

An assessment of corporate entrepreneurship in a petrochemical company

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ABSTRACT

Since the beginnings of venture creation the traditional role of the entrepreneur has evolved from only being the owner of a small business to include those individuals within a large organisation who has entrepreneurial skills and applies these to benefit the company. The focus of this research study was the assessment of corporate entrepreneurship within Sasol Polymers, a division of Sasol Ltd.

A comprehensive literature review was conducted in chapter 2. In the literature review entrepreneurship, corporate entrepreneurship and an entrepreneurial climate were defined. The dimensions of corporate entrepreneurship and the 13 constructs measuring the entrepreneurial climate were discussed, after which the constructs measuring the perceived success of the organisation were presented. Chapter 2 concluded by presenting practical suggestions in which an entrepreneurial climate could be established in an organisation.

A historic overview of Sasol and Sasol Polymers was then presented. Among others; the history, vision, strategy, technology and innovation was discussed. The chapter concluded with the unique causal factors of Sasol Polymers that prompted this study.

Empirical research was conducted after the literature review and background to the organisation. The empirical research focused on discussing the results obtained from the corporate entrepreneurship questionnaire. Top, middle and lower level managers of Sasol Polymers were selected as the sample population for this study and a 50% response rate was achieved. Basic demographic information of the respondents were dealt with first, after which the perceptions of the respondents with regard to the 13 constructs measuring the entrepreneurial climate and the constructs measuring the perceived success of the organisation were discussed. Furthermore, relationships were determined between demographic variables and the constructs measured in the questionnaire.

Following the detailed empirical analysis done in chapter 4, it was concluded that managers participating in the survey regarded the constructs **vision and strategic intent, strong customer orientation** and **entrepreneurial leadership** as the most prevalent in Sasol Polymers. The least prevalent constructs required for an entrepreneurial climate were **resource availability and accessibility, tolerance for risk, mistakes and failure** and **sponsors/champions**. No practical significant difference could be found between the mean values of any of the demographical categories and the constructs measured in the questionnaire. The study concludes with practical recommendation, a measurement of the achievement of objectives and suggestions for future research.

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CHAPTER 1

NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

The current economic crisis has taken its toll on global business. Many organisations have been forced to implement drastic cost cutting exercises including retrenchment of staff. Sustainable business processes, such as Research and Development and Training and Development, are usually the first to experience budgetary cuts in financially difficult times. This stifles growth and suppresses innovation.

Innovation is even more valuable to an organisation in times of economic crisis. A recent survey conducted by Knowledge Transfer Partnerships (2008) revealed that 65% of United Kingdom manufactures sampled, felt that investing in innovation could help them “future proof” their business against competition from low-wage economies. Innovation in organisations can be fostered if there is a climate of corporate entrepreneurship. The term, corporate entrepreneurship, will be defined in chapter 2.

Corporate entrepreneurship has two primary aims: the creation and pursuit of new venture opportunities and strategic renewal (Dess & Lumpkin, 2005: 147). The key to wealth creation is viewing every value chain activity as a source of competitive advantage. Burns (2004: 53) uses the term “Entrepreneurial DNA” where he describes the characteristics of entrepreneurial individuals and the implications of these characteristics for corporate entities.

The South African petrochemical company, Sasol, has also been affected by the economic downturn with a massive 41% drop in profits (Sasol, 2009). Sasol is a well established company and is know for their innovation and cutting edge technology. The relevance of corporate entrepreneurship to Sasol will be explored further in the problem statement.

1.2 PROBLEM STATEMENT

“Enterprises with well-developed entrepreneurial capabilities are able to sustain growth and innovation, which are critical competitive advantages in the 21st century” (Scheepers, Hough & Bloom, 2008: 50). Sasol is a proudly South African company with world class leading innovation spanning across its rich 60 year history. The company has gone through a few economic cycles in the past; however it has never experienced the combination of the following recent events:

- The recent dismal financial results.
- Pressure from environmentalists for the reduction of green house gases.
- Substantial competition-related fines.
- Lifting of import protection by Government in certain markets.
- Safety concerns at some production facilities.

All divisions within Sasol have been mandated to implement sustainable, innovative solutions to address these challenges. Sasol Polymers is a division of Sasol Chemical Industries, which is a major company in Sasol's family of businesses. Profitability of Sasol Polymers was also affected by the global crisis with a drop of 37% in operating profit for financial year 2009.

Sasol Polymers previously comprised of six business units. These were Chemicals, International Trading, Monomers, Polypropylene, Polythene and Vinyls. In response to the tough economic environment, Sasol Polymers initiated a number of internal processes to reduce costs. One of these processes involved restructuring the organisation to align with the new strategy. The Chemicals and Vinyls businesses were combined to form Chlor-Vinyls and Monomers, Polythene and Polypropylene were combined to form Polyolefins.

Charles Kettering said: “The world hates change, yet it is the only thing that has brought progress”. The restructuring of Sasol Polymers has brought about major change and resulted in a much leaner and vertically integrated organisation. Leaders have now acquired much larger portfolios and have been requested to find

smarter ways of working so that the “ball is not dropped”. It is now vital that leaders are agile to take calculated risks, exploit remaining talent and identify opportunities to turn the business around and create wealth for stakeholders.

Fostering a climate of corporate entrepreneurship will ultimately encourage innovation and lead to sustainable competitive advantage. An assessment of corporate entrepreneurship was never done at Sasol Polymers and the timing is opportune to measure and improve the corporate entrepreneurial climate.

1.3 RESEARCH OBJECTIVES

The objectives of this study are divided into a primary objective and secondary objectives. These are outlined in the paragraphs below.

1.3.1 Primary objective

The primary objective of this study is to evaluate the current entrepreneurial climate within Sasol Polymers. This research further aims to make suggestions on improving the entrepreneurial climate and thus, not only promoting innovative cost cutting ideas but also to generate new income streams.

1.3.2 Secondary objectives

The secondary objectives in support of the main objective of this research are:

- To define corporate entrepreneurship.
- To conduct a literature review to gain insight into corporate entrepreneurship.
- To measure the current entrepreneurial climate in Sasol Polymers with the use of a questionnaire.
- To determine the reliability of the questionnaire by means of statistical analysis.
- To examine the relationship between selected demographic variables and the entrepreneurial climate constructs.
- To determine the managers' perception of the success of the organisation.
- To suggest practical recommendations to ensure and enhance corporate entrepreneurship in Sasol Polymers.

1.4 SCOPE OF STUDY

1.4.1 Field of study

The field of study falls within the subject discipline of entrepreneurship with specific reference to corporate entrepreneurship.

1.4.2 Organisation under investigation

Sasol Polymers production facilities are located in South Africa at Sasolburg and Secunda, with the head office in Johannesburg. Sales offices are located in Cape Town, Durban, Johannesburg and Sasolburg. This study is conducted at all business units of Sasol Polymers located within the borders of South Africa.

1.5 RESEARCH METHOD

This research, pertaining to the specific objectives, consists of two phases, namely a literature review and an empirical study.

1.5.1 Phase 1: Literature review

In phase one a comprehensive review will be given regarding corporate entrepreneurship. The sources that will be consulted include:

- Books by subject matter experts
- Published journals
- Credible internet sources
- Previous dissertations on the subject
- Sasol databases

The literature review for the study will be discussed in chapter 2 and chapter 3. The following will be discussed in each of these chapters:

Chapter 2

Chapter 2 will focus on defining entrepreneurship and corporate entrepreneurship. The dimensions of corporate entrepreneurship will be explored as well as the types of corporate entrepreneurship. The determinates of corporate entrepreneurship including the 13 constructs measuring corporate entrepreneurship will also be discussed. This chapter will also explore the factors that determine the success of the organisation.

Chapter 3

Chapter 3 will provide the background to Sasol and Sasol Polymers. The organisation operations and supply chain of Sasol Polymers will be examined. Current entrepreneurial initiatives and the challenges facing Sasol Polymers will also be discussed. The chapter will also include the causal factors that are the main drivers to this study.

1.5.2 Phase 2: Empirical study

The empirical study consists of the research design, the questionnaire used in this study, the study population, gathering of data and statistical analysis.

1.5.2.1 Research design

The aim of the research design is to establish how to design an evaluation to achieve valid results (Cummings & Worley, 2008: 197). It plans to outline how information is to be gathered for the assessment and includes identifying the data gathering method, the instruments to be used or created, how the instruments will be administered, and how the information will be organised and analysed. The research can be classified as descriptive and explorative:

- **Descriptive research** or statistical research provides data about the population being studied. It is limited to “who, what, when, where and how” of a situation and does not address the cause. The most common types of descriptive research designs are observations and surveys.
- **Explorative research** is conducted in situations where the problem is not clearly defined or the scope is not clear. It allows the researcher to familiarise themselves with the problem to be studied and possibly generate hypotheses to be tested. Explorative research is done initially before more conclusive research is undertaken.

It is concluded that only **descriptive research** is relevant to the problem identified above and will be used in this dissertation. The specific design that will be used is field research. Field research involves the collection of primary data or information. It is collected through surveys and questionnaires that are made out specifically for a purpose (University of Toronto, 2004). The advantages of field research are that people are closer to real world conditions and that the researcher can custom design the survey to discover the particular information required. Business can also be sure that the information gathered is up to date.

1.5.2.2 Constructing the questionnaire

The measuring instrument that will be used for data collection will be a questionnaire. A crucial part of good research design concerns making sure that the questionnaire design addresses the needs of the research (Burgess, 2001: 3). The two options considered for measuring the constructs of an entrepreneurial climate are:

- The **Intrapreneurial Intensity Index** that was developed by Hill (2003: 195), and is aimed at measuring the six constructs that encourage intrapreneurship. A typical item is “Employees are rewarded when they take calculated risks”, and a high score indicates a high level of Intrapreneurial Incentive Policy. In previous research (Grobler, 2008) however, did not test the reliability of this instrument using Cronbach alpha coefficients.
- The **Entrepreneurial Climate Questionnaire** was developed by Oosthuizen (2006), and is aimed at measuring the 13 constructs of an entrepreneurial climate in an organisation. The questionnaire was then adapted by Jordaan (2008). The instrument consists of three parts with the first part being the climate questionnaire consisting 65 items, and is scored on the Likert scale. A typical item is “This organisation supports many small and experimental projects realising that some will undoubtedly fail”, and a high score indicates a high level of tolerance for risks, mistakes and failure. In previous research (Oosthuizen, 2006; Jordaan, 2008; De Villiers, 2009; among others) the reliability of this instrument was found to be adequate.

1.5.2.3 Study population

According to Cummings and Worley (2008: 129), it is important to ensure that the sample of people, behaviours, or records adequately represents the characteristics of the total population. It is also stated that if done correctly, the sample can provide useful and valid information about the entire organisation. The sampling method that will be use for this study will be a **non-probability, convenience sampling** method.

Convenience sampling occurs when participants are self selected by voluntarily completing a web based questionnaire (Levine, Stephan, Krehbiel & Berenson, 2008: 253).

Table 1.1 below presents the permanent staff complement of Sasol Polymers. These figures were obtained from the Human Resources department.

Table 1.1: Number of employees at different levels at Sasol Polymers

Management classification	Sasol Level	Number of employees
Top	02	6
	2B	1
	03	25
Middle	04	84
	5A	66
	5B	86
Lower	6C	143
	06	129
	07	240
	08	518
	09	368
	10	76
	11	6
	12	1
	Total	1771

Source: Sasol Polymers Human Resources department

The total permanent staff compliment of Sasol Polymers is 1771. The target population for this study is the lower, middle and top management, excluding executive management (levels 2 and 2B). Sasol Polymers lower management starts at level 6C. The total target population for this study, as highlighted in table 1.1 above, is thus 404 employees.

