

Factors contributing to successful
supplier client collaboration in South
African companies.

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for the degree of Master of Business Administration.

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ABSTRACT

The objective of this report was gain a better understanding of the factors that support and enable a collaborative effort in South African companies. The benefits from collaborate are significant and the findings could enable companies to attain these benefits. The predominant area of focus was four research questions dealing with both relationships and selection factors, these focussed on complexity, trust, culture and the impact of selection criteria.

The research collected, via survey, data from 34 respondents. This data was then statistically analysed both descriptively and through the use of multivariate analysis. The outcome provided insight into both the factors and the relationship between these factors that has bearing on the research questions

From the data a model was constructed of the findings with a potential process that could be followed by companies entering into a collaborative effort. The model is contained in Figure 6 Collaborative framework. The report concludes with both highlighted implications, recommendations and focus areas as well as recommendations for further research.

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University.

Andrew Mark Hofmeyr
14 November 2006

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1. Introduction to the research

1.1 Introduction

“The pressure to improve is relentless. Companies are continually scrambling to reduce prices, improve quality, shorten cycle times, introduce new products, and satisfy customers. Meanwhile, global competition is fiercer, and supply markets are more constrained. The only way to survive and prosper in this tough environment is to collaborate with suppliers.” Robert J. Trent (2005).

As evidenced by the above quote it is imperative for suppliers and clients to collaborate, the ability to do so requires that both parties understand the requirements for this to be successful. The benefits of a successful collaboration and the mechanisms to achieve these benefits will benefit all stakeholders involved.

1.2 Requirement for competitiveness

The ranked order of levels of interaction and the level of formality between the stakeholders has the following order: communication, coordination, cooperation and then collaboration. These each have distinct attributes and purposes. The underlying assumption between these aspects is the assumption that differences between the parties exist. (Denise, 1999)

Communication is about how individuals and companies understand each other and how information, not just facts, is transferred between the various parties. The limits of communication are that while information may be passed, there is no outcome determined from communication.

Coordination is about striving towards efficiency. The assumption is that there are differences that create inefficiencies and that through parties coordinating their activities the overall efficiency is improved. The process of telling each part how it needs to act is the purpose of communication. Coordination has limits in striving towards efficiency, as there may be great efficiency in an action that has undesirable consequences for either or both parties.

Duffy and Fearne (2004) indicate that while traditionally firms have been at arms length, the added costs in the supply chain does not contribute to profitability. Successful firms are encouraged to engage in cooperative long term partnerships that improve the efficiency of the whole chain to the benefit of both parties.

Cooperation can be allied to a culture within an organization, (Denise,1999), in that there is compliance to working together. Cooperation is an informal arrangement in which the individual agencies or stakeholders maintain their separate mandates and responsibilities, but do some work together to meet a common goal. Cooperation implies the lack of divergence and a close focus on a commonly held

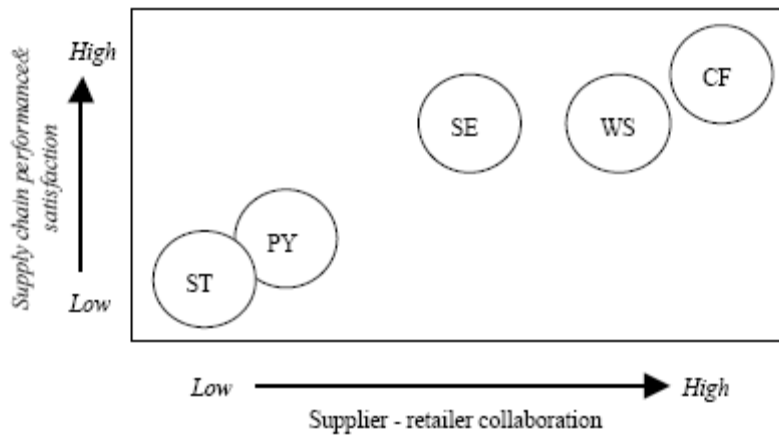
objective. The limits of cooperation are that in the effort to be “cooperative” the best outcome is missed.

Collaboration is focused on shared creation and has the requirement that agencies come together and fundamentally change their individual approaches to a goal, to allow for the sharing of resources and responsibilities. Collaboration uses information as opposed to communications sharing of information. Collaboration is focused on creation rather than harmony of activities and requires original thought to be applied. In the company context the nature of the effort would be to create value for both parties. The creation aspect means that collaboration will continue until the objective has been achieved, and then either needs to be renewed with another objective of the nature of the interaction reverts to cooperation.

The ability to create with others is the requirement for collaboration, there is a significantly higher value that can be derived in the creation of that value rather than in improving the efficiency of interaction or communication between parties.

The findings by Sheu *et al* (2006) as shown in Figure 1 below demonstrate the correlation between collaboration and performance. The letters indicate the companies studied and it can be clearly seen that performance increases with the level of collaboration.

Figure 1 Correlation performance vs. collaboration



There is a large body of literature on the area of supply chain, within which there is a number of factors that are linked to successful collaboration between supplier and client. Dickson (1966) indicates that there are over 50 different criteria for supplier selection.

A company cannot focus on all the areas at the same time and therefore the research will be aimed at understanding the primary factors that a company in the South African context should focus upon to achieve the objective of collaboration.

1.3 Problem statement

The problem is that, for those large industrial firms that have collaborated with either their client or supplier, there is little understand of what factors were

beneficial and which factors were considered to be detrimental to the collaborative effort.

The scope of the research will be on industrial and mining sector companies that operate in South Africa as these sectors are facing increasing pressure from overseas manufacturers and cyclical commodity prices.

1.4 The relevance of this research topic

The ability of South African companies to compete both locally and internationally, is critical to their long term survival. One of the mechanisms to improve the competitiveness is to collaborate with others to improve competitiveness. Therefore creating a better understanding of the factors that allow this to occur will ensure more successful collaborative efforts in the future with the attendant benefits.

2. Literature review

The literature review includes a number of areas that have bearing on the topic of both collaboration and the factors that lead to collaboration. The studies are primarily focused on the application of collaboration in the business environment. The literature review was instrumental in formulating the questions that were then covered in the questionnaire.

2.1 Introduction

There are multiple aspects to the requirements for successful collaboration. The literature review is divided into four areas. The first area covers the **relationship** factors that are supportive of the collaborative effort. The intent is to provide an insight into both how relationships are perceived and measured, and the impact of these on relationships on long term efforts.

The second area covers the **selection factors** that are necessary at the time of entering into a collaborative agreement. The importance of ensuring the correct partner for a value deriving effort is highlighted in the literature and what the organizations should be aware of when deciding on partners.

The third area is the **cultural environment** and its effect on collaborative efforts. The purpose was to understand if some the organisational and country culture aspects, have effected the ability to successfully collaborate.

Finally, the area of **collaboration** itself is covered in the literature, under various names, and the important aspects of collaboration are investigated to understand the environmental factors surrounding collaboration and the drivers behind entering into a collaborative effort.

2.2 Relationship factors

The changing nature of buyer seller relationships is changing to ever smaller number of suppliers due to the movement to more collaborative ties with these fewer suppliers, (Vorkurka *et al*, 1996).

Trent (2005) exhibits 4 types of supplier relationships, counterproductive, competitive cooperative and collaborative. The distinction is drawn between the cooperative and the collaborative whereby Trent (2005) states that cooperative is limited to information sharing and close cooperation versus the collaborative which has a creative aspect to it and is typically for items crucial to the companies' success. Figure 2 indicates the summary of the archetypes as espoused by Trent (2005).

Figure 2 The four C's of Supply Relationships

The Four C's of Supply Relationships				
Counterproductive (Lose-Lose)	Also called antagonistic relationships	Work actively against each other's needs	Neither party takes responsibility for what happens in a relationship	Destructive conflict occurs
Competitive (Win-Lose)	Also called adversarial or distributive relationships	Engage in a competitive struggle to divide a fixed amount of value	Attempt to maximize value for each side	Minimal sharing of information
Cooperative (Win-Win)	Also called integrative relationships	Longer-term relationships result from mutual goals	Supplier involvement during product development increases	Open sharing of information occurs, including sharing of cost data
Collaborative (Win-Win)	Also called integrative or creative relationships	Congruence of goals and co-destiny exists	Jointly identify new market opportunities	Jointly identify creative solutions to problems

Oberoi and Khamba (2005) contrast this with contractual relationships such as

- make or buy - self sufficiency transactional, low knowledge dependency, typically component suppliers.
- Outsourcing – transferred competence, focus on core competencies, typically capacity suppliers.
- Insourcing – joined asset specific investments, high exchange on information, typically technology suppliers.
- Strategic sourcing – joint risk and incentive sharing, optimized supply chain, typically system suppliers.

Oberoi and Khamba (2005) go on to state that strategic sourcing and supplier selection are critical aspects to the success of a company. The archetypes for the relationships are clearly defined in the paper and cover areas outside of the scope of this paper.

Kahn and Mentzer (1996) define interaction and integration, with interaction referring to information dissemination and interaction including functional integration such as shared goals, mutual respect and cross functional teams. The four dimensions of interaction and collaboration are stated below with the area in which this interaction or integration is appropriate included with the typology.

(1) Low interaction, low collaboration - department specific, 3rd Party

(2) High interaction, low collaboration – Stable products and markets, low uncertainty

(3) Low interaction, high collaboration – special, product launches, short term

(4) High interaction, high collaboration – complex product, orders, critical items

This is supported by Borden and Perkins (1999) whose checklists on collaborative efforts list the following factors as applicable; relationship, communication and the requirement for established processes. Political factors both current and historic between the groups were indicated as important.

Each of the factors are identified and defined:

1. Communication - the collaboration has open and clear communication. There is an established process for communication between meetings;
2. Sustainability - the collaboration has a plan for sustaining membership and resources. This involves membership guidelines relating to terms of office and replacement of members;
3. Research and Evaluation - the collaboration has conducted a needs assessment or has obtained information to establish its goals and the collaboration continues to collect data to measure goal achievement;
4. Political Climate - the history and environment surrounding power and decision making is positive. Political climate may be within the community as a whole, systems within the community or networks of people;
5. Resources - the collaboration has access to needed resources. Resources refer to four types of capital: environmental, in-kind, financial, and human;
6. Catalysts - the collaboration was started because of existing problem(s) or the reason(s) for collaboration to exist required a comprehensive approach;
7. Policies/Laws/Regulations - the collaboration has changed policies, laws, and/or regulations that allow the collaboration to function effectively;

8. History - the community has a history of working cooperatively and solving problems;
9. Connectedness - members of this collaboration are connected and have established informal and formal communication networks at all levels;
10. Leadership - the leadership facilitates and supports team building, and capitalizes upon diversity and individual, group and organizational strengths;
11. Community Development - this community was mobilized to address important issues. There is a communication system and formal information channels that permit the exploration of issues, goals and objectives; and,
12. Understanding Community - the collaboration understands the community, including its people, cultures, values and habits.

The above checklist supports, in a number of areas, the list as proposed by Ellram (1987) such as research, resources, connectedness which are similar to Ellram's (1987) other factors such as financial stability, structure and compatibility across levels.

The relationship factors that we contemplated by Kim and Heungshik (2005) focused on the type of relationship with three types identified: supplier dominated, manufacturer dominated or balanced. The findings were that if the manufacturer dominated the collaborative effort that there was higher profitability for the manufacturer and a similar bias for the supplier dominated effort. The model continued to indicate that the balanced effort resulted in the overall highest profitability for the effort but sub optimized the profits for an individual party. The implication of this is that the parties may choose to act in their own interest predominantly.

Business relationships comprise interdependence, duration/ stability and trust (Sheu *et al*, 2006). Where there is a high degree of power asymmetry in the relationship the one party works harder to maintain the relationship. Sheu's (2006) findings were that old relationships may not be valuable in collaboration. Sources of trust also vary by level of management such as frequent visits, relationships at a top management level or company policies. The lack of support at senior levels indicated low levels of collaboration.

