATCH	Engineer	B
Al Koning	HATCH	Engineer	D
Arne Weissenberger	HATCH	Marketing Manager	C
Ellen Minnaar	HATCH	Engineer	B
Vic Brady	HATCH	Engineer	A
Enslin Tukker	HATCH	Engineer	C
Mervyn Stevens	HATCH	Engineer	C
Robin Duff	Hitachi	Financial Director	B
Dirk Slabbert	Larox	Marketing Manager	B
Dirk Schreuder	Lodestone	Consultant	D
Mark Midgely	M & L Consulting Engineers	General Manager	D
Cobus van der Walt	MECS	Engineer	A
Danie de Bruyn	Powertech IST Energy	Marketing Manager	D
Joseph Mashao	Powertech IST Energy	General Manager	B
Pieter Hill	Powertech IST Energy	Operations Manager	C
Bernhard Wilcocks	Powertech IST Industrial	Operations Manager	A
Jurgen Prange	Powertech IST Otokon	Marketing Manager	B
Kennith Shuda	Powertech IST Telecoms	Marketing Manager	A
Charles Ntsele	SAM KZN	Engineer	D
Andy Turner	SAM KZN	Engineer	D
Jan Moodie	Siemens	Marketing Manager	C
Pranesh Daya	Siemens	Marketing Manager	B
Craig Naude	Solo Resources	Managing Director	A

-

-