1.5.2.4 Gathering of data

Permission was obtained from the Managing Director of Sasol Polymers, Mr Marinus Sieberhagen, to distribute the questionnaires to the target population. A list of the target population was obtained from the Human Resources department. An initial email with a cover letter was sent to introduce the questionnaire. Confidentiality was assured to each participant as they had to return their completed questionnaire via email. This was done to track progress and to follow up on uncompleted questionnaires. Follow-up emails were sent only to employees that did not respond. In the end a total of 203 completed questionnaires were statistically analysed.

1.5.2.5 Statistical Analysis

The Statistical Consultancy Services of the North-West University: Potchefstroom Campus, was approached for assistance in the analysis of the data collected. The gathered data was analysed using Statistica (Statsoft, 2009) and SPSS (SPSS, 2009). The validity of the questionnaire was assessed by calculating Cronbach alpha coefficients.

1.6 LIMITATIONS OF THE STUDY

This research is confined to only one division of Sasol, namely Sasol Polymers, and excludes Polymers International operations in Iran and Malaysia. This research is also only limited to lower, middle and top management. The sample can therefore not be considered to be representative of the petrochemical industry in South Africa or within Sasol.

No exploratory factor analysis, to assess the validity of the questionnaire, was done due to a limited sample size. This study provides some evidence of construct validity, but further research is needed before the instrument could be utilised to diagnose corporate entrepreneurship.

1.7 LAYOUT OF STUDY

This study will be divided into five chapters. The graphical representation of the study layout is presented in Figure 1.1 below.

Figure 1.1: Layout of study

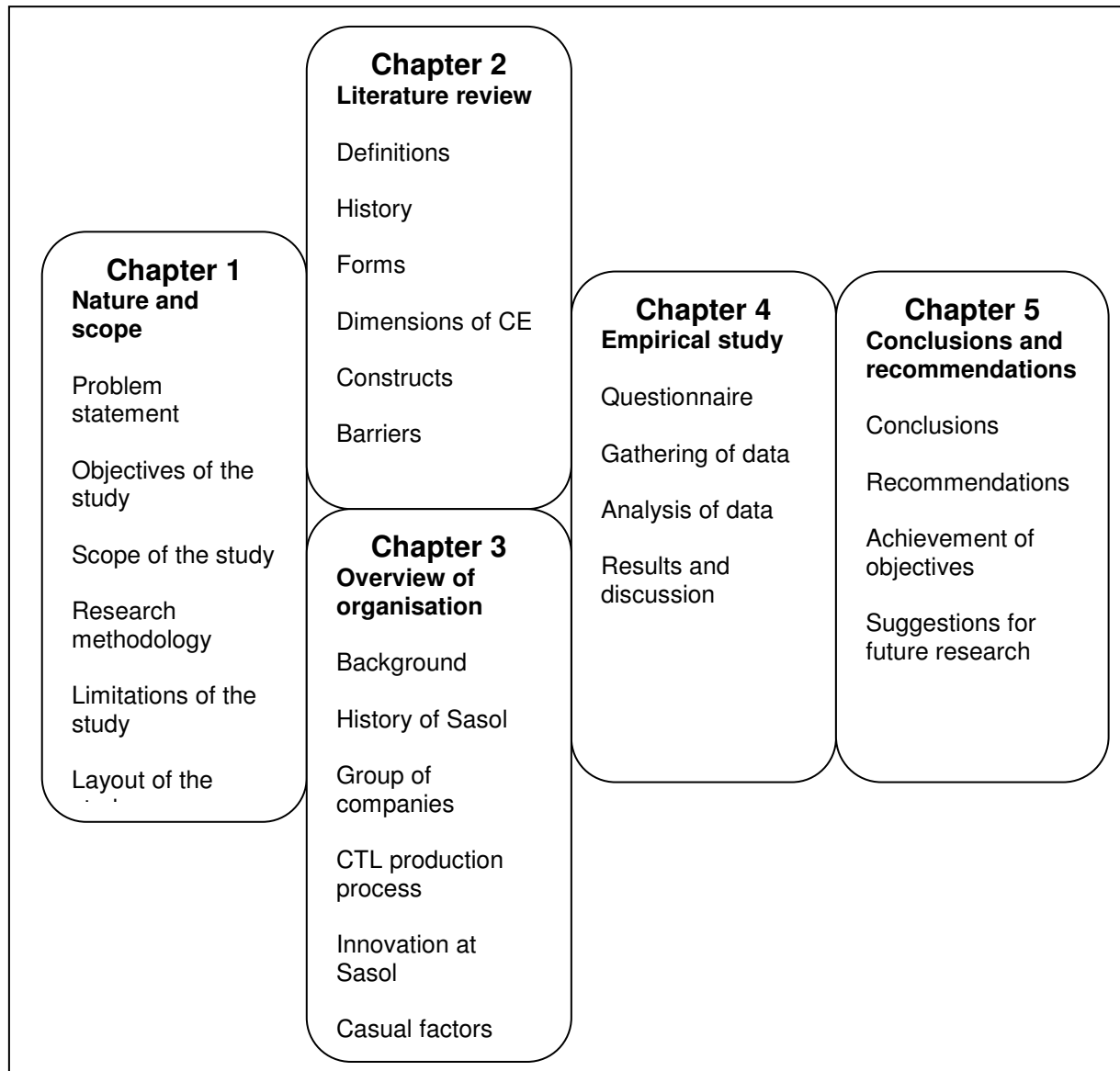


Figure 1.1 above graphically represents the contents of this study. A more detailed explanation of the contents of each chapter is provided below.

Chapter 1: Nature and scope of the study

Chapter 1 provided an overview and background to the study. It set out the problem statement, objectives, scope, research methodology and limitations of the study. The concept on corporate entrepreneurship and the effects of the global economic crisis are briefly discussed in the introduction. The problem statement explores the strain on profitability and the need for innovative solutions at the recently restructured Sasol Polymers. The primary and secondary objectives for the study are then derived from the problem statement. Firstly an assessment of corporate entrepreneurship will be done at Sasol Polymers, thereafter recommendations will be made to promote and grow the current entrepreneurial climate.

The scope of the study defined the field of study and the organisation under investigation. The research methodology showed that research was done through a literature study and empirical research. The empirical research was done by means of a questionnaire that was completed by a predefined study population. The limitations of the study are discussed and the chapter concludes with the layout of the study.

Chapter 2: Literature review

Chapter 2 reviews corporate entrepreneurship as a basis for this research. The concept of corporate entrepreneurship will be defined and the types and characteristics thereof explored. The history of corporate entrepreneurship will then be presented followed by the determinants and characteristics of an entrepreneurial climate. A substantial portion of the chapter is dedicated to the 13 constructs assessing an entrepreneurial climate. The chapter concludes with the barriers to corporate entrepreneurship and factors that determine the success of the organisation.

Chapter 3: An overview of Sasol

Chapter 3 provides the background information and profile of Sasol and Sasol Polymers. The vision, strategy and values are presented as introduction to Sasol. The illustrious history of the organisation is then explored followed by the presentation of the various divisions and business units within Sasol. The unique Coal to Liquid (CTL) production process is also explained. Innovation at Sasol is examined and the chapter concludes with the identification of the casual factors for this study.

Chapter 4: Empirical study

In this chapter, the data gathering process will be discussed, including a comprehensive explanation of the research methodology that was followed to conduct the empirical study. A discussion on the statistical methods used to analyse data and findings after analyses is also included. The reliability of the entrepreneurial climate questionnaire was tested and established by calculating Cronbach alpha coefficients. The demographic information of the respondents is analysed. These include gender, age group, race, highest academic qualification, managerial level and department. The chapter concludes with the correlation of the entrepreneurial constructs to the demographic variables.

Chapter 5: Conclusions and recommendations

Chapter 5 highlights the conclusions reached from the empirical study. Recommendations will be made to the management of Sasol Polymers based on the conclusions reached. The achievement of the study objectives is then explored and the chapter concludes with recommendations for future research.

CHAPTER 2

CORPORATE ENTREPRENEURSHIP: A LITERATURE REVIEW

2.1 INTRODUCTION

The global business environment is becoming increasingly complex and risky. This requires organisations to be agile and respond to change faster than their competition. Block and Macmillan (2003: 8) state that to survive in this dynamic and challenging environment, organisations need a level of innovation, speed and flexibility that was unheard of a decade ago. In response to these challenges, firms must follow an entrepreneurial strategy and encourage their organisational members to act entrepreneurially (Brundin, Patzels & Shepherd, 2008: 222).

Promoting entrepreneurial behaviours and practices has taken the forefront in the strategies of many large organisations. This is where creating innovation is perceived as an important means of establishing and maintaining competitive advantage, as well as a method for initiating corporate renewal (Russell, 1999: 65). According to Ireland, Kuratko and Morris (2006: 14), leading edge organisations see the effective use of corporate entrepreneurship as a source of competitive advantage and as a path to higher levels of financial and non-financial performance.

The organisation's ability to continuously innovate its products and business model is essential to its future success. Entrepreneurship and corporate entrepreneurship are, in many cases, the basis of technological innovations and firm renewal (Menzel, Aaltio & Ulijn, 2007: 733). Most organisations find that their ability to identify and innovatively exploit opportunities decreases as they move from the entrepreneurial to the growth phase. However, the key to success in the highly competitive and dynamic environment that most organisations presently operate in, is to retain this ability (Ramachandran, Devarajan, & Ray, 2006: 85).

Many large organisations are seeking ways of reinventing or revitalising their entrepreneurial roots. These organisations often long for some of the spark, innovation, speed and risk taking that they once had, but which have slowly eroded under the weight of size, bureaucracy, complex processes and hierarchy. Corporate entrepreneurship encompasses a set of activities, attitudes, and actions that are believed to help large organisations regain some of this lost magic (Thornberry, 2001: 526).

The rest of this chapter is an exposition of a literature study that has been conducted to gain more insight into the subject of corporate entrepreneurship. The relevant terminology, being entrepreneurship, corporate entrepreneurship, and the entrepreneurial climate will be defined. The interlinking of these concepts will also be presented, as well as the history of corporate entrepreneurship. After this foundation, with the terminology clearly defined and explained, the various dimensions or essential elements of corporate entrepreneurship will be identified and discussed. A substantial portion of this chapter is dedicated to examining the 13 constructs measuring an entrepreneurial climate. The chapter then concludes with an exposition of employees' perception of organisational success and steps to establish a corporate entrepreneurial climate in an organisation

2.2 DEFINITION OF CONCEPTS

In the past, entrepreneurship was seen by the broad community as robbers who exploited workers for their own success or by their compatriots as captains of industry and leaders in developing the economy of a country. In real life, few entrepreneurs fit either description. In reality they are those who, through hard work and long hours, generate business success (Van Aardt, Van Aardt & Bezuidenhout, 2008: 11). The subsequent sections will define the concepts of entrepreneurship, corporate entrepreneurship and entrepreneurial climate.

2.2.1 Entrepreneurship

Timmons and Spinelli (2009: 83) define entrepreneurship as a way of thinking, reasoning and acting that is opportunity obsessed, holistic in approach and

leadership balanced. This definition of entrepreneurship has evolved over the past two decades from the research at Babson College and the Harvard Business School and has recently been enhanced by Spinelli. The word entrepreneur is French and, literally translated, means “*between-taker*” or “*go-between*” (Hisrich & Peters, 1992: 7). Shesky (1994) points out that by breaking down the word into its three Latin roots, ‘*entre*’ meaning to ‘enter’, ‘*pre*’ meaning ‘before’ and ‘*neur*’ meaning ‘nerve centre’, one can conclude that the term describes someone who enters a business in time to form or substantially change that business’s nerve centre.