The involvement of the customer's voice and the involvement of the suppliers at an early stage are all part of the process of target costing (Ellram, 2006) and focuses on a number of other high relationship level requirements such as cross functional teams and the close interaction that concurrent engineering requires. This is consistent with a collaborative approach where an internal collaboration is required to facilitate an external effort with the support of integrated work processes.

In the study by Blancero and Ellram (1997) the perspective of relationships was raised from the psychological contract perspective. Psychological contracts are the perceptions of reciprocal agreements that are held by the two parties. The stated impact of this study on relationships is that it can be extended to include the relationship between buyers and suppliers. The reciprocity of the contract is rated as being critical to the success of the effort of the collaboration. Failure of the contract occurs when either party does not abide by the terms of the contract both

psychologically and in terms of the written contract. This is consistent with the application of trust in collaborative efforts.

2.3 Selection factors

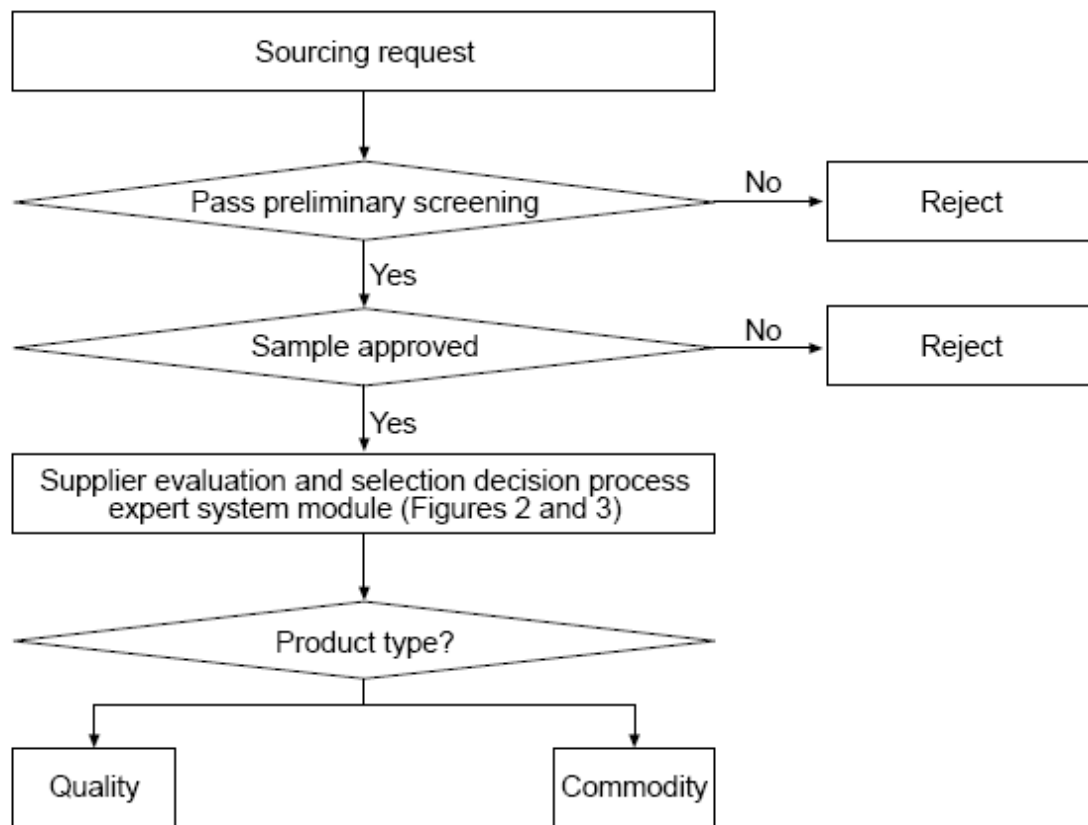
The importance of supplier selection is becoming higher due to rates of change of the external environment, single sourcing preferences and improved communication (Vorkurka *et al*, 1996). The article goes on to state that the “source selection” has a high complexity and is one of the most important decisions of the purchasing function. The strategic nature of collaborative partnerships for competitive advantage also highlights the need for the supplier selection.

The objective of improved internal management of companies and the shared performance of those in the chain has meant that relationships have changed in industrial companies. Ounnar and Pujo (2005) go on to state that a “self-organized logistical network” will improve the conduct of members and that the selection criteria for members should be

- Suppliers who deliver low cost products or services that meet the customers requirements
- Reliability of suppliers and the ability to meet delivery, quality and quantity requirements
- Monitoring the relationship on an ongoing basis where the measures are responsiveness and time-to-market

Vorkurka *et al* (1996) states that the traditional selection method is to weigh up various factors and make a judgment based on buyers experience or through a formal system. The expert system for supplier selection is then proposed in the article. The sourcing request initiates a evaluation of the supplier on two primary basis and those are preliminary screening on financial primarily and other disqualifying criteria such as recent performance, adverse publicity and environmental. The environmental aspect is not covered in Ellram's (1987) selection criteria possibly due to the time of writing. The second evaluation is the acceptance of the physical product from the supplier.

Figure 3 Vorkurka et al Expert system



Research by Ellram (1987) established a number of aspects that were considered important when considering a supplier for partnering; these criteria are detailed in Table 1 below.

Table 1 Ellram's supplier partnership criteria

<u>Factors</u>	<u>Criteria</u>
Financial issues	Economic performance
	Financial stability
Organizational culture and strategy issues	Feeling of trust

	Management attitude/outlook for the future
	Strategic fit
	Top management compatibility
	Compatibility across levels and functions of buyer and supplier firms
	Supplier's organizational structure and personnel
Technology issues	Assessment of current manufacturing facilities/capabilities
	Assessment of future manufacturing capabilities
	Supplier's design capabilities
	Supplier's speed in development
Other factors	Safety record of the supplier
	Business references
	Supplier's customer base

Holweg and Pil (2004) states the typical method of supplier selection is price followed by quality and delivery but stresses the importance of co location as a driver for flexibility specifically in the automotive sector. The importance of supplier parks for the automotive sector is driven by the short lead times to the production facility. The other aspect that is addressed is the requirement for information dissemination and sharing to enable the close functioning of the supply chain specifically in the correct sequencing for longer delivery distances.

Supplier development is addressed by Wagner (2006) where the increased focus on supplier development has occurred due to the increasing unavailability of suppliers due to high switching costs and the focus on core competencies that precludes vertical integration. The primary findings were that development focused on the process orientation followed by the importance of know how transfer. Strategic advice and market entry scored lower with a reduced focus on the financial support elements to develop their suppliers. The implication of this are that in supplier selection the areas of primary focus for a collaborative effort are likely to be on process and know-how, rather than on suppliers that need financial support.

The study by Wagner (2006) highlights that there is requirement for long term relationships, also highlighted is that the criteria are industry dependant.

Sheu *et al* (2006) addresses a number of critical relationship factors which have bearing on the propensity to collaborate. These include interdependency, duration, trust, information sharing and long term focus along with systems related issues such as information technology and inventory systems. The requirement for trust is supported by Blancero and Ellram (1997) as part of the criteria for close partnerships where trust and commitment is related to the constructs of fairness in the article. The indication is that if buyers and sellers enter with the goal of having a trusting relationship then they are more likely to deal effectively with adversity. The information sharing aspects of trust building are corroborated by Simatupang and Sridharan (2004) and Denise (1999).

The factors of suppliers' performance are the critical areas of quality and cost improvement, delivery performance, new technology adoption, and financial health according to the study by Krause and Ellram (1996). Furthermore the supplier evaluation as a prerequisite to further supplier development activities is considered critical. The study went on to evaluate the factors such as communication and the impact on the success of development and found that the greater efforts in communication resulted in a higher success rate.

2.4 Cultural factors

Hofstede (1980. p5) states that culture is characterised by values that reflect "broad tendency to prefer certain states of affairs over others." The work by Hofstede (1980) indicates that there are a number of cultural contexts these include Power distance, Uncertainty avoidance, Achievement orientation and Individualism.

Individualism–collectivism refers to the extent to which a firm believes that it should focus on personal goals rather than collective goals when working with partners. Whereas collectivists value the social fabric and group norms, individualists desire independence from other firms (Steensma *et al.* 2000).

Power distance is defined as the way people view authority and influence patterns, (Cumming and Worley 2005), the power distance can be applied in organization as espoused by Hofstede (1990) where specific mention is made of members of institutions. The impact of this parameter can be applied to the buyer supplier relationship. Wuyts and Geyskens (2005) found that low power distance does not necessarily positively affect the formation of close partnerships.

Wuyts and Geyskens (2005) emphasise the cultural aspects that have an impact on partnerships and suggest further research in how companies make governance decisions in a variety of cultural environments.

The company Eli Lilly assessed over 200 alliances in 2003; the findings were that there was friction arising from 3 main areas of fit in any alliances. These areas are goals, culture and practices (Stach 2006))

To manage the conflict on these areas there is a focus on the fit in a strategic, operational and cultural. The aspects that were considered essential were

- Strategic - strategic alignment between our companies; level of commitment to the alliance; and trust or fairness with our partner.
- Operational - communication; conflict management; decision-making; leadership; performance measurement; roles and responsibilities; skills and competence of team members; and team coordination.
- Cultural - flexibility and knowledge management.

Swaiden and Hayes (2005) investigated whether the cultural factors influenced ethics. The research has found that the various studies have contradictions in the findings. There was no basis for making an assessment on the impact of culture on behaviour or ethical attitudes.

The study by Hofstede *et al* (1990) determined from a factor analysis that the organizational culture in each of the distinct country specific cultures had significant variances. The organizational cultural factors that were determined were

- Process orientated vs. results orientated
- Employee oriented vs. job oriented
- Parochial vs. professional
- Open system vs. closed system
- Loose control vs. tight control
- Normative vs. pragmatic

2.5 Collaboration issues

The factors that create, maintain and are necessary for collaborative partnerships to occur is critical for companies to understand, for them to be successful in the current business environment.

In the article by Johnson (2006) the aspects raised are that the collaboration should not be viewed as a goal of itself, it can lead to co-dependency and does not mean indispensability. This is countered by Denise (1999) who states that the requirements for collaboration are that a specific challenge is created. The other requirements for collaboration are stated as being defining the collaborators, creating the space and the time to interact. The scorecard by Borden (1999) also has the requirement for a specific requirement or catalyst. Other factors that are raised by Borden (1999) are sustainability, resources, history between the parties and connectedness with supporting factors such as laws and leadership.

Wuyts and Geyskens (2005) state the decision to partner is a strategic one and the relationship with that partner is crucial. The article continues to state that given the short product life cycles and the specialization of markets that vertical integration is a disadvantage and that this has prompted a growth in hybrid governance models, of which strategic alliances and joint ventures are examples. This view is supported by Wagner (2006) where the statement is that management of supplier relationships can be a distinct advantage to a firm leading to a sustainable competitive advantage.

Simatupang and Sridharan (2004) state that collaboration consists of three areas, namely information sharing, decision synchronization and incentive alignment. This goes further than the article by Denise (1999) who only states that the incentive alignment or goal focus is the primary area and the other areas are cooperation

and coordination. Information sharing comprises capturing and dissemination in a timely manner whereas decision synchronization refers to joint decision making at a planning and operational level. Incentive alignment is related to risk sharing of costs and benefits and this matches Denise's (1999) evaluation of collaboration. A number of maturity models are discussed by Simatupang and Sridharan (2004) that indicate there is evidence of increasing level of collaboration with either three or four stages.

In later research Simatupang and Sridharan (2005) present a framework for collaboration that has five features namely:

- a collaborative performance system (CPS);
- information sharing;
- decision synchronization;
- incentive alignment; and
- Integrated supply chain processes.

These five features again support the view of Denise (1999) with the inclusion of incentive alignment.

Sheu *et al* (2006) indicate that the selection factors are extended to include the inventory systems and the firm's organizational structure. The structure that is mentioned is more than the personal relationship with the individual in the other firm but the "inter-organisational or supply chain coordination structure" that interfaces both on a firm level and in selected areas such as logistics or

purchasing. The finding was that it is the intensity not the duration, of the relationship that influences the retailer-supplier relationship. The importance of IT systems is investigated and the findings were that successful collaboration needs “the support of technical factors such as inventory systems, information sharing channels, and IT capabilities”. (Sheu *et al* (2006) p22)

Stach (2006) indicated that a critical aspect for the continuing collaboration was that “the fundamental reason the alliance was formed must be clearly and concisely defined and regularly reviewed.”

3. Research questions

Research question 1

How does complexity or relative cost of the service or product affect the need for collaboration?

Research question 2

How do levels of trust influence the ability to collaborate?

Research question 3

Do Hofstede’s(2001) factors of power distance, individualism and uncertainty influence collaboration?

Research question 4

What are the important aspects of supplier selection that influence the ability to collaborate?

4. Research methodology

4.1 Research design

A literature review was conducted to formulate the questions that were used in the questionnaire. Welman and Kruger (2001) pg 33 indicate that there should be familiarity with the subject before conducting research. The issues raised in the literature review were condensed into specific questions that could be rated by the respondents.

The research was conducted on a non experimental basis as there was no intervention involved, Welman and Kruger (2001. pg 69). The use of a survey was conducted on a correlational design where the random sample is taken on multiple variables and the correlation between these variables is analysed.

The research took the form of a web based survey where items were rated on various scales and the information collected electronically. The number of respondents was insufficient from the initial response and therefore the researcher conducted facilitated questionnaires on a number of additional respondents.

4.2 Population, sampling and unit of analysis

The research method applied is a quantitative exploratory study from surveys sent out to the relevant purchasing or sales individuals in the major mining and construction houses and their suppliers. The personnel that were targeted are those who operate at a relationship rather than operational level with the supplier or customer. The applicable level will be the commodity strategy level and above in the mining sector where those individuals operate in the supply chain function.

The target personnel in this survey were the individuals most likely to have had interactions with suppliers and customers that have attempted or been successful at a collaborative effort.

The questionnaire as contained in Appendix 2 was accompanied by a brief of the objective of the research and an explanation of the terminology that is applicable to the questions such as collaboration.

Given the significance of the mining and construction industries in South African and the importance of the decisions made in these organizations on all the supporting industries, the mining industry and related companies should form the basis of a good proxy for other companies in this sector. Over 300 questionnaires were sent to the targeted individuals, both in the mining industry and construction industries and the supplier organizations that provide goods and services to them.

4.3 Questionnaire

The questionnaire is aimed at collecting information on the factors that would lead to formation of collaborative relationships in organizations and focused on six areas. The questionnaire was developed both in consultation with members of supply chain organizations and the literature review. The questionnaire was sent out with the definition of a collaborative effort as

Collaboration – a joint creative effort to derive value for both parties

The five areas are demographics, Hofstede's cultural factors, the extent of collaboration, other factors, trust and alignment and the decision factors for engaging with another organization. The view was garnered from both the supplier side and the client side. The respondents were asked to rate the success of the collaboration to determine negative as well as positive aspects.

Demographics

Twelve questions assessed the demographics of the participant including if they were the supplier or the client, an assessment of the closeness of a prior relationship and a judgment on the success of the collaboration. These were then supplemented with the statistics of the company such as number of employees, turnover, and physical distance between companies the respondents experience in sales or purchasing and the number of years that the company has been in operation.

Table 2 demographic data collection

Were you the supplier or the Client Consider an example where your company has attempted or is collaborating with a supplier / client

Was there a prior close relationship with the firm - had there been previous business dealings

In your view was the collaboration successful?

For how long had your company been dealing with this supplier / client (years)

What is the physical distance between the supplier and client point of delivery (km)

Number of years you are working in procurement / supply chain / Sales function

number of years you have been working/ worked with this client / supplier

Size of your company (Turnover Rm per annum)

Approximate number of employees in your company

Total Spend with vendors (client) / Sales revenue (Rm) (supplier)

Approximate number of deliveries per year in or out

Number of years in operation of your organisation

The demographics of the participants were considered from an organizational and an individual basis. The demographics or profile of the organization allows the size of the organization in both financial and personnel terms to be evaluated against the other factors and not just the individual. The impact of physical distance and number of deliveries allows a proxy for the type of product and the geographical spread to be understood against the other factors.

The individual respondent demographic of experience “Number of years you are working in procurement / supply chain / Sales function?” gives an indication directly of the ability to make an informed decision on the ratings in the rest of the questionnaire and evaluate a successful collaboration. The length of the

relationships between the parties is potentially a critical parameter in the collaboration as is the closeness of a prior relationship.

Hofstede's (2001) factors

The cultural factors for uncertainty avoidance, collectivism vs. individualism and power distance were evaluated using five questions. With three for uncertainty avoidance and two questions for power distance

Table 3 Hofstede (2001) factor questions

Amount of detail in the contract

Frequency of communication

Level of research done on other party

Whose contract is used to define the relationship

At whose venue do meeting regularly occur?

The information relating to the collectivism vs. individualism can be inferred from the relevant responses in the survey namely the detail quantity and whose contract was used. The relevance of the cultural factor underlies the corporate culture of the organization and while Hofstede's work was based on national attributes, similar groups are likely to be found within organizations

Collaboration

The extent of the collaboration was determined by nine questions dealing with both internal and external collaboration. The aspects of collaboration in the questions determine both the level and area in which the collaborative efforts were applied.

Table 4 Collaboration questions

Supplier involvement in the planning stages of the business?

Level of commitment to long term partnership

Amount of focus on value rather than price

Extent of joint problem solving

Extent of integration of work processes

Extent of joint decision making

Extent of sharing of short term planning data

Extent of sharing of long range forecasting data

Extent of internal collaboration in own organisation

The level of collaboration and the areas in which this collaboration occur is critical to the understanding of the factors leading to successful collaboration. The factors need to be aligned to the area in which that collaboration is required to occur.

Trust and compatibility of goals

The issue of trust is raised in many areas (Shue *et al*, 2006, Ellram, 2006) as being a critical factor in the formation of relationships and the success of collaboration. The questionnaire used four primary questions to determine the level of trust

between the two parties. The other two questions relate to the both the power differences in the relationship and the alignment of the objectives of the two organizations.

Table 5 Trust and compatibility questions

Promises are likely to be kept

Quality of advice from other party

Other party concern for our welfare

Other party will support us in need

Our success is dependent on theirs

Our need for collaboration vs. theirs

The level of trust and the impact on the collaborative effort needs to be established. If there is a significant power differential or incompatibility of goals, these factors may influence the ability of two parties to co-operate sufficiently to result in a collaborative effort.

Other factors

Other factors which are raised in the literature include the complexity of the service or product that is being collaborated upon. The question will determine if complexity and or cost were significant factors in the requirement to collaborate and the success thereof.

Table 6 Other factor questions
Complexity of the product or service

The cost of the product or service

Quality of the relationship between parties

Importance of physical proximity

The two other factors being contemplate are a judgment on the quality of the relationships between the two parties and then another issue of physical proximity. While the aspect of subjective quality measure will need to be investigated further this may have bearing on the success of a creative problem solving scenario. The physical proximity of the supplier and client is included to determine if this is a significant factor in the ability to maintain a collaborative effort over geographic distances.

Purchasing decision factors

Using Ellram's (1987) factors fourteen questions were asked on a Likert scale to rank the importance of various factors of importance that were considered before engaging the company. The factors that were ranked included "Company growth over last 5 years", financial stability and a host of softer issues such as compatibility of staff, culture and attitudes. An assessment of the companies manufacturing and design capabilities was also rated.

Table 7 Selection factors questions
Company growth over last 5

Financial stability (adequate cash flow, profitability)

Organizational culture

Management attitude/outlook for the future

Strategic fit to your objectives

Top management compatibility

Compatibility across levels and functions of buyer and supplier firms

Supplier's organizational structure and personnel

Assessment of current manufacturing capabilities

Assessment of future manufacturing capabilities

Supplier's design capabilities

Supplier's speed in development

Safety record of supplier

Business references

Since these factors were through research indicated as important, (Ellram, 1987) but does not specifically include price, (Holweg and Pil, 2004) the respondents were asked to rate them for the company that they were choosing or had chosen to engage with. All the factors were included and can be correlated to the other factors and the demographics of the respondents

4.5 Analysis of research

The relationships in the proposed research models, including descriptive statistics, correlation analysis, cross tabulation and Factor analysis using NCSS as statistical software.

4.6. Research assumptions

- The respondents are suitably educated to understand the basis of the question, and that they have the applicable experience to be able to answer the question.
- The factors as determined from the literature are applicable and suitable factors for the research.
- While some of the questions were used to determine the duration of working in the field this is assumed to be a proxy for experience in collaborative efforts.
- Normal Distribution: - The dependent variable should be normally distributed within groups.
- Homogeneity of Variances: - Homogeneity of variances assumes that the dependent variables exhibit equal levels of variance across the range of predictor variables.
- Homogeneity of Variances and Covariance's: - In multivariate designs, with multiple dependent measures, the homogeneity of variances assumption described earlier also applies.(Welman and Kruger, 2001)

4.7. Research limitations

- The respondent sample group may be not representative of the greater population of companies wishing to engage in the collaborative process.
- The survey did not require dyad responses to determine if there was an equivalent perception by the other party.

- The survey was not check for validity and reliability prior to sending out and therefore there may be survey bias.
- The survey called for the use of memory on an historical event which may not be representative of actual event due to recall error.
- The survey response had a limited response and therefore may require an expanded survey.

5. Research results

5.1 Descriptive statistics

The sample size of greater than 30 means that the normality condition test is not required.

5.1.1 Respondents

The survey was sent out to in excess of 300 people in the manufacturing, construction and mining sectors. Of these there were 52 who viewed the survey with 30 full completions of the survey although there were 34 partial completions.

Of the completions there were 16 who were the supplier and the balance being on the client side of the collaborative effort.

Table 8 supplier vs. client demographics

Were you the supplier or the Client

Supplier	16	47.06%
Client	18	52.94%
Total	34	

The statistics were skewed on whether the collaboration was successful.

Table 9 Success of the collaboration

In your view was the collaboration successful?

YES	26	76.47%
NO	8	23.53%
Total	34	

With the greater percentage being those that viewed the collaboration as successful by a significant margin.

The respondents' period of working in either the procurement or sales function was on average 6.33 years with a range up to 33 years. The standard deviation on this time period is 7.5 years giving a skewed distribution to the lower tenure in this position.

A portion of the respondents results (43%) were collected from facilitated questionnaires by the researcher and the levels interviewed were at the level of procurement specialist or procurement strategist on the supply chain side and account manager through sales director on the sales side of the collaborative effort.

5.1.2 Company Demographics

The average length of dealing with the other party is 11.7 years with a range from new entrant to 52 years. The standard deviation is 14.5 years. The average distance between the supplier and the customer is 185km with a standard deviation of 285km with the outlier of 8000km removed.

The period for which the collaborative effort is applicable is on average 6.17 years with a range up to 20 years. The standard deviation is 4.29 years.

The company size in terms of turnover is bimodal with the companies either in the range of R200 millions to R600 millions or in the range R2 billion to R28 billion per annum. This bimodal distribution is also reflected in the number of employees. The distribution of size of company is reflected in the spend with vendors but with the percentage spend as a portion of turnover being predominately in the 5% to 40% with an average of 16%.

The average duration in business of the organizations is 46 years with a standard deviation of 39 years. The range of values is from 0 to 100 years in existence.