Van Aardt *et al.* (2008: 11) further describe entrepreneurship as: “the act of initiating, creating, building and expanding an enterprise or organisation, building an entrepreneurial team and gathering other resources to exploit an opportunity in the market place for long term gain.” This definition of entrepreneurship expects growth, expansion and long term financial gain. This is why a small business that is aimed only at the survival of its owner cannot be seen as an entrepreneurial venture under this definition.

Morris and Kuratko (2002: 23) restate the broad nature of entrepreneurship as it is not only concerned with creating financial wealth, but also the creation of wealth on a personal level. They further comment that innovation in itself is not enough, but needs to be the precedent to change, growth and the creation of value. On the same note, entrepreneurship is a process of creating value by bringing together a unique package of resources to exploit an opportunity. This definition presents four important aspects, namely:

- Entrepreneurship involves a process. It is manageable and can be broken into steps and does not end. It can be applied in any organisation.
- Entrepreneurship creates value where there was none before. This value is then created in the organisation and in the market place.
- Entrepreneurs put resources together in a unique way. Unique combination of money, people, procedures, technologies, materials, facilities, packaging, distribution channels, and any other resources.

- Entrepreneurship is an opportunity driven behaviour. It involves pursuing an opportunity regardless of the resources currently controlled.

From the literature review, it is concluded that Sexton and Bowman-Upton (1991: 12) provide the most concise definition of entrepreneurship: *“an approach to general management that begins with opportunity recognition and culminates with the exploitation of the opportunity”*.

2.2.2 Corporate entrepreneurship

According to Kuratko and Hodgetts (2001: 53), corporate entrepreneurship can be described as: "A process whereby an individual or a group of individuals, in association with an existing organisation, creates a new organisation or instigates renewal or innovation within the organisation." These authors argue that under this definition the following are important and legitimate parts of the corporate entrepreneurship process:

- **Innovation:** introducing something new to the marketplace.
- **Strategic renewal:** organisational renewal involving major strategic and/or structural changes.
- **Corporate venturing:** efforts that lead to the creation of new business organisations within the corporate setting.

Barringer and Bluedom (1999: 422) state that the main assumption that underlies the notion of corporate entrepreneurship is that it is a behavioural phenomenon and all organisations fall along a conceptual continuum that ranges from highly conservative to highly entrepreneurial. Entrepreneurial firms are risk-taking, innovative, and proactive. In contrast, conservative firms are risk-averse, are less innovative, and adopt a more 'wait and see' posture.

Ramachandran *et al.* (2006: 86) describe corporate entrepreneurship as the process by which individuals inside organisations pursue opportunities independent to the resources they currently control. An entrepreneurial manager links up disconnected

pieces of new technical knowledge that would provide a solution to a customer problem, matches this technical capability with the satisfaction of the market, and harvests resources and skills needed to take the venture to the next stage. This process leads to the birth of new businesses and to the transformation of organisations through a renewal of their key ideas.

Russell and Russell (1992: 639) combined the views of Burgelman (1984) and Schumpeter (1934) and defined the practice of corporate entrepreneurship as the improvement of organisational competencies through innovation.

Corporate entrepreneurship has also been defined as entrepreneurial activities in the form of product, process, and organisational innovations (Zahra & Covin, 1995: 44). Corporate entrepreneurship processes refer to creation of new business ventures, and other innovative activities such as development of new products, services, technologies, administrative techniques, strategies, and competitive postures (Antoncic & Hisrich, 2000: 2).

Morris, Allen, Schindehutte and Avila (2006: 469) highlight corporate entrepreneurship as a process of organisational renewal and new business creation. In a corporate context, entrepreneurial activities revolve around organisational sanctions and resource commitments for the purpose of innovative results (Zahra & Covin, 1995: 52). These activities may take place on the corporate, division, functional, or project levels, with the unifying objective of improving a company's competitive position and financial performance. Entrepreneurship within established organisations can take the following forms:

- New strategic directions.
- Initiatives from below.
- Autonomous business creation.

From the above it is concluded that there is generally no single definition for corporate entrepreneurship. However, the commonalities that can be extracted from

all the researchers' definitions are the utilisation of resources in a large organisation for the implementation of innovative solutions to accelerate growth.

2.2.3 Entrepreneurial climate

Organisations interested in developing and preserving entrepreneurship should strive to create a corporate environment in which those who believe in the attractiveness of opportunities feel encouraged to pursue them (Ramachandran *et al.*, 2006: 90). In such a climate, a process of self-selection takes place whereby entrepreneurs naturally come to the fore. Since entrepreneurial activity involves high levels of uncertainty, management under such conditions requires rapid information processing abilities and high levels of trust in entrepreneurial individuals and teams. In this process, management ensures high level of interaction between the individual, the organisation, and the external environment at all levels.

Bhardwaj, Agrawal and Momaya (2007: 134) comment that management support is a measure of the willingness of managers to facilitate and promote entrepreneurial activity in the organisation. This support can take many forms, including championing innovative ideas, providing necessary resources or expertise, and institutionalising the entrepreneurial activity within the firm's system and processes. The importance of management involvement, as well as top management support, commitment, style, staffing and rewarding venture activities have been associated with creating an effective entrepreneurial climate. Organisational support in terms of training and trusting individuals within the firm to detect opportunities as well as related practices such as work discretion, innovation rewards, time flexibility, and loose intra-organisational boundaries have been defined as crucial organisational elements impacting the entrepreneurial climate.

Heinonen and Toivinen (2007: 170) concur and state that organisational support, such as work discretion and autonomy, reward and reinforcement, time availability and defined boundaries, are critical organisational climate antecedents of corporate entrepreneurship. Corporate entrepreneurship can be sustained in the organisation if it is embedded in the culture of the organisation.

Bessant and Tidd (2008: 57) point out that culture and climate have been used interchangeably by different scholars. According to Timmons and Spinelli (2009: 263), an entrepreneurial culture is described as a common value system existing in growing new ventures, which is difficult to articulate, elusive to measure and is evident in behaviour and attitudes. The entrepreneurial climate attracts and encourages the entrepreneurial achievers, and it helps maintain the intensity and pace so characteristic of high growth firms.

Nayager and Van Vuuren (2005: 32) summarise the definition by stating: “Entrepreneurial culture should encourage employees to be creative and innovative, to experiment with new products, to make suggestions for the improvement of products and internal processes, to take risks, responsibility and ownership of their creations.” This is achievable only if management:

- Allows employees to take risks.
- Tolerates mistakes and allows failure in the attempts at innovation.
- Supports employees in their entrepreneurial initiatives.
- Empowers employees to do their job and be responsible in their work.
- Rewards employees for being innovative.
- Provides resources to employees to develop their innovation.
- Allows flexibility and time in developing their innovation.

2.2.4 Combining the concepts of entrepreneurship and corporate entrepreneurship

There are as many similarities as there are differences in the concepts of entrepreneurship and corporate entrepreneurship. A risk-averse person with some entrepreneurial attributes will probably opt to work in an organisation that encourages corporate entrepreneurship, whereas another may choose the pure entrepreneurial route. Table 2.1 below, as developed by Morris and Kuratko (2002: 63), illustrates the comparison between these two concepts.

Table 2.1: Comparison between individual entrepreneurship and corporate entrepreneurship

Individual entrepreneurship	Corporate entrepreneurship
The individual takes the risk.	The business assumes the risk, and the individual only takes on a career-related risk.
The entrepreneur owns the concept.	The organisation owns the concept, and usually also the intellectual rights thereof.
The entrepreneur owns all or most of the organisation.	The entrepreneur may have no equity in the organisation or only a small percentage.
Potential rewards for the entrepreneur are theoretically unlimited.	There are clear limits placed on the rewards that the entrepreneur can receive.
One misstep can mean failure and insolvency.	There is more room for errors, as the organisation can absorb it.
The entrepreneur is very vulnerable to outside influences.	The organisation is a bit more insulated from outside influences.
The entrepreneur is independent and usually takes all of the credit due.	The corporate entrepreneur may have to share his credit with the rest of the team.
The individual entrepreneur has a lot of flexibility to experiment and try new ideas.	Rules, procedures and bureaucracy may hinder the ability to manoeuvre.
High speed of decision making.	Longer approval cycles.
The entrepreneur has no safety net, and his venture is likely to be his only source of income.	The individual still has a dependable benefit package and monthly salary.
Very little security.	The intrapreneur still has a high level of job security.
The individual often has very few people to talk to and share ideas with.	Often in a corporation, there would be an extensive network for bouncing around ideas.
Initially the entrepreneur might be forced to limit his scale and scope due to practical considerations.	There is a potential for a sizeable scale and scope in a fairly short amount of time.
The entrepreneur will mostly experience severe resource limitations.	Often, the intrapreneur will have access vast resources

Source: Morris and Kuratko (2002: 63)

Table 2.1 presents the comparison between an entrepreneur and a corporate entrepreneur. From the above table, it is concluded that the main reasons an individual will opt for a particular career direction are:

- **Risk and reward:** an entrepreneur is more risk prone and will usually reap the bigger reward.
- **Independence:** an entrepreneur would typically not fit in a corporate environment as they would prefer autonomy.

2.3 HISTORY OF CORPORATE ENTREPRENEURSHIP

Macrae (1982) predicted, in an article in *The Economist* in 1976, a number of trends in business. One of these predictions was that dynamic corporations of the future should simultaneously be trying different ways of doing things in competition with each other. He argued in a survey called “The Coming Entrepreneurial Revolution” that the methods of operation in business were going to change radically in the next few decades. This was going to be in a direction opposite to that which most businessmen and nearly all politicians expected.

The survey provoked both enthusiasm and infuriation in almost equal measures and lead to invitations to lecture in more than twenty countries. He revisited his predictions in 1982 and observed that there was a trend of confederations of intrapreneurs (Kautz, 1999).

Gifford and Elizabeth Pinchot were developing their concept of the intra-corporate entrepreneur, around the same period. They were the first to coin the term “intrapreneurship”, in 1985, giving credit for their thinking to the 1976 article by Macrae. Based on the success of some of their early trials they began a school for intrapreneurs near New York (Macrae, 1982) and in 1985 they published their first book called *Intrapreneuring*. By 1986, John Naisbett was citing intrapreneurship as the way for established businesses to find new markets and new products in his book, *Re-inventing the Corporation*, whilst at about the same time, the developments of the Macintosh computer were being described as intrapreneurial.

Rao (2004: 35) argues that the discipline of corporate entrepreneurship refers to old models and examples that have existed for more than a century. He challenges whether corporate entrepreneurship has changed that much over time and concludes that there has been no revolutionary change by current standards.

Goosen, De Coning and Smit (2002: 21) concur that over the recent years, corporate entrepreneurship has been viewed as a means of invigorating corporate organisations. This view is based in part on the belief that an intrapreneurial element will assist the organisation to be more dynamic and competitive.

Fattal (2003: 14) states that in the past 20 years, entrepreneurship has become a much appreciated element of our economic fabric. It has proven its worth to individuals who have taken this route. Entrepreneurship has also been recognised by the various government programmes and venture capital initiatives that support innovative entrepreneurial projects.

In early 2000's the world was rocked with the scandal in organisations like Enron, Global Crossing, Andersen, Tyco and WorldCom. It was from this backdrop that Kuratko and Goldsby (2004: 14) commented that in overcoming internal obstacles to reaching their professional goals, managers can often walk a fine line between clever resourcefulness and outright rule breaking. This dilemma, however, has not been recognised in the literature on corporate entrepreneurship up to that point.