5.1.3 Cost and complexity

The respondents rating on the 5 point Likert scale for the cost and complexity of the product or service over which the collaborative effort was undertaken was as follows

Table 10 Complexity and cost analysis

Complexity of the product or service	
Very low	3.03%
Low	24.24%
Neutral	30.30%
High	21.21%
Very high	21.21%
NA	0.00%
Total	100%
The cost of the product or service	
Very low	0.00%
Low	12.12%

Neutral	33.33%
High	51.52%
Very high	3.03%
NA	0.00%
Total	100%

As can be seen that there was on average a neutral rating on the complexity of the product with a close to normal distribution. The cost of the product or service was skewed towards the higher end but with a close grouping around the mean or 3.45 as indicated by the standard deviation of 0.75.

5.1.4 Hofstede's (2001) factors

The issue of uncertainty avoidance had the following results for detail in the contract and the frequency of communication

Table 11 Detail and frequency of communication

Amount of detail in the contract

Very low	6.06%
Low	21.21%
Neutral	6.06%
High	48.48%
Very high	18.18%
NA	0.00%
Total	100%

Frequency of communication

Very low	0.00%
Low	6.06%
Neutral	18.18%
High	48.48%
Very high	27.27%
NA	0.00%
Total	100%

As can be seen from the above results that the requirement in the collaborative effort has a high uncertainty avoidance with a bimodal distribution on the amount of detail in the contract. The question on prior research done on the other party elicited neutral results.

On Power Distance the power appears to be skewed towards the client in the collaborative effort from a contractual perspective as the client's contract is used. The equivalent inference can be made for the venue that the probability is that the client's venue would be used. (Null hypothesis rejected at $p=0.032$) This would be in line with customer service

5.1.5 Collaboration

There was a wide range of results in the collaborative effort itself. The following questions highlight the more extreme variations

Table 12 Involvement in planning stages

Supplier involvement in the planning stages of the business?

Very low	16.67%
Low	23.33%
Neutral	16.67%
High	36.67%
Very high	6.67%
Total	100%

As can be seen from the data above that the distribution on this question was bimodal with an almost equal proportion indicating a high and a low involvement in the planning stages of the business.

While the predominant response to the collaborative effort was high rating on the extend of the collaborative effort the highest response was on the joint problem solving and level of commitment to long term relationships aspects of collaboration.

Table 13 Joint problem solving

Extent of joint problem solving

Very low	0.00%
Low	13.33%
Neutral	26.67%
High	43.33%
Very high	16.67%
Total	100%

With the equivalent average of 3.63 for level of commitment to long term partnership.

With one exception that balance of the responses indicated a high degree of collaboration both internally and externally. The items that were predominantly high were levels of commitment, focus on value rather than price, integration of work processes, joint decision making and sharing of short term planning data. The exception to the rating of high was in the area of long range planning data where the results were as follows

Table 14 long range forecast sharing

Extent of sharing of long range forecasting data

Very low	23.33%
Low	33.33%
Neutral	23.33%
High	20.00%
Very high	0.00%
Total	100%

This data was skewed towards the lower extent of sharing between the two parties.

The area of success of the collaboration and the extent of the collaborative effort was reviewed. The difference in the average score between those that were rated as successful and those rated as unsuccessful was analyzed to see where that

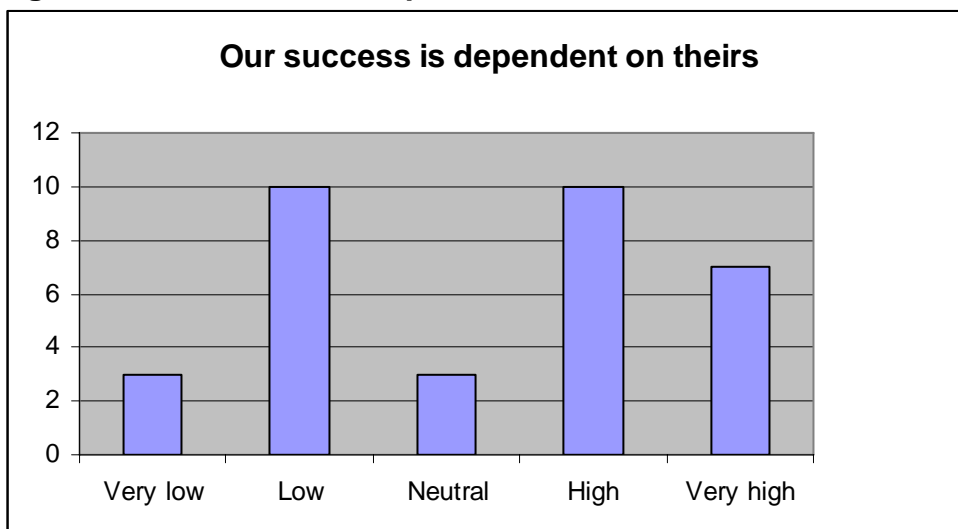
difference was greater than one standard deviation. The only area for collaboration where the difference in averages exceeded one standard deviation was in the “extent of integration of work processes” with the successful collaboration scoring 1.2 points higher.

5.1.6 Trust and compatibility of goals

In general the ratings by the respondents were that there was a high trust environment with the exception being the neutral stance on the other party providing support. The spread of values though was high on a number of questions with the standard deviations being greater than 1.25 in two instances.

In terms of goal alignment there was a large difference between the two sets of questions. In the question on “Our success is dependent on theirs” the following graphed results show the high variance that was recorded and is clearly bimodal. The standard deviation supports this with a value of 1.35

Figure 4 Our success is dependent on theirs



Comparison with successful and unsuccessful

Again a comparison was made between the average value of those that viewed the collaboration as successful and those that viewed it as unsuccessful. The questions that elicited a response where the means varied by more than one standard deviation were

- “Promises are likely to be kept”
- “Other party concern for our welfare”
- “Quality of advice from the other party”
- “Other party will support us in need”

5.1.7 Other factors

The complexity of the product was rated overall as a factor in the collaboration. The mode value was neutral but the mean at 3.33 indicates a slight bias towards complexity as being important. Over 20% of the respondents rated the product as very complex. The cost of the item or service was also biased towards high with a mean of 3.35 but the high and neutral accounted for over 84% of the responses. There was congruence on the judgment on the quality of the relationship was high with a mean of 3.70 and a low standard deviation of 0.81.

The importance of physical proximity had a bimodal spread, the mean value of 2.82 indicates that in general there is a lower importance to physical proximity but that it may be important in particular instances.

Where comparison was made between the average value of those that viewed the collaboration as successful and those that viewed it as unsuccessful. The question that elicited a response where the averages varied by more than one standard deviation were **“the quality of the relationship”** indicating that were there was judged to be a poor relationship the probability of success is low.

5.1.8 Purchasing decision factors

There was a lot of support for the critical factors as espoused by Ellram (1987) with the highlighted figures being tabulated below. The ranked order of rating based on means is below.

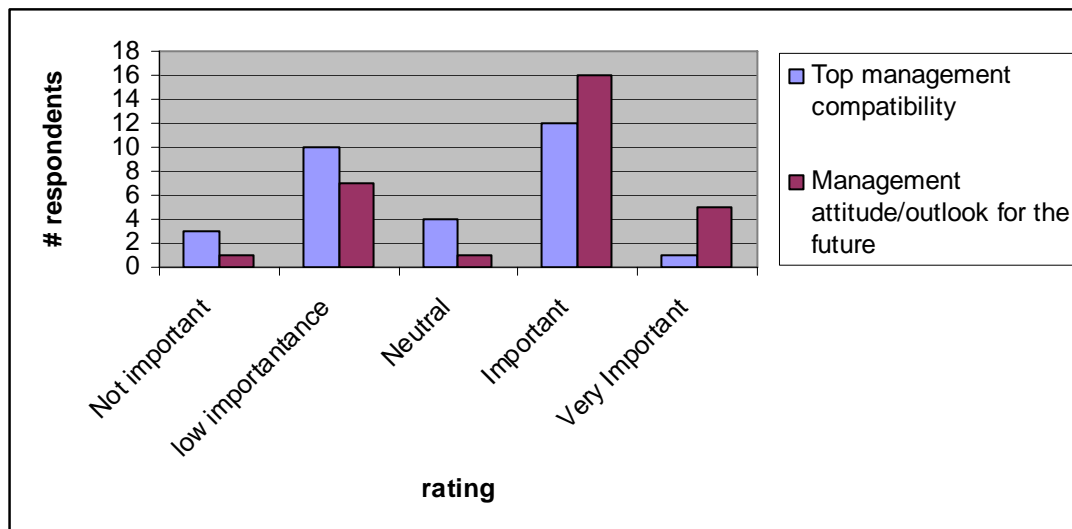
Table 15 Ranking of selection factors

Financial stability (adequate cash flow, profitability)	4.27
Strategic fit to your objectives	4.17
Assessment of future manufacturing capabilities	4.13
Assessment of current manufacturing capabilities	4.03
Management attitude/outlook for the future	3.57
Compatibility across levels and functions of buyer and supplier firms	3.53
Supplier’s design capabilities	3.53
Company growth over last 5 years	3.43
Business references	3.37
Supplier’s speed in development	3.33
Safety record of supplier	3.33
Top management compatibility	2.93
Organizational culture	2.90
Supplier’s organizational structure and personnel	2.87

As can be seen that those items the highest ranked item being financial stability with over 86% of the respondents indicating in the high or very high importance. Only 3 items scored below the mean of 3, being “top management compatibility”, Organizational culture” and “supplier’s organizational structure and personnel”

There were two items in the survey that elicited a bimodal response but with a weighting towards the important.

Figure 5 Bimodal analysis management compatibility / attitude



The one item that resulted in the highest percentage being attributed to very important was in the assessment of future manufacturing / operational capabilities with the below weighting.

Table 16 future manufacturing capabilities

Assessment of future manufacturing capabilities

Not important	0.00%
low importance	10.00%
Neutral	10.00%
Important	36.67%
Very Important	43.33%
Total	100%

The high weighting appears to indicate that manufacturing capability is one of the predominant factors after strategic fit with the organization and financial stability.

The highest difference in the means between those that rated the collaboration as successful and unsuccessful on a particular item for Ellram's (1987) factors was "Suppliers design capabilities"

5.2 Correlation

5.2.1 Overall correlation

A correlation matrix was calculated on the respondent's ratings. There was as expected a broad range of correlations from close to 0 though to an 88% correlation. The following items are those items that had a bearing on the research questions and that were significant

Research question 1

The complexity and cost of the product was rated by the respondent on a 5 point Likert scale, this was then correlated with the other responses in the questionnaire. The highest correlations that was achieved with the complexity of the product were the “Cost of the product or service” (48%) and negative correlation with “financial stability” (44%) indicating that the higher the complexity of the product the lower the rating of the requirement for financial stability. The percentages stated indicate the amount of variance of the item explained by the variation in the complexity of the product.

The “cost of the product “was positively correlated with “our need for collaboration vs. theirs” at 63% indicating the cost of the product drives a higher need to collaborate by the purchaser. The “cost of the product” was also positively correlated with importance of “top management compatibility” (50%) indicating a higher need for high level interaction at senior levels.

Table 17 Cost of product test of independence

Cost of the product	Chi Square test of independence. p=0.05	Correlation
Importance of physical proximity	0.009	Positive (16%)

Amount of detail in the contract	0.027	Positive (38%)
Supplier involvement in planning stages of business	0.003	Positive (63%)
Importance of Organizational culture	0.028	Positive (30%)
Importance of Top management compatibility	0.009	Positive (50%)
For how long has you company been dealing with the supplier /client	0.013	Positive (25%)

Research question 2

The question that was posed was to what extent does trust affect the ability collaborate? The level of trust was assessed directly on the “Promises are likely to be kept” and supporting questions on “Other parties concern of our welfare” and “other party will support us in need” As expected with these questions there was a high correlation of 57% and 61% respectively and an 88% correlation between the latter two questions.