Chowdhury (2005: 728) focused his research on demographic diversity in entrepreneurial teams and its influence on team effectiveness. He argued that: "The diversity of composition is not as important as team commitment and the process of cognitive comprehensiveness that utilised diverse decision criteria." Entrepreneurial teams should thus create an environment of trust and loyalty for improving team commitment. Additionally, entrepreneurs should collectively formulate an agreed-upon system of team interaction. This would not only ensure that each member proposed different approaches, points of views and alternatives, but would also encourage members to compare the diverse alternatives and approaches and weigh them against each other.

Seshadri and Tripathy (2006: 17) delved into the psychology of the intrapreneur and explored the intrapreneurial mindset as opposed to the 'employee' mindset. Intrapreneurship at any level (individual, group or organisation) fundamentally involves taking ownership and operating with an entrepreneurial mindset. In the corporate context, since the person leading the reinvention is not an autonomous entrepreneur, he is more appropriately referred to as an "intrapreneur." They found that it was very unlikely that reinvention at any level can occur without this basic transformation of perspective from "employee" to "psychological owner" or intrapreneur.

2.4 FORMS OF CORPORATE ENTREPRENEURSHIP

Stopford and Baden-Fuller (1994: 521) identify three types or forms of corporate entrepreneurship:

- One is the creation of new businesses within an existing organisation. This can be referred to as corporate venturing or intrapreneurship.
- Another is the more pervasive activity associated with the transformation or renewal of the existing organisations.
- The third is where the enterprise changes the 'rules of competition' for its industry.

Stopford and Baden-Fuller (1994: 521) found that different types of entrepreneurship can exist in the same firm at any given time. The different dimensions or attributes of entrepreneurship are common to all types, and these attributes change their role and relative importance over time. The different dimensions of corporate entrepreneurship will be discussed in section 2.5 of this chapter.

Rao (2004: 13) holds the view that there are at least four generic flavours of corporate entrepreneurship:

- **Corporate venturing:** forming a business within an existing business.
- **Resource re-organisation:** new sequence or combination of existing resources and capabilities.
- **Industry rule breaking:** redefining the rules or basis for competition within the industry.
- **Intrapreneuring:** encouraging intrapreneurial behaviour among employees.

Covin and Miles (1999: 50) identified four forms of corporate entrepreneurship, with each one oriented to either rejuvenating or intentionally redefining the organisation or establishing innovation. Table 2.2 illustrates the key attributes of these four forms below.

Table 2.2: Key attributes of the four forms of corporate entrepreneurship

Forms of CE	Focus of CE	Typical basis of competitive advantages	Typical frequency of new entrepreneurial activity	Magnitude of negative impact if new entrepreneurial activity is not a success
Sustained regeneration	New products or new markets	Differentiation	High frequency	Low
Organisational rejuvenation	The organisation	Cost leadership	Moderate frequency	Low to moderate
Strategic renewal	Business strategy	Varies with specific form manifestation	Less frequency	Moderate to high
Domain redefinition	Creation and exploitation of product market arenas	Quick response	Infrequency	Varies with specific form manifestation and contextual consideration

Source: Covin and Miles (1999: 57)

Table 2.2 identifies the four forms of corporate entrepreneurship as defined by Covin and Miles (1999: 57). These will now be explained under each subheading below.

2.4.1 Sustained regeneration

Sustained regeneration is the form of corporate entrepreneurship concerned primarily with continuous innovations. It is the most frequently recognised form of corporate entrepreneurship (Dess, Ireland, Zahra, Floyd, Janney & Lane, 2003: 354). The organisation develops cultures, processes, and structures to support and encourage a continuous stream of new product introductions in its current markets as well as entries with existing products into new markets (Covin & Miles, 1999: 51). Organisations are aware of product life cycles and often frame product strategies around the competitive expectations associated with them. These organisations tend also to be learning organisations that embrace change and willingly challenge competitors in battles for market share.

Organisations involved with corporate entrepreneurship commit to the importance of learning and adapting while actively competing against rivals. They demonstrate an ability to introduce new products and enter new markets. An example of this was demonstrated by the company Arm and Hammer, which used sustained regeneration as it creatively worked with their core product, baking soda. According to Covin and Miles (1999: 51), “through the development and introduction of baking soda-based toothpaste and deodorising products, Arm and Hammer has been able to capitalize on emerging product-market opportunities unseen or underappreciated by competitors in its core industry segment.”

2.4.2 Organisational rejuvenation

Organisational rejuvenation is concerned primarily with improving the firm’s ability to execute strategies. This form often entails changes to value chain activities such as internal processes, structures and capabilities (Dess *et al.*, 2003: 355). Demonstrating process and administrative innovations rather than product innovations, organisational rejuvenation shows that firms can become more entrepreneurial through processes and structures as well as by introducing new product and/or entering new markets with existing products.

In recent years, General Electric rejuvenated itself by developing and using what others sometimes viewed as radical administrative routines and operating policies to support them. For the most part, corporate entrepreneurship efforts oriented to organisational rejuvenation are framed around support activities (procurement and human resource management) rather than primary activities (inbound logistics and operations). The most successful organisational rejuvenation efforts renew one or more major aspects of the firm's operations.

2.4.3 Strategic renewal

Strategic renewal refers to the corporate entrepreneurship phenomenon whereby the organisation seeks to redefine its relationship with its markets or industry competitors by fundamentally altering how it competes (Covin & Miles, 1999: 52). Thus, the nature of rivalry with competitors is altered as the firm concentrates on renewing the strategies it uses to successfully align itself with its external environment. With organisational rejuvenation, the organisation itself is the focus of corporate entrepreneurship efforts. This is in stark contrast to strategic renewal's intention of positively mediating the organisation-environment interface.

Corporate entrepreneurship as strategic renewal allows the firm to more profitably exploit product-market opportunities. Often, this outcome is achieved when the firm repositions itself in ways that allow simultaneous exploitation of current competitive advantages and exploration for advantages that will lead to future success. Harley-Davidson's turnaround demonstrates the use of strategic renewal as a form of corporate entrepreneurship.

2.4.4 Domain redefinition

The corporate entrepreneurship form of domain redefinition allows the firm to proactively seek to create a new product market position that competitors have not recognised or actively sought to exploit (Covin & Miles, 1999: 54). The focus here is exploring what is possible rather than exploiting what is currently available. The commitment to reenergise the firm by redefining its domain is also intended to establish first mover advantages.

Within the domain redefinition circumstances, the entrepreneurial organisation may be able to create the industry standard or define the benchmark against which later entrants are going to be measured. As the first firm to sell an offering in a new product category, the company redefining its domain is proactive and demonstrates a strong entrepreneurial orientation. Sony's introduction of the innovative Walkman illustrates first mover actions that created a new product arena.

2.5 DIMENSIONS OF CORPORATE ENTREPRENEURSHIP

Scholars concur that the discipline of corporate entrepreneurship comprises of a number of dimensions. Table 2.2 below reveals the product of a literature study that was done to consolidate the views of various researchers.

Table 2.3: Dimensions of corporate entrepreneurship

Dimensions	Researchers				
	Morris <i>et al.</i> (2002: 39)	Burns (2004: 12)	Hisrich <i>et al.</i> (2005: 44)	Dess <i>et al.</i> (2005: 147)	Antoncic <i>et al.</i> (2003: 19)
Innovation	X	X	X	X	X
Risk taking	X				X
Proactive patterns	X	X	X	X	X
Corporate venturing		X	X	X	X
Organisational self-renewal			X	X	X
Competitive aggressiveness				X	X
Autonomy				X	
New businesses					X

Source: Adapted from Antoncic *et al.* (2003: 19)

Table 2.2 presents, in matrix format, the views of various researchers on their interpretation on the dimensions of corporate entrepreneurship. These dimensions will be explored in the subsequent paragraphs, as defined by Antoncic *et al.* (2003: 14-19).

2.5.1 Innovation (process, product and service)

Innovation as a dimension of corporate entrepreneurship refers to product and service innovation with an emphasis on development and innovation in technology (Morris *et al.*, 2002: 41). Corporate entrepreneurship includes new product development, product improvements, and new production methods and procedures. One part of the entrepreneurial posture is a reflection of itself in the extensiveness and frequency of product innovation and the related tendency of technological leadership (Hisrich *et al.*, 1992: 44).

2.5.2 Risk taking

From the onset, risk taking has been viewed as a fundamental element of entrepreneurship (Morris *et al.*, 2002: 50). Risk, as the possibility of loss, may be viewed as an inherent characteristic of innovativeness, new business formation, and aggressive or proactive actions of existing firms. While there is an argument for a possible strong association of risk taking with other corporate entrepreneurship dimensions, risk taking has been considered a distinctive characteristic or dimension of entrepreneurship in existing firms. Risk taking can refer to the quick pursuit of opportunities, fast commitment of resources and bold actions (Antoncic *et al.*, 2003: 17).

2.5.3 Pro-activeness

The pro-activeness dimension is related to pioneering and initiative taking in pursuing new opportunities or entering new markets. This dimension also refers to the extent to which organisations attempt to lead rather than follow competitors in such key business areas as the introduction of new products or services, operation technologies and administrative techniques. Pro-activeness includes pioneering and

initiative taking that is reflected in the orientations and activities of top management (Dess *et al.*, 2005: 151).

2.5.4 New ventures and new business

New business venturing is a salient characteristic of corporate entrepreneurship since it can result in new business creation within an existing organisation. In large corporations, as well as in smaller established firms, new venturing can include the formation of more formally autonomous or semi-autonomous units of firms, often labelled incubative entrepreneurship (Burns, 2004: 14). Pursuit of and entering new business by redefining the company's products or services and/or by developing new markets is considered an important dimension of corporate entrepreneurship. Overall, for all organisations, regardless of size, the new ventures dimension refers to the formation of new units or firms, whereas the new businesses dimension refers to entering new businesses by the existing organisation without forming new organisational entities (Antoncic *et al.*, 2003: 18).

2.5.5 Organisation self-renewal

The organisation self-renewal dimension reflects the transformation of organisations through the renewal of the key ideas on which organisations are built. This dimension has strategic and organisational change connotations and includes a redefinition of the business concept, reorganisation, and the introduction of system-wide changes for innovation. It is believed that the organisational imperative to continual renew its business and achieving adaptability and flexibility as crucial characteristics of an entrepreneurial corporation (Antoncic *et al.*, 2003: 18).

2.5.6 Competitive assertiveness

This dimension refers to the organisations propensity to challenge and aggressively compete with its industry rivals. Competitive assertiveness is viewed as a managerial disposition expressed in an organisational willingness and desire to take on and dominate competitors (Dess *et al.*, 2005: 160). Some scholars find it hard to distinguish between competitive assertiveness and pro-activeness, however these

should be considered as two distinct dimensions of organisational level entrepreneurship. Differentiation can be drawn due to the fact that pro-activeness relates to the pioneering in seizing market opportunities, whereas competitive aggressiveness is associated with an aggressive organisational relationship to its competitors (Antoncic *et al.*, 2003: 18).

2.5.7 Autonomy

This dimension of corporate entrepreneurship can be defined as independent action of an individual or team in bringing forth an idea or a vision and carrying it through to completion. The core idea of personal autonomy is to have personal rule of the self while remaining free from controlling interference by others. The autonomous person acts in accordance with a freely self-chosen and informed plan (Dess *et al.*, 2005: 160).

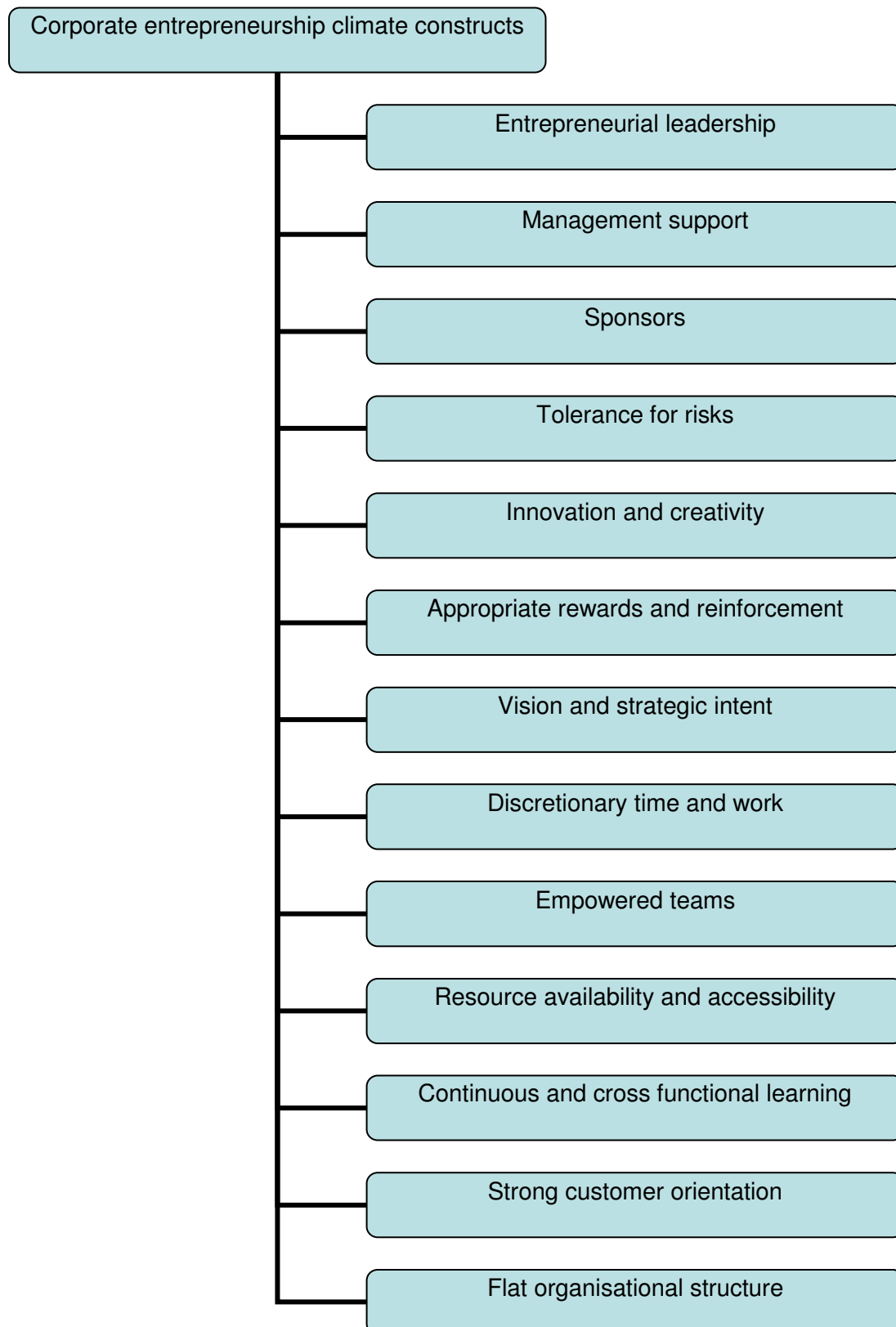
An entrepreneurial climate will be ultimately encouraged if organisations allow employees to make decisions about their work process and avoid criticising them for making mistakes while innovating. Environments that allow autonomous decision making result in employees feeling valued for their contribution to the organisation in attaining its goals and objectives. Decentralisation, flexibility and the absence of inhibiting rules and regulations are typical features of autonomy.

The above dimensions are distinct in terms of their activities and orientations. Antoncic *et al.* (2003: 20) proposes that corporate entrepreneurship should be viewed as a multidimensional concept with eight distinctive, yet related elements. By analysing nurturing and advancing these corporate entrepreneurial dimensions, managers can make significant improvements in performance of their organisations.

2.6 CONSTRUCTS OF CORPORATE ENTREPRENEURSHIP

Various scholars have emphasised necessary characteristics that contribute to the creation and sustainability of an entrepreneurial climate. According to Oosthuizen (2006), there are 13 constructs that are vital for establishing of a corporate entrepreneurial climate. These constructs are illustrated in figure 2.1 below.

Figure 2.1: Constructs of an entrepreneurial climate



Source: Adapted from Oosthuizen (2006)

2.6.1 Entrepreneurial leadership

Timmons and Spinelli (2009: 523) argue that no single leadership pattern seems to characterise successful ventures. It is stated that entrepreneurial leadership is based on expertise and not authority. These leaders do not force their own solution on the team or exclude the involvement of potential resources; instead the leader understands the relationships among tasks and between the leader and their followers. They are able to lead in those situations where it is appropriate, including managing actively the activities of others through direction and suggestions. Lowe and Marriott (2006: 109) suggest that entrepreneurial leaders need to be lateral leaders by inspiring their followers and leading alongside.

The term entrepreneurial leader can refer to two different groups of people, with two distinct roles in the organisation (Cohen, 2004: 1). The first kind of entrepreneurial leaders are the people who reside at the top of the organisation chart and who have broad responsibilities across an organisational unit, or even the entire organisation. The key roles of these leaders includes setting the organisation's vision, and then creating the space, systems, procedures and culture that free others to take responsible initiative that can achieve the vision. According to Turner (2002: 25), entrepreneurial leadership is about encouraging others within the organisation to develop their pioneering spirit by leading from the front, going beyond the immediate, and ensuring that structures are not restricted.

The second kind of entrepreneurial leader refers to someone at any level of the organisation who works to uncover and pursue opportunities for constructive change. These opportunities for change include finding and pursuing new products, processes, services, markets, organisational approaches, and more. They may identify a broken process that wastes resources or delays service, learn of a new procedure for building customer loyalty, use careful analysis to spot a new market segment, and then figure out how to implement a solution (Cohen, 2004: 1).

In this study, the construct of **entrepreneurial leadership** will be measured by a five-point Likert scale and refers to whether leaders take a long term view; challenge the status quo; instil organisational values; lead by example and seek to maximise opportunities (Jordaan, 2008: 49).

2.6.2 Management support

Management support should coordinate key non-controlled resources, to be flexible and to create an environment where employees are free to create and seek opportunity (Brown, Davidson & Wiklund, 2001: 954). According to McBeth and Rimac (2004: 20), when management commits to an entrepreneurial orientation, the culture of the organisation through its people must be able to support this transformation.

Management structure encourages employees to believe that innovation is part of the role-set for all organisation members. This support is reflected by quick adoption of employees' ideas, the recognition of people who support small experimental projects and provide money to get the project off the ground (Kuratko & Hodgetts, 2004: 63). Kuratko, Montagno and Hornsby (1990: 52) point out that the concept of management support is to encourage employees to believe that innovation is embedded in the role of all employees.

Srivastava and Lee (2005: 463) state that within the domain of the research on the role of top management in new product moves, are researchers who have argued that top management support to new product development teams is particularly important for innovation. Brundin, Patzels, and Shepherd (2008: 223) maintain that the corporate environmental factors, such as top management support, encourage organisational members to act entrepreneurially.

According to Kuratko and Hodgetts (2004: 65), management must play a more people orientated or intangible role. They must see the importance of valuing people to nurture talents and recognise efforts made where appropriate. If the needs of staff are accommodated, it is highly probable that they will use their full potential and

competencies such as imagination and goodwill towards uplifting the company. Employees will be concerned with the company's goals, only when they feel cared for, and this can only be accomplished with proper management support (Powell, 2004: 8).

For the purpose of this study, the construct of **management support** includes whether managers encourage idea development; whether managers is receptive to ideas and suggestions; whether managers encourage employee participation and whether managers tolerate rule bending in order to keep promising ideas on track (Jordaan, 2008: 51).

2.6.3 Sponsors and champions

Van Aardt *et al.* (2008: 15) suggest that the availability of sponsors and champions are a critical success factor for implementing entrepreneurship within an established organisation. According to Peterson and Johnson (2004: 62), effective entrepreneurial teams generally have a champion, a sponsor, and rewards to motivate the innovative spirit. Sponsors form an important connection between top management and intrapreneurs within the organisation and act as mentors to innovators. Champions are people who encourage projects during critical stages. They keep decision-makers and sponsors informed, lead team members, and enthusiastically promote the project at all levels of the organisation.

Sponsors are also described as corporate managers, by Morris and Kuratko (2002: 93), at higher levels in the organisation willing to protect intrapreneurs by building environments of safety around them. Sponsors have a sincere belief in the vision and aid the intrapreneur in gaining access to resources and information. It is also stated that they assist in keeping the entrepreneurial project "under the radar screen," where it has less visibility and is not as likely to become a target for elimination (Morris & Kuratko, 2002: 93).

Garvin and Levesque (2006: 105) state that new entrepreneurial ventures that fails to attract influential sponsors, won't receive sufficient resources or attention, to survive. Hamel (2006: 83) states that an executive sponsor would set the initial odds for a project to achieve a particular rate of return within a specific time frame.

Sharma and Chrisman (1999: 23) argue that the challenges and opportunities for entrepreneurship vary according to the nature of sponsorship. In case of autonomous entrepreneurial efforts, the role of an organisational champion and sponsor is extremely important, whereas it may not be as critical in the case of formally induced efforts.

In this study, the construct of **sponsors and champions** refers to whether managers remove obstacles; whether managers support innovators; whether managers provide influential coaches and whether managers poses the skills to champion corporate entrepreneurial initiatives (Jordaan, 2008: 51).

2.6.4 Tolerance for risks, mistakes and failure

Successful entrepreneurs take calculated risks or avoid risks they do not need to take (Timmons & Spinelli, 2007: 122). Management should make it known that mistakes will be tolerated within the organisation in the quest for creativity and improved service delivery. Intrapreneurial spirit can only be sustained if the internal business environment allows for new mistakes to be made.

Morris and Jones (1999: 76) are of the opinion that top management should emphasise the fact that mistakes would be tolerated within the organisation in the quest for creativity and improved service delivery. They maintain that top management must foster the belief that entrepreneurial behaviour is valued and appreciated and give re-assurance to employees that project failure does not involve unacceptably high personal risks.

Kemelgor (2002: 70) states that, in an environment of flexibility and adaptability, encouraging innovative and risk-taking behaviour by employees is the hallmark of a corporate entrepreneurship culture. He further states that an organisation can only become entrepreneurial if the leaders in the organisation are successful in creating a culture where employees can, and are allowed to be entrepreneurial.

Dawes (2007: 20) views mistakes as inevitable and therefore should be beneficially exploited. An organisation must learn from past mistakes and use it as a method to improve when taking future calculated risks. Hisrich and Peters (1992: 50), as well as Kuratko and Hornsby (1998: 30), concur with this view, as they state that a blaming-culture would even be negative learning and almost ensure that the potential benefit of mistakes are not reaped. Turning mistakes into positives is a reactive process and would involve analysing the mistakes for commonalities and then designing an appropriate future response or behaviour (Dawes, 2007: 21).

For the purpose of this study, the construct of **tolerance for risks, mistakes and failure** will be assessed by a five-point scale and refers to whether calculated risks are taken at the correct time; whether high risk projects are fully supported even with the possibility of failure and whether failure is forgiven (Jordaan, 2008: 54).

2.6.5 Innovation and creativity

“Innovation is the specific instrument of entrepreneurship. The act that endows resources with a new capacity to create wealth.” Peter F Drucker.