The “quality of the relationship” with the other party and the “other parties concern for our welfare” were positively correlated at 54%.

As can be seen from the below table 20 that two of the three questions on trust are statistically significant on the impact on the success of the collaboration.

Research question 3

The relationship between Hofstede's (2001) factors and the other aspects of collaboration are investigated with the questions related to detail in the contract, frequency of communication and level of research done on other parties.

The correlation with "amount of research done on the other party" was positively correlated with "other parties concern for our welfare"(61%) and "other party will support us in need"(52%) this indicates that a higher level of research is likely to be done were there is a need to the other party to be concerned about the investigators welfare. The factors of detail in the contract had the highest correlation with "number of years working in supply chain/sales" (45%) and a negative correlation of 44% with "amount of sharing of short term planning data" indicating the high level of detail occurs frequently with a low level of sharing of short term planning data.

"Frequency of communication" had the highest correlation with "complexity of the product" (47%) and "importance of organizational culture" (44%).

The aspect of power distance was measured with defining whose contract was used and at whose venue the meetings took place regularly. The contractual usage

and at whose venue meetings occurred was correlated negatively with being the supplier (43% and 42% respectively).

Table 18 Hofstede factors test of independence

		Chi Square test of independence. $p=0.05$
Whose contract is used	Physical proximity	0.015
Amount of detail in contract	Cost of product	0.027
Amount of detail in contract	Extent of sharing of long range forecasts	0.037
Frequency of communication	Management attitude / outlook for the future	0.025
Frequency of communication	Supplier speed of development	0.015
Level of research done on other party	Supplier involvement in planning stages of the business	0.008
	Level of commitment to a long term partnership	0.025
	Focus on value rather than price	0.036
	Financial stability	0.024

Research question 4

The factors as stated by Ellram (1987) were correlated against the other questions asked in the survey only those correlations that exceeded 50% either positively or negatively were considered in the below analysis.

Current design capabilities and integration of work processes are correlated at 60% indicating a high degree of interdependence for design work.

The amount of prior research done correlated positively with management attitude/ outlook for the future (54%) indicating a possible link with what is important on those firms that researched the other party.

Strategic fit as an important criteria was negatively correlated with physical delivery distance (-61%) indicating that a high rating on strategic fit appears to related to the distance separating the two parties.

Business references were correlated to being the client 53% indicating the there was a greater importance placed on references by the client evaluating the supplier than the converse.

A negative correlation of -50% between the prior close relationship and the design capability of the other party indicates that a high importance on design capability is supported by a prior close relationship.

Table 19 quality of relationship test of independence

		Chi Square test of independence. $p=0.05$
Quality of the relationship	Integration of work processes	0.043

5.3 Success of the collaboration

Table 20 Success of collaboration test of independence

Factor	Chi Square test of independence Probability	
Quality of the relationship	0.008	
Promises are likely to be kept	0.013	
Quality of advice from other party	0.022	
Other parties concern for our welfare	0.028	
Extent of integration of work processes	0.012	
Business references	0.029	

5.4 Factor analysis

A factor analysis was conducted on the questions posed in the questionnaire.

For the questions on collaboration the reliability was assessed. The below table indicates the results of this analysis.

Table 21 Reliability testing

Reliability Section

Variable	----- Item Values -----		----- If This Item is Omitted -----				
	Mean	Standard Deviation	Total Mean	Total Std.Dev.	Coef Alpha	Corr Total	Other Items
X20	3.5	1.252584	44.83333	7.715114	0.7761	0.2765	0.8034
X21	3.633333	0.9643055	44.7	7.593781	0.7545	0.5354	0.6017
X22	3.2	1.349329	45.13334	7.29068	0.7452	0.5826	0.9384
X23	3.2	1.214851	45.13334	7.228933	0.7324	0.7233	0.9193
X24	3.233333	1.381736	45.1	7.480319	0.7635	0.4147	0.4770
X25	3.233333	0.9352607	45.1	8.082974	0.7915	0.0151	0.5362
X26	2.933333	1.25762	45.4	8.04556	0.8006	0.0061	0.5550
X27	3.633333	1.129032	44.7	7.675083	0.7676	0.3609	0.6915
X28	3.266667	0.9071872	45.06667	7.60641	0.7536	0.5620	0.4443
X29	3.633333	0.9278575	44.7	7.666092	0.7593	0.4785	0.6275
X30	2.633333	1.159171	45.7	7.302102	0.7366	0.6954	0.8243
X31	3.2	0.9965457	45.13334	7.793602	0.7720	0.3028	0.7428
X32	3.6	0.8136762	44.73333	7.982452	0.7806	0.1582	0.5960
X33	2.4	1.069966	45.93333	7.718913	0.7688	0.3457	0.5361
X34	3.033333	0.9643055	45.3	7.768859	0.7689	0.3438	0.7641
Total			48.33333	8.150876	0.7780		

Cronbach's Alpha 0.778028 Std. Cronbachs Alpha 0.776877

As can be seen from the above data the unreliable questions were X25, X26, X32, corresponding to questions on “our need for collaboration vs. theirs”, “supplier involvement in planning stages of the business” and “extent of sharing of short term planning data”. These questions can be removed from the questionnaire due

to the coef alpha being higher than the Cronbach's alfa of 0.778 although the deviation is small.

A factor analysis was conducted over the questions. Due to the nature of the questions and the potential insight to be gained coupled with the small deviation as stated above, these questions were not removed from the first analysis Table 22 . Table 23 removes the questions rated as unreliable. An Eigen value analysis indicated 8 factors are appropriate for the questions for both cases. The following results were found against 8 factors. The factor headings have been selected by the researcher to indicate the best summation of the factor.

Factor analysis conducted in rank order.

Table 22 Factor analysis

<p style="text-align: center;">Factor1 Trust and collaboration</p> <p>Other party concern for our welfare</p> <p>Other party will support us in need</p> <p>Promises are likely to be kept In your view was the collaboration successful?</p> <p>Quality of advice from other party</p> <p>Quality of the relationship between parties Extent of integration of work processes</p> <p>Level of research done on other party</p> <p>Amount of focus on value rather than price</p>	<p style="text-align: center;">Factor2 Uncertainty Avoidance</p> <p>Frequency of communication</p> <p>Complexity of the product or service</p> <p>Extent of joint decision making</p> <p>The cost of the product or service Extent of joint problem solving</p> <p>Extent of integration of work processes Our success is dependent on theirs</p> <p>In your view was the collaboration successful?</p>	<p style="text-align: center;">Factor3 Information - short term</p> <p>Extent of sharing of short term planning data</p> <p>Amount of detail in the contract</p>	<p style="text-align: center;">Factor4 Physical proximity</p> <p>Importance of physical proximity Whose contract is used to define the relationship</p> <p>Extent of integration of work processes</p>
<p style="text-align: center;">Factor5 Information - long term</p> <p>Extent of sharing of long range forecasting data</p> <p>Level of research done on other party</p>	<p style="text-align: center;">Factor6 Commitment & power</p> <p>Our need for collaboration vs theirs</p> <p>Level of commitment to long term partnership</p>	<p style="text-align: center;">Factor7 Internal collaboration</p> <p>Extent of internal collaboration in own organisation</p> <p>Level of commitment to long term partnership</p> <p>Quality of the relationship between parties</p> <p>Promises are likely to be kept</p>	<p style="text-align: center;">Factor8 Early involvement</p> <p>Supplier involvement in the planning stages of the business?</p> <p>The cost of the product or service</p>

Table 23 Factor analysis with questions removed

<p style="text-align: center;">Factor1 Trust and alignment</p> <p>Other party concern for our welfare Other party will support us in need</p> <p>Promises are likely to be kept</p> <p>Level of research done on other party Quality of advice from other party Quality of the relationship between parties Extent of integration of work processes</p>	<p style="text-align: center;">Factor2 Co-operation</p> <p>Our success is dependent on theirs Extent of joint problem solving</p> <p>Amount of focus on value rather than price</p> <p>Extent of integration of work processes</p>	<p style="text-align: center;">Factor3 Decision making</p> <p>Extent of joint decision making</p>	<p style="text-align: center;">Factor4 Venue and contract</p> <p>At whose venue do meeting regularly occur? The cost of the product or service</p> <p>Complexity of the product or service</p> <p>Whose contract is used to define the relationship</p>
<p style="text-align: center;">Factor5 Contract detail</p> <p>Amount of detail in the contract</p> <p>The cost of the product or service</p> <p>Level of research done on other party</p>	<p style="text-align: center;">Factor6 Information sharing long term</p> <p>Extent of sharing of long range forecasting data</p>	<p style="text-align: center;">Factor 7 Internal factors</p> <p>Extent of internal collaboration in own organisation Level of commitment to long term partnership</p> <p>Quality of the relationship between parties Quality of advice from other party</p>	<p style="text-align: center;">Factor 8 physical proximity</p> <p>Importance of physical proximity</p>

6. Discussion of Research results

6.1 Introduction

The above statistical analysis has a number of implications for the intent of this paper. The data as recorded will be related back to the literature and the support for this in the research where possible.

The specific findings will be highlighted from the research that will allow the firms intent on collaboration to enter into this endeavour with the appropriate factors considered.

The discussion of the results will be focused on the research questions and then be related back to overall intent of the paper which is factors leading to successful collaboration.

6.2. Findings on the research questions

An assessment of the level of collaboration was determined from the questions on the collaborative effort. These included supplier involvement in the planning stages of the business, level of commitment to long term partnership, focus on value rather than price, extent of problem solving, joint decision making and data sharing. Other than the low mean rating on the sharing of long range data the mean scores were well over the mean mark at 3.40 for the successful collaboration. This

indicates that the results in the survey were applicable to a collaborative effort and not to lower order interaction such as co-operation or communication as discussed in Section 1.

In addition to the above findings on the collaborative effort the respondent's average tenure in the supply chain or sales environment is 6.33 years indicating that they are at an experienced level in the industry.

As can be seen from the level of office of the respondents, section 5.1.1, the results are considered opinions of senior personnel in the collaborative effort and therefore should be representative of results to be achieved in the industries in which they operate.

6.2.1 Research question 1

There is supporting documentation that price has is a critical aspect in supplier selection (Holweg and Pil. 2004, Wagner. 2006) however the literature is unclear on the impact that individual unit price for the service or product has on the collaborative effort. The findings in the research have two aspects.

The one aspect is that the rated complexity of the product or service does not seem to be a leading factor in the entering into collaborative effort and the level of collaborative effort. This is indicated by the neutral rating on complexity and that

complexity is not correlated with any other rating to a statistically significant degree.

The other aspect, the higher rating on cost is, as expected, a driver for collaboration and although there is not very high rating on the relative cost of the product or service there is a correlation between cost and a number of factors. These factors are importance of physical proximity, amount of detail in the contract, supplier involvement in planning stages of the business, importance of organizational structure and top management compatibility. The length of dealing with the client was also related to the cost of the product or service.

Without the ability to infer causality in the data the aspects that seem to be of relevance is that with a higher cost of product or service, the company intent on collaboration would wish the other party to be physically near and is likely to have conducted extensive research on the other party. Risk would be managed by the level of detail in the contract. The importance of the relationship between the parties for an expensive product or service is higher as indicated by the correlation with organizational structure and the compatibility of top management.

Communication and the integration of information systems was not addressed in the survey but is indicated as important in the literature (Sheu *et al*, 2006) the correlation to physical proximity may be related to information flows around the

product or service. The importance of physical proximity does not appear, in the research, to correlate to the delivery distance or the number of deliveries per year.

This is supported by the factor analysis which indicates that the cost and complexity of the product or service is related to how the risk and control issues are managed in that it relates to the use of whose contract and venue. The finding here is that the higher the relative product cost the more important the use of contracting and improving the relative power of the party.