Van Aardt *et al.* (2008: 13), describe innovation as finding new and better ways of doing things. This could include improvements in both technology and methodology which may be evident in product and process changes, new approaches to marketing, new forms of distribution and new concepts of scope. Innovators not only respond to the possibility of change, but also speed up change when innovation is perceived as a need to be radical. Innovation depends more often on an accumulation of small insights and advances rather than on major technological breakthroughs. It often involves ideas that are not ‘new,’ but have never been

rigorously pursued and result from organisational learning as much as from formal research and development.

According to Van Aardt *et al.* (2008: 13), the most common types of innovation that result in an increase in competitiveness are:

- **Developing new products for existing markets:** this is also referred to as product development and usually entails large scale research and development expenditure. Examples of this type of innovation are firms in the beer market which allocate large amounts of money to product development. SABMiller has successfully developed and launched a low alcohol beer which is consumed by a growing proportion of the existing beer drinking market.
- **Developing new markets for existing products or market development:** this involves introducing current products or services in new geographical areas and/or for specific demographic groups. Penetrating the international market is one way of market development and is also one of the opportunities that have opened up for South African entrepreneurs in recent times. The changes in South Africa have also created opportunities for introducing products developed for the traditional white market to the traditional black consumer.
- **Developing new products for new markets:** this is perhaps the most cost consuming of all types of innovation since it involves extensive market research as well as product research and development. The products could either be related to present products or a totally different range.
- **Developing existing products for existing markets:** this refers to changes effected to existing products without changing the product itself such as changes in the packaging or distribution of a product. The introduction of plastic instead of glass containers for milk is an example of such an innovation.

Timmons and Spinelli (2009: 65) add to this definition by stating that at the heart of the entrepreneurial process is the innovative spirit. Example of brilliant entrepreneurs and innovators are Ben Franklin, Thomas Edison, Steve Jobs and Bill

Gates. Today, the fast pace of innovation is actually accelerating, as new scientific breakthroughs in biotechnology and nanotechnology are driving the next great waves of innovation.

For the purpose of this study, the construct of **innovation and creativity** is operationalised to whether the organisation quickly implements improvement ideas by employees; whether there is a considerable number of employees that are involved in generating and implementing innovative ideas; whether effective training is provided with regard to the implementation of innovative ideas and whether employees are encouraged to “think-out-of-the-box” (Jordaan, 2008: 52).

2.6.6 Appropriate rewards and reinforcement

Kuratko, Ireland and Hornsby (2001: 63) maintain that compensation is vital because it is among the most visible indicators of a firm's motivation and reward systems. Compensation can have a powerful effect on outcomes resulting from individual and team efforts, and, ultimately, on firm performance. Rewards and reinforcement can include more than just money paid in the form of wages, salaries, and bonuses. It also includes intrinsic or psychic compensation, such as status, independence and power.

McBeth and Rimal (2004: 21) argue that one cannot expect creativity and innovation while measuring and rewarding the opposite. Organisations adopting an entrepreneurial orientation should place more emphasis on individual long-term performance while rewarding group efforts to encourage collaboration. Although intrapreneurs are highly intrinsically motivated and desire freedom and access to corporate resources and learning experiences, they are also goal-oriented and seek rewards, feedback, and recognition.

The appropriate reward system for these individuals is value and team-based, without upper limits. This view is supported by Jacobs and Kruger (2001: 5) who state that the evaluation system used to measure performance plays an important role in reinforcing intrapreneurial behaviour. Morris and Kuratko (2002: 245) state that some entrepreneurs might seek rewards such as pride and financial gain,

whereas corporate entrepreneurs value other incentives which are not always clear or tangible. In this study, the construct of **appropriate rewards and reinforcement** will be measured by a five-point Likert scale and refers to whether individuals receive additional rewards and compensation; whether recognition rather than criticism is emphasised and whether supervisors give special recognitions for outstanding performance (Jordaan, 2008: 55).

2.6.7 Vision and strategic intent

Cohen (2004: 2) maintains that creating an organisation of entrepreneurial leaders at every level takes a focused, concerted, and long-term effort to shape the organisation's structures and processes. If the systems and processes that support the taking of initiative are not in place, then it will never initiate. One of these actions is a clear entrepreneurial vision, reinforced constantly. Company leaders need to articulate an inspiring future, in which the organisation makes an important difference for customers or community, and then use that vision repeatedly to guide decisions, inspire commitment, and motivate action. Cohen goes on to state that emphasis only on monetary goals, control, or preserving a protected position inhibits rather than inspires initiative, but so does an empty, unused vision statement posted on the wall.

Most important to the promotion of intrapreneurship will be the alignment of the organisation's culture and to a new vision of innovation. This will require support from senior management along with buy-in from functional managers and will be critical to successful intrapreneurship. A new vision that stresses the importance of innovation to the success of the company will need to be communicated to all employees (Gaw & Liu, 2004: 5).

Ireland *et al.* (2006: 14) argue that the creation of an entrepreneurial work environment by using the company's vision and strategic intent, would involve elements of the organisational structure, controls, human resource practices and the organisational culture. Gaw and Liu (2004: 69) found that management will have to align the firm's culture and vision to this innovation process. O'Connor

and Rice (2001: 102) concur and state that many projects typically result from management's expression of their strategic intent to grow in a particular technology or market domain.

For the purpose of this study, the construct of **vision and strategic intent** refers to whether the organisational vision is well communicated and understood; whether the opportunity is created for regular information sharing; whether the vision gives direction and helps with goal setting and whether employees adopt the values of the organisation (Jordaan, 2008: 56).

2.6.8 Discretionary time and work

Corporate entrepreneurs should be given autonomy to define their own work in a climate with much freedom. They must be able to exercise discretion in their day to day activities (Bessant & Tidd, 2008: 66). Fattal (2003) specifies that corporate entrepreneurial project should have a timeline of two years. The first year is spent learning about all the mistakes in the initial business plan and adapting it to reality. During the second year, enough processes are usually in place for the venture to start developing momentum and to show some signs of success.

Kuratko, Ireland, Covin and Hornsby (2005: 703) state that managers should evaluate workloads to ensure that individuals and groups have the time needed to pursue innovations and that their jobs are structured in ways that support efforts to achieve short- and long-term organisational goals.

Morris and Kuratko (2002: 67) identify one of the key conflicts that affects corporate entrepreneurs, as time. Though corporate entrepreneurs are self driven, with self-imposed timelines and performance benchmarks, the timeline of moving a project through to completion is almost always at odds with the normal performance review cycles, of the organisation. The challenge therefore facing corporate entrepreneurs is the ability to perform satisfactorily on the normal performance measures, while meeting self-imposed goals for project development, and ensuring that self-imposed

goals exceed anything that senior management would ever have expected (Morris & Kuratko, 2002: 67).

In this study, the construct of **discretionary time and work** will be assessed by a five item-scale and refers to whether time is provided to develop ideas; whether an ideas generator is allowed to see it through to completion; whether idea generation is forced and whether growth and development opportunities are provided (Jordaan, 2008: 57).

2.6.9 Empowered teams, multi-disciplined teamwork and diversity

Kuratko *et al.* (2001: 62) highlight that in today's complex business environments, teams are formed. These teams are often called new-venture teams and their focus is on collective entrepreneurship rather than solely on the entrepreneurial abilities of a firm's top-level managers. Collective entrepreneurship results in team-based endeavours in which the whole of the effort exceeds the sum of individuals' contributions. The collective talent of a new-venture team can be particularly effective when its members come from different functions and when top-level managers actively support the team's efforts. When forming new-venture teams, firms should draw from their entire talent pool, because the most effective entrepreneurial actions sometimes surface from individuals or teams from whom such output was not anticipated.

Effective teamwork, according to Kreitner and Kinicki (2004: 455), can be achieved through cooperation, trust and cohesiveness among team members. The sole purpose of effective teamwork should be to achieve a collective objective. They add that a multi-disciplinary team approach is often implemented in organisations to deal with organisational challenges and to effectively resolve them for the ultimate goal of attaining organisational objectives.

Sadler (2000: 31) comments that entrepreneurial team must compile of diverse groups of managers and specialists as this tends to promote innovation because of the difference in their expertise and perspectives.

For the purpose of this study, the construct of **empowered teams, multi-disciplined teamwork and diversity** is operationalised to whether project team work is encouraged; whether cross functional teams is used effectively; whether projects have a choice in selecting team members and whether cross functional teams are characterised by diversity based on their skills (Jordaan, 2008: 57).

2.6.10 Resource availability and accessibility

Russell (1999: 72) defines organisational resources to include money, time, people, equipment and competencies. Entrepreneurial ventures are resource consuming activities and, therefore, a firm's ability to pursue innovation will be constrained by available resources. Moreover, since decentralised structure is associated with innovation through increased discretionary control over resources, it makes sense to include a variable that is related to the availability of those resources. The opportunity to use resources for intrapreneurial ventures cannot be exercised unless the resources exist.

Organisational support in terms of resource availability has been identified as an important driver of the entrepreneurial activities of established firms. It is proposed that social techniques may help entrepreneurs in resource acquisition. In addition to a supportive organisational internal environment, availability of financial resources for corporate entrepreneurship has to be given specific attention (Antoncic & Hisrich, 2004: 526).

Hisrich *et al.* (1992: 426) furthermore state that an important entrepreneurial competency is the knowledge and ability to obtain resources and then recombine them into a package that is scarce, essential and unique. This knowledge is vested in entrepreneurial employees and is acquired over a period of time, thereby making it difficult for their competition to replicate.

In this study, the construct of **resource availability and accessibility** refers to whether financial support is available for innovative ideas; whether resources are readily available and whether the process to obtain resources is streamline (Jordaan, 2008: 58).

2.6.11 Continuous learning and cross-functional learning

Nicholson-Herbert, Mkhize and Schroder (2004: 44) maintain that the very nature of corporate entrepreneurship requires individuals who constantly improve and develop themselves, and it is to this that South African corporations, and indeed corporations all over the world, should be paying attention. Allowing these individuals' opportunities for personal growth can foster a culture of constant unease with the status quo which gives rise to mindsets that are obsessed with continuous improvement and staying ahead of the game. Furthermore, this can contribute significantly to employee commitment to the organisation. Retaining innovative staff members is less costly than employing and developing new individuals.

Cohen (2004: 3) points out that broad assignments and education encouraging initiative and experimentation will improve performance. People who move across functions, geographies, products and lines of business are exposed to many different perspectives and experiences, which makes them far more likely to be innovative compared to those who spend long stretches of their careers in one spot. The chance to learn about responsible initiative outside of one's area, with people from different parts of the organisation, supports the ability to see new possibilities. The phenomenon of organisational learning is viewed by Cummings and Worley (2008: 538) as an organisational structure or social process that enables employees and teams to learn and to share knowledge among other organisational members.

For the purpose of this study, the construct of **continuous learning and cross-functional learning** will be measured by a five-point Likert scale and refers to whether people are keen to share knowledge within the organisation; whether employees are encouraged to exchange ideas with other department regarding their projects; whether the organisations has open communication channels and whether employees are encouraged to stay abreast of technological developments in their field (Jordaan, 2008: 59).

2.6.12 Strong customer orientation

Deshpande, Farley and Webster (2000: 354) maintain that market orientation is the set of beliefs that puts the customer's interests first. It is the central element of the management philosophy based on the marketing concept. Scholars across disciplines have recently engaged in discussions of customer orientation, entrepreneurship, and the learning organisation. First, customer orientation is one of the core aspects of marketing in the strategic marketing literature together with goal attainment, namely objectives and profitability, and integrated marketing organisation (Liu, Luo & Schi, 2002: 367).