The research indicates that while there are a number of factors and issues that are related to the cost of the product there is little supporting evidence that the complexity of the product has a significant effect on the aspects of the collaborative effort. The cost of the product or service is related to the importance of physical proximity, amount of detail in the contract, supplier involvement in planning stages of the business, importance of organizational structure and top management compatibility.

6.2.2 Research question 2

On the impact of trust on the relationship there is a high degree of correlation between promises are likely to be kept and the other parties concern for the respondent's welfare as indicated in the data above. The differences in the successful and unsuccessful collaborative efforts as indicated in table 20 highlight

the findings of Sheu (2006), Blancero and Ellram (1997) that where there was not a long term successful relationship, the predominant aspects were quality of the relationship and the lack of trust. The implication for the practitioner is that while there a likely to be technical and financial considerations for the initiation of a collaborative effort the biggest decider in the success of the effort is relationship based.

The quality of the relationship as raised by Wuyts and Geyskens (2005), Wagner (2006) has the lowest probability of independence at less than the 1% level, Table 20, with the success of the collaborative effort. The maintenance and improvement of the quality of the relationship is therefore of high importance in the long term success of a collaborative effort. The research did not ask questions on the mechanisms used to build and maintain the relationships for the successful collaborative efforts although there is a correlation with the “other party is concerned for our welfare” which indicates that one mechanism for improving the quality of the relationship is to ensure that there is sufficient support for the other party and expressed interest in their welfare.

The only aspect of trust and relationship building covered in the selection factors and trust from which the research found a statistically significant relationship is between the quality of relationships and the trust questions was with “integration of work processes”. While this had a low factor consideration it had a significant impact on the success of the collaborative effort as indicated in Table 20 with a

probability of independence being 1.2%. Careful consideration should be given to the mechanisms of working together at an operational level in terms of sharing of information and the hand over between organizational boundaries. The integration of work processes specifically on information systems supports the findings of Kahn and Mentzer (1996), Sheu *et al* (2006) and Simatupang and Sridharan (2005). This finding may support the requirement for collocation as this would facilitate the integration of work processes.

The areas such as concern for welfare and support in need are correlated to the likelihood of promises being kept as indicated in section 5.2.1. For the companies entering into the collaborative agreement the causality is likely to be in both directions, that delivering on promises are likely to show concern for the other parties welfare and a real concern for the other parties welfare would probably result in promises being kept.

Keeping of promises, concern for the other party and supporting the other party are all aspects of trust. These have been shown to be critical for the success of a collaborative effort. The mechanisms for ensuring these aspects are covered were only partially covered in the research with the mechanism of “integration of work processes” being one statistically significant aspect. The interrelatedness of the factors of trust cannot be ignored and need to be managed to ensure that the quality of the relationship is maintained.

6.2.3 Research question 3

The aspects of Hofstede (2001) work will be addressed in two areas, Uncertainty Avoidance and Power Distance

The Uncertainty avoidance which was analysed with amount of research done on the other party, the level of detail in the contract and frequency of communication. The research was positively correlated with concern for welfare, this indicates that a higher level of research is likely to be done where there is a need to the other party to be concerned about the investigators welfare.

The detail in the contract appears to be supported by the length of tenure in the area of sales or procurement, as seen in section 5.2.1, this may mean that individuals have learned to mitigate risk through contract detail as their careers progressed. The level of detail in a contract though is not statistically significantly supported in the success or failure of a collaborative effort so the implication is that professionals in the area of sales or procurement who have long tenures may not have a positive bearing on success of a collaborative effort. This is supported by Sheu *et al* (2006) who found that older relationships do not support the collaborative effort.

The research found that there is a higher level of detail in the contract where there is a low amount of sharing of short term planning data. This may indicate that this is a more hands off relationship and therefore there is less frequent communication

necessitating a contractual protection to resolve disputes. This has implications for the aspects of trust and relationship building as addressed in the above section. Hands off relationships where the relationship is not carefully managed may have lower probability of success.

The level of detail in the contract from a factor perspective is that this is related to the extent of sharing of short term data and cost of the product as indicated above and also the level of research done on the other party. The increased detail as indicated by the latter relationship may mean that more of the investigative data is captured into the contract or since it has been shown that when the cost of the product or service is high, there is more research done.

The data in section 5.2.1 above indicates that the amount of communication and the complexity of the product are correlated. This is to be expected if there are technical or developmental aspects that need consideration or are changes that need to be updated regularly. The uncertainty avoidance aspect is noted in the average rating for the frequency of communication at 3.97 indicating that in all the collaborative efforts there was a high level of communication. The correlation between importance of organizational culture and the frequency of communication indicates that for some parties there is a high need to understand the other party and its organisational culture. The requirement for understanding organisational culture would entail a significant amount of communication to get a feel for the other organisations beliefs and systems.

South Africa as a whole scores lower on uncertainty avoidance than the global average (49 vs.65) while the average rating for the level of detail, frequency of communication were scored 3.52 and 3.97 indicating a high requirement to minimize the uncertainty.

The aspect of power was measured with defining whose contract was used and at whose venue the meetings took place regularly. The findings of the data indicated that this was significantly skewed toward the client. The purchaser of the product or service has therefore higher power dominance in the relationship. The implication is that a collaborative effort may be unequally balanced if there is a lack of willingness to develop a contract for both parties and the willingness to meet at either venue. This is supported by the findings of Kim and Heungshik (2005) who indicate that there is a dual party optimum for both parties but is sub optimal for each party.

Power-distance refers to the extent to which less powerful members expect and accept unequal power distribution within a culture. The power distance aspects covered in the research indicate that the parties accept that there is a higher likelihood of the client's contract being used. The relatively low ranking of the importance of top management compatibility may indicate that there is not a high requirement for top management to be directly involved in the collaborative effort and therefore a lower rating on power distance.

South Africa features scores slightly lower than the global average (49 vs. 60) in Power Distance (Appendix 3) but higher than the score for Christian countries, if this can be assumed to be a proxy for organizational differences then the marginally high power differential between supplier and client should be able comfortable for South African organizations.

Hofstede's (2001) factors of uncertainty avoidance and power distance as a proxy for company behaviour found that there is little support for the lower uncertainty avoidance in the firms surveyed. There was in general a high requirement for uncertainty avoidance as indicated by high levels of communication and levels of detail in the contract. The requirement to avoid uncertainty was driven by cost, requirement to understand the other party's organisational culture, level of sharing of data and to a lesser extent the complexity of the product.

The lower rating of South Africa for Power distance indicates support for the rating in the firms surveyed in that there was a low requirement for top management involvement but there was an acceptance of the highly skewed use of the client's contract. From a relationship power perspective the power, especially in a high cost item or service, is dominated by the client and this has the potential negative implications raised in the two sections above.

6.2.4 Research question 4

Selection of partners for collaboration is important (Oberoi and Khamba, 2005) indicating that companies should focus on the aspects that add value to the selection of partners. In the data, the findings were that not all the selection factors were rated equally and that some had a significantly higher rating than others.

The order ranking as displayed in Table 15 is an indication of the respondents ranking of the importance of the supplier selection criteria as proposed by Ellram (1987)

The very high rating, out of 5, for the first four items, financial stability, strategic fit and future and current capabilities indicates that these items carried were highly valued by the respondents and a company wishing to enter into a collaborative agreement should evaluate these factors based on the findings of the data.

The only anomaly in the correlation data was that high delivery distances did not equate to high rating on the importance of strategic fit. This may indicate that it is difficult to maintain or enter into a collaborative agreement with parties that are geographically dispersed. This is supported in the literature on the automotive sector on the development of supplier parks to ensure close working relationships as indicated by Holweg and Pil (2004)

The other correlation that is of interest with integration of work processes and the design capabilities indicates that for work that has a high degree of design there is

a specific need for integration of work process and as indicated above this may require co-location.

There was no finding for a high correlation with supplier involvement in the early stages of a business and the design requirement. This contradicts the findings of Ellram (2006) which indicate the high requirement for early involvement in the planning stages for concurrent engineering type projects which are primarily design focussed.

The secondarily rated measures of management attitude/ outlook for the future, design capabilities and compatibility were rated equivalent for importance and should be evaluated as a second tier of importance given after there is successful evaluation of the above more critical factors. The research raised a point that the amount of prior research done was positively correlated with the management attitude aspect of the selection criteria specifically which may mean that this information is difficult to ascertain and therefore requires a high degree of research or there is undue focus on researching this area.

The relative rankings of the first two groups indicates that hard issues of finance, manufacturing and strategy are of higher regard than the second tier factors such which are predominantly relationship factors.

Commercial arrangements and risk management are addressed briefly in the research indicating that client firms are more likely to evaluate their suppliers through business references than the supplier to evaluate the client. The aspect that is raised in the research, Table 20, is that there is a statistically significant relationship between the importance of business references and the success of the collaboration. The implication for the supplier is that maintenance of good business references is critical in being able source companies to collaborate with. The implication for the client is that while the reference importance was rated lower on average there is significant merit in checking the business references of the other party when entering into a collaborative agreement.

The complexity aspect is address to some extent with the correlation between the design aspects and issue of prior close relationships, the indication from the research as address in the above section is that design work is likely to be undertaken with known other parties. The implications for the parties are that there should be focus in collaborative efforts with existing suppliers and clients rather than with unknown third parties.

The selection factors that were rated low and below average for a collaborative effort were top management compatibility, organizational culture and organizational structure as these were rated below average, Table 15. The indication is that these aspects need to have little review when entering into a collaborative effort and

should potentially be dropped from a list of items on which to evaluate the other party.

The selection factors have differing importance when entering into a collaborative agreement. The highly rated aspects should always be evaluated such as financial, manufacturing and strategic aspects and once these have been successfully evaluated the area that should next be evaluated is the relationship aspects followed by the remaining aspect with a specific requirement to evaluate business references. The requirement for design work has some implications for the collaborative effort in that it raises the importance of physical proximity and working within existing relationships.

6.3. Other findings

6.3.1 Success of the collaboration

The aspects that are statistically significant on the evaluation on if the collaborative effort was successful was mainly relationship based, these being quality of the relationship, promises are likely to be kept, other parties concern of our welfare. The maintenance and support of the relationship is therefore critical in the successful implementation.

The other aspects that were statistically significant from the data were the “hard” aspects of ensuring good advice, integrating work processes and the importance of

business references. The implications for the potential collaborators is that due regard needs to be given to ensuring that the advice given is well thought out and adds value to the other party. Integration of work processes, while undefined in the research, is a potential future area for study other than the information technology sector where a number of studies have been covered for items such as order process integration. Kahn and Mentzer (1998)

6.3.2 Assessment of future capabilities

The ratings for the assessment of future capabilities in the study indicated that this had the highest number of respondents indicating the very high importance. While the average resulted in the ranking of this aspect lower, section 5.1.7, the high number of very high rankings means that there was a significant group that had a very high forward focus on the future operating capability. The rating was higher in numbers and in average than the current operational capabilities. This indicates that the collaborative efforts as a whole tend to be future orientated.

This can be expected as the companies are collaborating for a future endeavour and indicates that the research was focussed on more than a co-operation but on a creative value add for both parties.

6.3.3 Bimodal distributions

In the data from the respondents there were a number where the respondents indicated a clear bimodal distribution. A bimodal distribution is typified by an either or response. The aspects that had bimodal distributions were

- Importance of top management compatibility
- Importance of Management attitude/ outlook for the future
- Amount of detail in the contract
- Involvement planning stages of the business
- “Our success is dependent on theirs”

The findings on these indicate that there is unlikely to be a middle ground such as somewhat important. It is likely to be important or not important. There is likely to be a lot of data in the contract or little data in the contract. The bimodal distributions should be taken into account when planning the collaborative effort as it may precipitate a particular path such as drawing up a contract or getting the other party involved in the planning of business.

The rating of “our success is dependent on theirs” is interesting in that there was a limited number where the parties felt that there was a co dependence between parties the most likely response was that one party had the higher need and potentially therefore a lower power position.

6.2.4 Factor analysis

The factor analysis conducted on the data indicated a number of other findings, these are contained in Table 22.

The factor analysis conducted supports the findings as stated above in the research questions. The factors as tabled above also indicated additional findings, including the distinct separation of long and short range sharing of information, which has different implications on the level of detail in the contract and the amount of research done respectively.

Some of the factors are intuitive in that the physical proximity of the parties facilitates the integration of work processes as indicated by Trent (2005), but the impact of physical proximity on the use of contract is not explained in the data.

The alignment of the questions with specific factors is captured in Figure 6 below with the various factors contained in the decision tree.

7. Conclusion

7.1. Conclusion

The requirement to collaboration with other parties remains as an important tool to improve competitiveness. The ability to collaborate requires that both parties understand the requirements for this to be successful.

A number of research questions were proposed to understand the impact of various factors on the collaborative effort and those that affected the collaborative effort both positively and negatively.

A survey instrument was used to record the responses from various individuals on both the supplier side and the client side for an example of where they engaged in a collaborative effort. This elicited 34 responses and a statistical analysis of this data was undertaken to determine the relationships between the variables in the survey.

The results of these relationships are covered in the model (figure 6) below in a graphical decision tree format and cover the major findings in the research. There is additional detail that was covered in the research where the findings are covered in more detail.

The predominant findings were that there are two main areas that need focus being “hard issues” and relationship issues and there are aspects that should be considered at all the stages of engaging in a collaborative effort.

The rated complexity of the product or service was not found to have a significant impact although the relative cost of the product was a driver for a number of statically significant implications such as detail in contracts and involvement of the other party.

The selection factors for a party to collaborate with the issue being that a company cannot focus on all the areas at the same time. The selection factors were ranked with the research indicating that there were 4 tiers of importance in the selection factors. These were found to be the hard issues of financial, manufacturing and strategic fit followed by soft issues on relationship aspects followed by other harder issues with a specific relationship between business references and the success of the collaboration.

The problem was raised that, for firms that have collaborated with either their client or supplier, there is little understand of what factors were beneficial and which factors were considered to be detrimental to the collaborative effort. The one area of high focus that had a significant impact is the importance of relationships and specifically the trust building and maintenance over the collaborative effort.

The ability to create with others is by definition collaboration, there is a significantly higher value that can be derived is in the creation of that value rather than in improving the efficiency of interaction or communication between parties. This research should allow the parties to have a framework under which to engage in the collaborative effort from partner selection through to avoiding the pitfalls that could damage the effort.

7.1.1 Model of findings

The model as displayed below is a mechanism or decision tree from the findings of the research. Dependent on the type of collaborative relationship entered into and the relative power positions of the parties involved the effort.

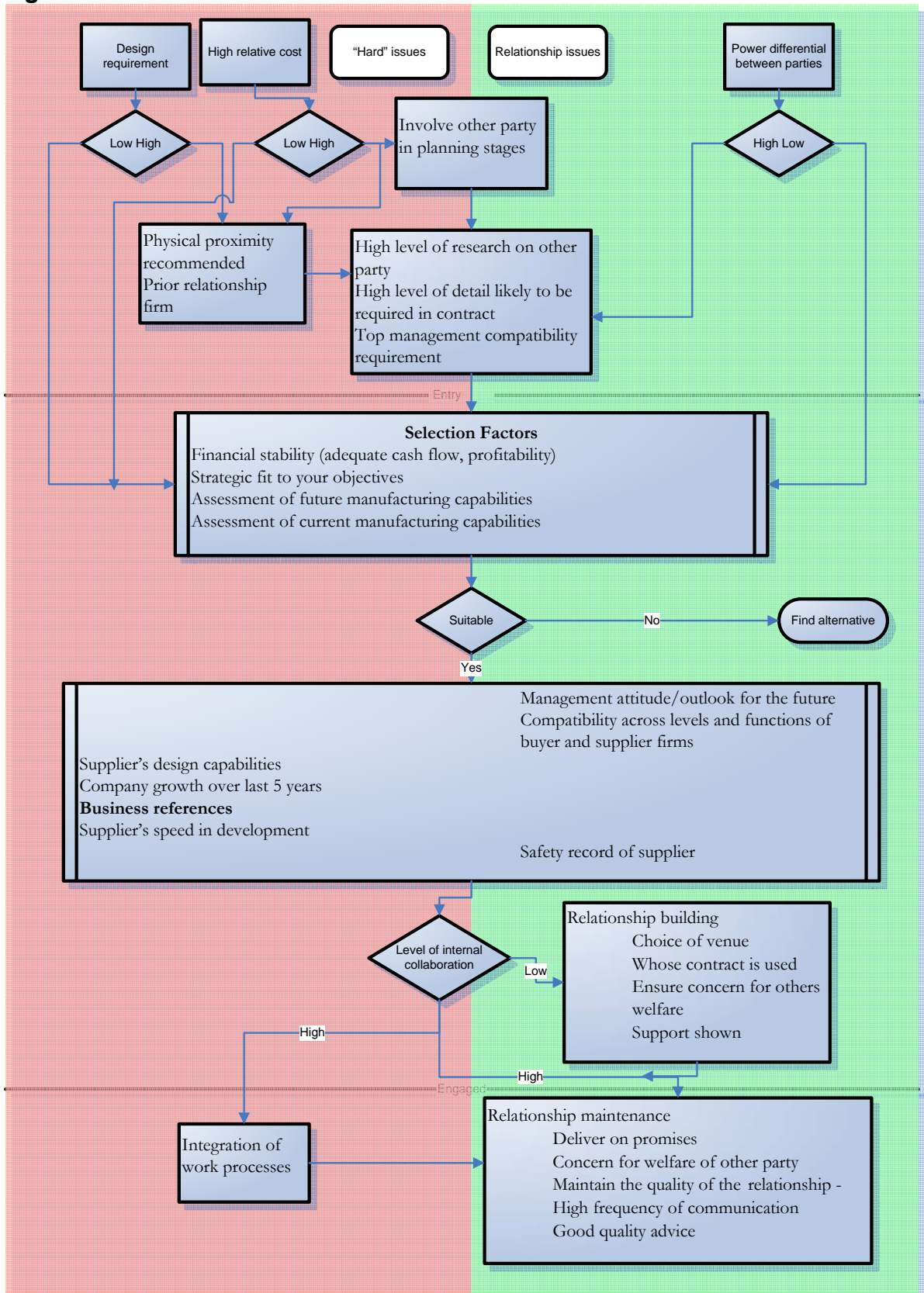
The model was determined from the findings. The various stages of engaging in a commercial relationship are covered in the literature (Vokurka *et al*, 1996), Ellram, 2001). The aspects covered in the research were then placed against these stages.

The bimodal distributions on a number of the questions in the survey indicated that there is a decision aspect to these questions and this prompted the relationship between the rating and the factors as determined in table 22.

Engaging in a collaborative effort is by nature a process and therefore a flow could be established over the time period of the stages and this is evident in the model below.

The research also indicated that there were two distinct areas in which the literature and the questions could be grouped and these were then added to the model in the vertical columns of hard issues and relationship issues. Both of these groupings were shown to be of relevance to the collaborative process.

Figure 6 Collaborative framework



The use of the model is as follows. The decision tree is followed with the three primary input parameters. There are both hard issues such as financials and technical abilities of the parties and then relationship issues that have been indicated to be important to the collaborative effort.

Each stage of the entry into a collaborative effort is defined on the left hand side of the model being the initiation stage, entry and engaged stages of the collaborative effort and the important aspects that should be considered at that stage in the collaboration.

The input parameters of design requirement, relative costs and relative power position is then used by following down the decision tree. The items listed in the blocks are the items that the research indicates are important factors to consider in the collaborative effort and have been indicated to contribute significantly to the effort.

The selection factors box indicates, in order of priority, the importance of factors that should be reviewed about the other party from the research. These factors will vary in importance from one effort to the next and should not be taken as a hard requirement.

Relationship and trust building is critical for the collaborative effort and the choices at each stage that could improve the effort from a relational perspective are listed in the blocks under relationship issues.

The model may be used as a checklist for the collaborative effort at all the stages as listed in the model. The model may not be a fully comprehensive checklist although the research indicates that from the questions asked that the areas raised in the model need to be considered.

7.2. Recommendations

7.2.1. Importance of the relationship

The research clearly indicates that the main determining factors for the success or failure of a collaborative effort are the quality of the relationship, comprising all aspects of trust, advice and concern for welfare.

A recommendation to companies entering into or currently engaged in a collaborative effort is that there is a periodic review of the relationship and that the requirement for trust in these relationships is reinforced with all the participants. The negative impact of a minor trust breach warrants a high focus on the improvement and support of the relationship.

The relationship focus needs to be addressed by both parties as the supplier and the client. This is evident in the differential in the relative need for collaboration. There is often a significantly higher need from one party but the success of the effort as a whole needs support and concern for welfare from the dominant party and therefore that party cannot abdicate its responsibility for maintaining a high quality relationship.

Sheu *et al*, (2006) indicate that the party with the lower level of power in the relationship is likely to work harder at maintaining the relationship than the stronger party.

7.2.2 Recommendations to suppliers

There are a number of recommendations to suppliers who wish to engage with existing or future business partners in a collaborative effort.

From a supplier perspective the importance of business references on your business is critical. As the research shows that this is one specific area that has a statistically significant relationship with the success or failure of a collaborative effort. In the event that a potential client is aware of this relationship ensuring that business has excellent references could provide an advantage.

Positioning of the suppliers business such that there is a high apparent strategic fit between the company and a potential client is rated as important by both parties.

The advantage is that a highly visible strategic fit can ease the process of supplier selection in a collaborative effort.

The other factors that need focus from a potential client perspective are the financial and operational capabilities of the business. These are areas that typically get a high degree of focus and this should be maintained. The ranking order as in the model and in the results should potentially be used to determine the internal strategy of the business relative to the clients. The area that has historically received focus that is not supported by the research is the requirement for top management compatibility.

7.2.3 Recommendations to clients

From a client perspective there are a number of findings in the research dependant on the type of decision that needs to be made, these included Co location and the selection factors.

The nature of the collaborative effort is influenced by the requirements of the collaboration itself; the research indicated that for high importance of design capability of the supplier that physical proximity was also indicated. The literature supports this, Trent (2005) and so consideration should be given to suppliers that are close in terms of distance.

Another aspect that requires consideration is that if the service or product to be purchased is relatively expensive then there is evidence to indicate that suppliers with a prior relationship, assuming positive, should be used to provide this service or product. To a lesser extent there is the requirement for top management compatibility and physical closeness for these expensive items.

The last aspect that was clear in the research was the highlighted importance of how you select the supplier. The high importance rated items should be critically evaluated and as stated above the checking of business references for suppliers are critical for the success or failure of a collaborative effort.

7.2. Areas of further research

The topic selected for the research was broad in scope as the intent was to understand the broad aspects the result in successful supplier collaboration. This broadness of the scope therefore limits the detail that a practitioner in the sales or procurement field may wish to understand. There is thus scope for areas of research that can build onto the broad areas covered in this paper. Some of these areas are listed below.

7.3.1. Mechanisms for relationship maintenance and building.

The research did not delve into the mechanisms used in the collaborative efforts. With the importance, as highlighted in the results, of the relationship on the

collaborative effort. A further area may be to understand, in the South African context, the mechanisms used in both the successful and unsuccessful collaborations that resulted in the final outcome.

The research does not proscribe the method but highlights the areas that should be focussed upon. It would be of value to the practitioner to understand the actual behaviours and processes that were followed in each of the respondents collaborative efforts.

7.3.2 Mechanisms used for risk management

The assumption is made in the research that some of the aspects have an underlying causality of risk management. The research did not evaluate risk and risk management around collaborative efforts.

A further area of research then would be to determine the underlying cause of, specifically the amount of detail in the contract, the requirement for physical proximity and the what actions were taken where there was a significantly higher requirement for collaboration from one party over another.