Ultimately, an organisation exists to serve customers. By bringing the voice of the customer inside the organisation, and finding ways for those not usually in direct contact with customers to hear directly from them, can shake loose resistance to needed change, and serve as a stimulus to developing new products and services. The highly innovative company, 3M, is encouraging early researcher interaction with marketing, a way of also adding the customer's voice inside (Cohen, 2004: 4).

Bhardwaj, Agrawal and Momaya (2007: 131) state that with change today becoming discontinuous, abrupt, and seditious, failure to anticipate change, results in organisational fossilisation. The continuous high growth rate necessary to meet the challenges of this ever changing scenario is only possible when organisations are competitive in creating new value for customers.

In this study, the construct of **strong customer orientation** includes whether resources are committed to determine customer needs; whether product and service innovation are driven by customer orientation; whether customers are involved in product development; whether customer feedback is requested and whether customers are treated as very important stakeholders (Jordaan, 2008: 59).

2.6.13 Flat organisational structure with open communication and strong sense of belonging

Cohen (2004: 3) proposes that reduced hierarchy, flatter organisations, and reduced segmentation of units all contribute to increasing employee initiative. Each of these organisational structures results in leaders who are responsible for a broader range of work activities, while giving them increased authority to make decisions within their areas of influence. Freed of the constraints of hierarchy and artificial boundaries among functions, these people act more entrepreneurially.

Covin and Slevin (1991: 18) state that an entrepreneurial posture will be most positively related to an organisations performance when administered through an appropriate organisational structure. This structure will often include decentralisation of decision-making authority, minimal hierarchical levels or structural layers, free-flowing communications channels, and closely integrated research and development (R&D), manufacturing, and marketing functions.

Echols and Neck (1998: 41) comment that an organisational structure that promotes entrepreneurial behaviours like opportunity detection, opportunity facilitation and motivation to pursue opportunity, is a primary element necessary for corporate entrepreneurial success. Hence, an entrepreneurial structure is a form or system that has a relationship of mutual dependence and reciprocation within an entrepreneurial climate. Climate and structure symbolically reinforce each other, and need each other to make possible the breadth and depth of commercialised innovations needed to survive environmental turbulence (Echols & Neck, 1998: 43).

For the purpose of this study, the final construct of **flat organisational structure** will be measured by a five-point Likert scale and refers to whether employees are allowed to make decisions without elaborate justification processes; whether employees are given ample opportunity for independence and freedom; whether employees have autonomy to decide how to do their work; whether the degree of hierarchical control is relatively low and whether employees determine their key performance areas in co-operation with their supervisors (Jordaan, 2008: 60).

2.7 BARRIERS TO CORPORATE ENTREPRENEURSHIP

In the light of the recent economic crisis, it is necessary that organisations need to seek out new business ideas and opportunities and implement these in the most innovative and cost effective way to improve profitability. However, research reveals that many large organisations face various difficulties in doing this. According to Fry (1993) as mentioned by Hill (2003: 23), there are four main reasons that explain why large organisations have trouble becoming and staying intrapreneurial as well as why they have trouble regaining a level of intrapreneurship once it is lost.

2.7.1 Resistance to change

According to Coetsee (2003: 190), resistance to change probably represents the largest threat to successful organisational reform and/or transformation. It can consist of forces outside the organisation and/or internal forces or a combination of the two forces, which slow down, impede or block change. Kreitner and Kinicki (2004: 591) define this concept as an emotional/behavioural response to real or imagined threats to an established work routine. Resistance can be as subtle as passive resignation and as overt as deliberate sabotage. Cummings and Worley (2008: 166) add by stating that change can generate deep resistance in people and in organisations, thus making it difficult, if not impossible, to implement organisational improvements.

2.7.2 The inherent nature of large organisations

Large organisations have trouble being intrapreneurial simply because they are too huge and bureaucratic, meaning that managers are required to structure the organisation in order to be able to control it. This results in multiple layers of management, which create too many levels of approval between the innovator and the person in charge of resources. As previously discussed in section 2.6.13, corporate entrepreneurship is more prevalent in a flat organisational structure (Cohen, 2004: 3).

Hisrich and Peters (1992: 534) believe that the guiding principles in a traditional corporate culture are to:

“follow the instructions given; do not make any mistakes; do not fail; do not take the initiative but wait for instructions; stay within your turf; and protect your backside. This restrictive environment is of course not conducive to creativity, flexibility, independence, and risk taking - the jargon of intrapreneurs”.

2.7.3 Lack of entrepreneurial talent

Generally large organisations attract very few entrepreneurs as they prefer the high risk reward option. Another reason is the fact that large organisations often do not encourage entrepreneurial behaviour, which results in entrepreneurs being viewed as *“cynics, rebels or free-spirits who are late and do sloppy work that does not conform to standards set by the corporation”* (Fry, 1993: 376). This type of attitude results in a high rate of intrapreneurial turnover.

2.7.4 Inappropriate compensation methods

Fry (1993: 377) states that even though monetary rewards may not be especially important to entrepreneurial individuals, some mechanism of rewarding innovation must be evident if innovation is to continue. The traditional method of rewarding performers is to promote them to managerial positions. This seldom works for intrapreneurs as it removes them from the arena in which they are innovative, and they typically do not make good corporate managers.

2.8 PERCEIVED SUCCESS OF THE ORGANISATION

There is reason to believe that the level of entrepreneurial intensity may positively affect performance outcomes in an organisation (Morris & Sexton, 1996: 8). Employees in large organisations gauge their success based on their own perceptions. The subsequent paragraphs will explore some of the determinants of employee's perception of organisational success.

2.8.1 Financial

Morris and Sexton (1996: 8) maintain that the most notable impact on the economic dimension is where evidence is provided that suggests that entrepreneurial firms not only produce more jobs but are also responsible for new wealth creation, and a sizeable amount of tax revenue. Goosen, De Coning and Smit (2002: 23) state that several approaches to measuring financial performance can be considered. Some are related to financial dimensions and others to operational dimensions such as market share, market positioning and growth in turnover and profits.

According to Megginson, Smart and Gitman (2007: 9), the practice of corporate finance involves five basic and related functions:

- Raising capital to support an organisation's operations and investment programs.
- Selecting the best projects in which to invest the firm's resources, based on each project's perceived risk and expected return.
- Managing the firm's internal cash flows and its mix of debt and equity financing to maximise the firm's value and to ensure its survival.
- Developing a corporate governance structure that ensures that managers act ethically and in stockholders' interest.
- Managing the firm's exposure to risk, in order to maintain the optimum risk return trade-off and therefore maximise shareholder value (Megginson *et al.*, 2007: 9).

In this study, the variable of **perceived financial success** refers to whether employees perceive the organisation to have experienced growth in market share; whether employees perceive the organisation to have experienced growth in turnover and whether employees perceive the organisation to have experienced growth in profits.

2.8.2 Customer satisfaction

Kotler and Armstrong (2010: 29) state that today, marketing must be understood not in the old sense on making a sale, but in the new sense of satisfying the customer's needs. They further go on to state that customer satisfaction comprises of five core concepts, these are:

- Customer **needs, wants** and **demands**.
- **Market offering:** some combination of products, services, information or experiences offered to a market to satisfy a need or want.
- Customer **value and satisfaction:** customers form expectations about the value and satisfaction that various market offerings will deliver and buy accordingly.
- **Exchanges and relationships:** consists of actions taken to build and maintain desirable exchange relationships with target audiences involving a product, service, idea or other object.
- **Markets:** the set of all actual and potential buyers of a product or service (Kotler & Armstrong, 2010: 30).

Barringer and Bluedorn (1999: 426) maintain that strategic control measures must include customer satisfaction criteria, new patent registrations, success in meeting target dates for new product or process introductions, and the achievement of quality control standards. Brundin, Patzels, and Shepherd (2008: 227) conclude that a common definition of customer satisfaction is a reaction to positive feedback that individuals have received in the past.

For the purpose of this study, the variable of **customer satisfaction** will be measured by a five-point Likert scale and refers to whether the organisation develops products or services with customers' needs in mind; whether the organisation has a high customer retention rate; whether the customers are loyal to the organisation; whether customer satisfaction is the organisation's top priority and whether employees understand the needs of their customers.

2.8.3 Process

Firms competing in a given target market, at any point in time, differ in their objectives and resources. Some firms are large, others small, some have many resources, while others are strapped for funds. Some are mature and established, others new and fresh. Some strive for rapid market share growth, others for long-term profits. Thus firms can occupy the following different competitive positions in the target market:

- **Market leader:** the firm in an industry with the largest market share.
- **Market challenger:** a runner-up firm that is fighting hard to increase its market share in an industry.
- **Market follower:** a runner-up firm that wants to hold its share in an industry without rocking the boat.
- **Market nicher:** a firm that serves small segments that the other firms in an industry overlook or ignore (Kotler & Armstrong, 2010: 561).

A determinant of corporate success is related to the effectiveness and efficiency that a company's employees are able to succeed in producing the company's outputs (Dess *et al.*, 2003: 370). Kearney, Hisrich and Roche (2007: 282) agree by stating that organisational innovation supports redesigning and restructuring the process to enhance the efficiency and effectiveness in the delivery of new and existing services provided.

In this study, the variable of **process** refers to whether employees believe that the competitive position of their organisation has improved; whether efficiency has improved and whether effectiveness has improved.

2.8.4 People development

Kreitner and Kinicki (2004: 188) define organisational commitment as a force that binds an individual to a course of action of relevance to one or more targets. This reflects the extent to which an individual identifies with an organisation and is committed to its goals. Organisational commitment is an important work attitude because committed employees are expected to display a willingness to work harder to achieve organisational goals and a greater desire to stay employed at an organisation. Research presented by Kreitner and Kinicki (2004: 190) reveal that there is a significant and strong relationship between organisational commitment and job satisfaction.

Job satisfaction essentially reflects the extent to which an individual likes his job (Kreitner & Kinicki, 2004: 192). It is an affective or emotional response toward various facets of one's job. An employee can thus be relatively satisfied with one aspect of his job and dissatisfied with one or more other aspects. Bulut and Alpan (2006: 67) found that factors of an entrepreneurial climate will contribute positively to the organisational commitment and job satisfaction of employees, and that this positive association will be moderated by the existence of extrinsic and intrinsic reward systems.

For the purpose of this study, the variable of **people development** will be measured by a five item-scale and refers to whether employees are highly committed to the organisation; whether employees are viewed as the most valuable asset to the organisation and whether the morale (job satisfaction) has improved recently.

2.8.5 Future success

Organisations that are able to exploit the competitive advantages they own today, while simultaneously making decisions to shape the advantages they intend to own and use tomorrow, increase the probability of long-term survival, growth, and financial success (Kuratko *et al.*, 2001: 60).

According to Bulut and Alpan (2006: 61), the basis for future success is the ultimate outcome of a combination of managerial effectiveness and factors outside the control of the organisation. Therefore, focus is mainly placed on internal performance criteria that are assumed to be controllable indicators of future financial success. Covin and Slevin (1991: 16) found that entrepreneurial posture is more positively related to firm performance among organisations with a high percentage of their financial resources devoted toward R&D activities than among organisations with a low percentage of their financial resources devoted toward R&D activities.

Kotler and Armstrong (2010: 237) state that even when competing offers look the same, buyers may perceive a difference based on company or brand image differentiation. A company or brand image should convey the product's distinctive benefits and positioning. Developing a strong and distinctive image calls for creativity and hard work.

In this study, the variable of **future success** includes whether during difficult economic periods, investments in innovative projects continue and whether the image of the organisation, relative to its competitors, has grown over the past few years.