7.3.3 Dyad research of supplier and client / expand the sample

The research was conducted with a random sample of respondents from South African companies. The demographics of these companies are included in appendix 3. There was no requirement for a dyad matching where the responses of the two parties in one collaboration were investigated to determine if there was a common or diverging perspective.

The further area of research would be to take matched pairs of respondents and critically evaluate the perspectives on the same collaborative effort.

7.4. Final words

The field of collaboration in Supply Chain's is very broad and there are multiple aspects that need to be considered. The framework as developed in this research may provide guidance to those entering into a collaborative effort but does not cover all the aspects of this complex interaction. The findings may assist companies to engage in collaborative efforts with higher success and therefore improve South African competitiveness and so this research may have assisted in resolving the research problem.

8. References

Borden, LM and Perkins, DF (1999) Assessing Your Collaboration: A Self Evaluation Tool *Journal of Extension* Vol. 37 No 2 April

Blancero ,D. and Ellram,L. (1997) Strategic supplier partnering: a psychological contract perspective, *International Journal of Physical Distribution & Logistics Management*, Vol. 27 No. 9/10, 1997, pp. 616-629. MCB University Press

Cumming,T. & Worley, C (2005) *Organisational development and change* 8th edition, Thomsom 2005

Denise, L. (1999) Collaboration vs. C-Three (Cooperation, Coordination, and Communication) *Innovating* Vol.7 No3

Dickson, G. (1966) An analysis of vendor selection systems and decisions, *Journal of Purchasing*, Vol. 2 No. 1, 1966, pp. 5-17

Duffy,R & Fearn, A (2004) The Impact of Supply Chain Partnerships on Supplier Performance, *The International journal of Logistics Management*, Vol. 15 (1) 2004 p.57 -71

Dyer, J. H. Singh, H. (1998), The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage, *Academy of Management Review*, 23 (4), 660–79.

Ellram, L., (1987) The supplier selection decision in strategic partnerships, *Journal of Purchasing and Materials Management*, Vol. 26 No. 3, pp. 8-14.

Ellram, L., (2006) The implementation of target costing in the United States: theory vs. Practice, *Journal of Supply Chain Management*, Winter 2006; 42, 1; pg. 13

Kahn, K B. and Mentzer, J.T. (1998), Marketing's Integration with other Departments, *Journal of Business Research*, Vol. 42, No. 1, pp. 53-62.

Kahn, K B. and Mentzer, J.T. (1996), Logistics and interdepartmental integration *International Journal of Physical Distribution & Logistics Management*, Vol. 26 No. 8, 1996, pp. 6-14. MCB University Press,

Hofstede, G (1980), *Culture's Consequences*. Beverly Hills,CA: Sage Publications.

Hofstede, G Nueijen, B Ohayv, DD, Sanders G (1990) Measuring organisational culture: a qualitative and quantitative study across 20 cases *Administrative Science quarterly*, 35, 1990, 286-316 Cornell University

Hofstede, G (2001), *Culture's Consequences*, 2d ed. Thousand Oaks, CA: Sage Publications.

Holweg, M. and Pil, P.K . (2004) *The Second Century* 2004 Massachusetts Institute of Technology.

Johnson, D (2006), A few words about collaboration, *Library Media Connection* January 2006 p90

Kim,B. & Heungshik, O (2005) The impact of decision-making sharing between supplier and manufacturer on their collaboration performance *Supply Chain Management: An International Journal* 10/3 (2005) p.223–236.

Krause, D. and Ellram, L (1997) Success factors in supplier development, *International Journal of Physical Distribution & Logistics Management*, Vol. 27 No. 1, 1997, pp. 39-52. MCB University Press

Oberoi J.S. and Khamba, J.S. (2005) Strategically managed buyer-supplier relationships across supply chain: An exploratory study *Human Systems Management* 24 (2005) 275–283 275, IOS Press

Ounnar, F. Pujo, P (2005) Evaluating suppliers within a self-organized logistical network, *The International journal of Logistics Management* Vol. 16 No. 1, 2005 pp. 159-172

Sanchez, CS. Hemsworth, D. Martinez-Lorente, AR. (2005) The effect of supplier development initiatives on purchasing performance: a structural model *Supply Chain Management: An International Journal* 10/4 p.289–301, Emerald Group Publishing Limited

Segil, L (1998), Strategic Alliances for the 21st Century, *Strategy and Leadership*, 26 (4), p. 12–16.

Sheu, C. Yen, HR. Chae, B (2006) Determinants of supplier-retailer collaboration: evidence from an international study *International Journal of Operations & Production Management* Vol. 26 No. 1, pp. 24-49. Emerald Group Publishing Limited

Simatupang, TM & Sridharan, R (2004) Benchmarking supply chain collaboration, *Benchmarking: An International Journal* Vol. 11 No. 5, 2004 pp. 484-503. Emerald Group Publishing Limited

Simatupang, TM & Sridharan, R (2005) An integrative framework for supply chain collaboration *The International Journal of Logistics Management*, Vol.16 No. 2 2005 pp.257- 274 Emerald Group Publishing Limited

Stach, G. (2006) Special section on innovation Business alliances at Eli Lilly: a successful innovation strategy *Strategy & Leadership* VOL. 34 NO. 5, pp. 28-33, Emerald Group Publishing Limited, ISSN 1087-8572

Steensma, K. Marino, L. Weaver, M. Dickson, P.H. (2000), The Influence of National Culture on the Formation of Technology Alliances by Entrepreneurial Firms, *Academy of Management Journal*, 43 (5), 951–73.

Swaiden, Z and Hayes, LA (2005) Hofstede Theory and Cross Cultural Ethics Conceptualization, Review, and Research agenda *Journal of American Academy of Business*, Cambridge; Mar pg. 10

Trent, Robert J. (2005) Why relationships matter. *Supply Chain Management Review*, November 2005, p53-59

Vokurka, R. Choobineh, J and Vadi, L (1996) A prototype expert system for the evaluation and selection of potential suppliers, *International Journal of Operations & Production Management*, Vol. 16 No. 12, 1996, pp. 106-127. University Press

Wagner, SM (2006) Supplier development practices: an exploratory study *European Journal of Marketing* Vol. 40 No. 5/6, pp. 554-571. Emerald Group Publishing Limited.

Welman, J.C. & Kruger, S.J. (2001). *Research Methodology for the Business and Administrative Sciences*. 2nd ed. Southern Africa: Oxford University Press.

Wuyts, S & Geyskens, I. (2005) The Formation of Buyer–Supplier Relationships: Detailed Contract Drafting and Close Partner Selection. *Journal of Marketing*, Vol. 69 (October 2005), p103-117

Appendix 1 Overview statistics

suppl/ ven

Consider an example where your company has attempted or is collaborating with a supplier / client

Were you the supplier or the Client

Supplier	16	47.06%
Client	18	52.94%
Total	34	

Mean	1.53
Standard Dev.	0.51
Variance	0.26
Mean Percentile	73.53%

Q20

Was there a prior close relationship with the firm - had there been previous business dealings

YES	23	71.88%
NO	9	28.13%
Total	32	

Mean	1.28
Standard Dev.	0.46
Variance	0.21
Mean Percentile	85.94%

Q21

In your view was the collaboration successful?

YES	26	76.47%
NO	8	23.53%
Total	34	

Mean	1.24
Standard Dev.	0.43
Variance	0.19
Mean Percentile	88.24%

Appendix 3 Demographics of respondents

Demographics	Demographics								
	For how long had your company been dealing with this supplier / client (years)	What is the physical distance between the supplier and client point of delivery (km)	Number of years you are working in procurement / supply chain / Sales function	number of years you have been working/ worked with this client / supplier	Size of your company (Turnover Rm per annum)	Approximate number of employees in your company	Total Spend with vendors (client) / Sales revenue (Rm) (supplier)	Approximate number of deliveries per year in or out	Number of years in operation of your organisation
	52	120	1	1	15000	5000	130	60000	100
	10	12	33	15	470	170	60	2880	12
	3	180	3	3	20000	40000	10000	52	35
	25	40	2.5	2.5	20000	50000	100	120	25
	25	300	12	3	6		400	52	12
	10	300	7	7	28000	40000	160	1000000	100
	50	180	3	20	3000	50000	115	0	50
	3	60	3	1	450	1000	140	50000	4
	15	100	3	3	20000	4000	8000	5000	100
	20	80	8	3	2000	12000	200	1	80
	3	140	2	2	360	250	144	48	7
	5	700	2	2	7	4000	3600	200	2
	5	300	15	1	20000		1	52	1
	25	100	5	5	600	250	250	200	25
	10	70	2	2	200	80	10	299	15
	12	6	5	2	600	500	400	12000	90
	7	15	10	2	500	500	400	10000	80
	0	120	2	0	500	240	500	1000	100
	15	40	4	2	3	35			
	1.5								
	2	250	3	4	300	120	300		9
	10	40	5	0.5	4000	30000			100
	10	3	5	2					10
	4	10							
	50	300	2	2	50000	35000	13000		100
	4	100	10	8	500	515		2500	50
	0	100	10	0	500	515	400	2500	50
	0	1500	0.75	0	20	35	10	28	1
	5	100	0.5	0.5	300	35	35		10
	0	8000	6	0	2000	750	2000	5	80
	5	20	30	0.5	500	300	400		0
	0	50	1	0	300	500	300		50
	0	600	8	0	500	300	250	5000	86
Min	0	3	1	0	3	35	1		0
Max	52	8000	33	20	50000	50000	13000	1000000	100
Mean	11.71	435.50	6.57	3.03	6353.87	9860.54	1529.81	50084.22	46.13
Std dev	14.53	1410.10	7.58	4.37	11647.01	17004.15	3329.80	207662.55	39.03

Appendix 4 Hofstede's country ratings

Source <http://www.clearlycultural.com/geert-hofstede-cultural-dimensions/power-distance-index/>

Country	Power Distance	Individualism	Uncertainty Avoidance	Masculinity	Long term orientation
Arab countries	80	38	68	53	
Argentina	49	46	86	56	
Australia	36	90	51	61	31
Austria	11	55	70	79	
Belgium	65	75	94	54	
Brazil	69	38	76	49	65
Canada	39	80	48	52	23
Chile	63	23	86	28	
China, Mainland					118
Colombia	67	13	80	64	
Costa Rica	35	15	86	21	
Denmark	18	74	23	16	
East Africa	64	27	52	41	
Equador	78	8	67	63	
Finland	33	63	59	26	
France	68	71	86	43	
Germany FR	35	67	65	66	31
Great Britain	35	89	35	66	25
Greece	60	35	112	57	
Guatemala	95	6	101	37	
Hong Kong	68	25	29	57	96
India	77	48	40	56	61
Indonesia	78	14	48	46	
Iran	58	41	59	43	
Ireland	28	70	35	68	
Israel	13	54	81	47	
Italy	50	76	75	70	
Jamaica	45	39	13	68	
Japan	54	46	92	95	80
Malaysia	104	26	36	50	
Mexico	81	30	82	69	
Netherlands	38	80	53	14	44
New Zealand	22	79	49	58	30
Norway	31	69	50	8	
Pakistan	55	14	70	50	
Panama	95	11	86	44	
Peru	64	16	87	42	
Philippines	94	32	44	64	19
Poland					32
Portugal	63	27	104	31	
Salvador	66	19	94	40	
Singapore	74	20	8	48	48
South Africa	49	65	49	63	
South Korea	60	18	85	39	75
Spain	57	51	86	42	
Sweden	31	71	29	5	33
Switzerland	34	68	58	70	
Taiwan	58	17	69	45	87
Thailand	64	20	64	34	56
Turkey	66	37	85	45	
Uruguay	61	36	100	38	
USA	40	91	46	62	29
Venezuela	81	12	76	73	
West Africa	77	20	54	46	16
Yugoslavia	76	27	88	21	