2.9 ESTABLISHING A CORPORATE ENTREPRENEURIAL CLIMATE IN AN ORGANISATION

The most critical step in creating an entrepreneurial climate is to invest heavily in entrepreneurial activities that allow new ideas to flourish in an innovative environment (Kuratko & Hodgetts, 2004: 68). Dess and Lumpkin (2005: 147) highlight that corporate entrepreneurship is found in companies in which where the strategic leaders and the culture together generate a strong drive to innovate, take risk and aggressively pursue new venture opportunities. Kuratko and Hodgetts (2004: 68) further state that management need to develop an environment that will help innovative-minded people reach their full potential in the organisation, in addition to establishing entrepreneurial ways and nurturing corporate entrepreneurs.

Kuratko, Hornsby, Naffziger and Montagno (1993: 28) state that the key to creating an entrepreneurial climate is to develop and articulate a specific strategy for encouraging innovative activity. This process first starts with assessing the current strategies for entrepreneurial activity. Typical questions used to assess the entrepreneurial strategy are:

- Has the company developed effective ways to access the resources needed to try new ideas?
- Are the managers prepared to allow experimentation with new products or services?
- Does the organisation encourage risk taking and tolerate mistakes?
- Are the employees more concerned with new ideas or with defending their turf?
- Is it easy to form autonomous project teams within the corporate environment?

Kuratko *et al.* (1993: 30) further state that in establishing the drive to innovate inside today's corporations, one approach is to concentrate on developing a climate conducive to corporate entrepreneurs. Several elements are critical in establishing the corporate entrepreneurial climate, these include:

- **The presence of explicit goals:** these goals need to be mutually agreed upon by employee and management so specific steps are achieved.
- **A system of feedback and positive reinforcement:** this feedback is necessary in order for potential inventors, creators, or corporate entrepreneurs to realise there is acceptance and reward.
- **An emphasis on individual responsibility:** confidence, trust and accountability are key features to the success of any innovative program.
- **Rewards based upon results:** a reward system that enhances and encourages others to risk and to achieve must be established.

Developing a corporate entrepreneurial culture provides a number of advantages as mentioned by Kuratko and Hodgetts (2004: 60). These advantages include an atmosphere that leads to the development of new products and services that help the organisation expand and grow. Another advantage is that it creates a workforce that can help the organisation to maintain its competitive position, and finally it promotes a climate conducive to high achievers and helps the organisation to motivate and keep its best people.

2.10 SUMMARY

The highly competitive and dynamic environment prevalent in most industries is forcing many organisations to adopt an entrepreneurial strategy which is seeking competitive advantage through innovation on a sustained basis (Ramachandran *et al.*, 2006: 92). This chapter has introduced the concepts of entrepreneurship, corporate entrepreneurship and entrepreneurial climate as a basis for this study. It was presented that *innovation*, *strategic renewal* and *corporate venturing* were vital components of the corporate entrepreneurship process. A distinction was also made between entrepreneurship and corporate entrepreneurship and it was concluded that *risk and reward* as well as *independence* were the main distinguishing factors between the two concepts.

The history of corporate entrepreneurship revealed that this discipline is related to concepts that emerged in the early 1970's. The study shows that in the past 20 years, entrepreneurship has become a much appreciated element of our economic fabric. It has proven its worth to individuals who have taken this route. Entrepreneurship has also been recognised by the various government programmes and venture capital initiatives that support innovative entrepreneurial projects.

Researchers have postulated different forms and types of corporate entrepreneurship, including corporate venturing, resource re-organisation, intrapreneurship, sustained regeneration, organisational rejuvenation, strategic renewal and domain redefinition.

The eight dimensions of corporate entrepreneurship were presented, which include innovation, risk taking, proactive behaviour patterns, corporate venturing, organisational self-renewal, competitive assertiveness and autonomy. These dimensions should be present in order to implement an intrapreneurial climate in an organisation successfully.

Oosthuizen (2006) identified thirteen constructs that are vital for establishing an entrepreneurial climate and are the basis for this research. These constructs are: entrepreneurial leadership, management support, the presence sponsors, tolerance of risk, innovation and creativity, appropriate reward and reinforcement, vision and strategic intent, discretionary time and work, empowered teams, resource availability and accessibility, continuous and cross-functional learning, stronger customer orientation and flat organisational structures with open communication.

The barriers to the fostering of an entrepreneurial climate consist of among others, the resistance to change, the inherent nature of large organisations, lack of entrepreneurial talent and inappropriate compensation methods were discussed. The chapter then concluded with an exposition of employees' perception of organisational success and steps to establish a corporate entrepreneurial climate in an organisation.

The next chapter presents Sasol as an organisation by depicting the vision, values and the structure that constitutes Sasol. A brief history of the organisation will be presented as well as causal factors to this study.

CHAPTER 3

AN OVERVIEW OF SASOL

3.1 INTRODUCTION

The international petrochemical sector has recently come under tremendous strain mainly due to the global economic crisis. Sasol has not been immune to problems and is currently facing huge challenges. According to Hall-Green (2010: 29), the current challenges facing Sasol are:

- Headline earnings per share down 33% to R25.42.
- Increase in cash fixed costs largely due to weaker average exchange rate and higher electricity costs in South Africa.
- Four fatalities recorded and a deteriorating safety statistic.
- Substantial competition-related administrative penalties at Sasol Wax GmbH and Sasol Nitro for past breaches in competition law.
- Challenging targets to reduce carbon footprint.

To mitigate these challenges, Sasol's management has initiated business improvement plans and restructuring. All the business units within Sasol have been mandated to come up with innovative ways to turn the organisation around. Most of the 13 constructs of corporate entrepreneurship, as discussed in chapter 2, will be vital to this process of organisational reengineering.

In this chapter, an overview of Sasol will be given. Among others; the history, vision, strategy, technology and innovation will be discussed. The chapter will conclude with the unique causal factors of Sasol Polymers that prompted this study.

3.2 BACKGROUND TO SASOL

Sasol is an energy and chemicals company based in South Africa. Formed in 1950, Sasol started producing synthetic fuels in 1955. They have operations in 38 countries, employ about 34 000 people and are listed on the Johannesburg Stock Exchange in South Africa and on the New York Stock Exchange in America. They convert coal and gas into liquid fuels, fuel components and chemicals through their proprietary Fischer-Tropsch processes. Sasol mines coal in South Africa and produce gas in Mozambique and oil in Gabon. The organisation has chemical manufacturing and marketing operations in South Africa, Europe, Asia and the Americas. Annexure A presents the global activities of Sasol. The South African operation refines imported crude oil and retails liquid fuels through the network of retail convenience centres (Hall-Green, 2010: 2).

3.2.1 Organisation's vision

Sasol's vision is: "To be a respected global enterprise, harnessing our talents in applying unique, innovative and competitive technologies to excel in selected markets in the energy, fuels, chemicals and related sectors in Southern Africa and worldwide" (Sasol, 2010).

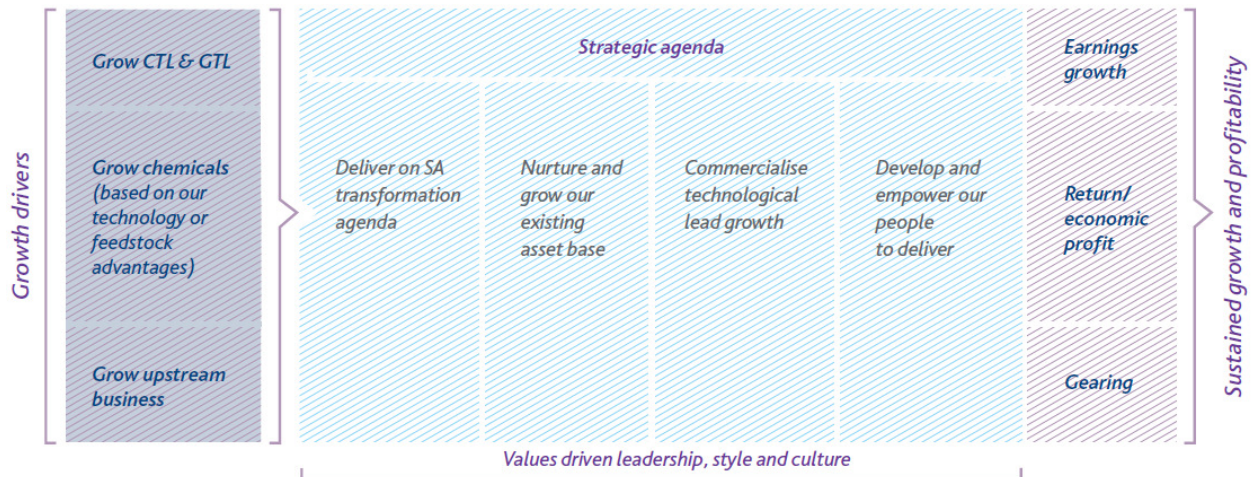
3.2.2 Organisation's strategy

Sasol's strategy is to leverage their core competitive advantages by replicating the successful Sasol business model to create several integrated hubs based on coal as well as natural gas, thereby substantially growing the upstream, liquid fuels and chemical businesses, and by continuing to develop the existing asset base. The strategy is reviewed annually to ensure that Sasol remains robust and competitive.

The three priorities are aligned to the strategy and focus firstly on **improving operating performance** by keeping a strong focus on profitability and managing costs. Secondly, they **focus on growth** by maintaining disciplined capital and resource allocation and rigorous reviews of project portfolios. Lastly the focus is on **sustainability** by striving to improve safety performance, continued investment in

skills, reducing CO₂ footprint, improving energy efficiency and sharpened focus on compliance. Figure 3.1 below graphically illustrates Sasol's strategy.

Figure 3.1: Sasol's strategy



Source: Sasol facts (2010)

Figure 3.1 above present the growth drivers and strategic agenda of Sasol. Sasol continues to strengthen the foundation of the business by optimising the balance sheet, extracting operational efficiencies and making improvements by adopting a proactive stance on governance and compliance. Their sustainability focus involves continuously improving safety, driving transformation in the South African operations, and further enhancing efforts to reduce the environmental footprint across the group. The growth drivers remain unchanged, and the pipeline of growth projects is strong.

3.2.3 Organisation's values

The values of the organisation as quoted form their website are:

- **Customer focus:** we meet customers' needs by providing world-class service, optimal product performance and efficient support systems.

- **Winning with people:** we respect and encourage individuals to grow as unique contributors to their teams. We reward performance and promote sharing and the harnessing of diversity.
- **Safety:** we commit to eliminate all incidents and we strive to achieve world-class safety standards.
- **Excellence in all we do:** we pursue world-class business operating standards and superior performance within a framework of sound governance and internationally accepted health and environmental standards and practices.
- **Continuous improvement:** our innovative spirit drives us as we continuously improve our performance.
- **Integrity:** we maintain the highest level of ethics, fairness and transparency in our interactions with each other, customers and all other stakeholders (Sasol, 2010).

3.3 HISTORIC MILESTONES OF SASOL

Sasol has been a proudly South African company for the last 60 years. Listed below are some of the major historic milestones of Sasol (Hall-Green, 2010: 6):

- **1950:** Sasol is formed to commercialise coal-to-liquids (CTL) technology in South Africa.
- **1955:** Original CTL complex starts producing synthetic fuels and chemicals at Sasolburg, South Africa.
- **1971:** Joint-venture Natref oil refinery begins production in Sasolburg.
- **1979:** Sasol privatises and lists on the JSE Limited in Johannesburg, South Africa.
- **1980:** Construction of Sasol Two synfuels and chemicals complex in Secunda completed.
- **1990:** Launch of polymer production and first international chemical marketing office at Birmingham, United Kingdom.
- **1993:** First full-scale Sasol Slurry Phase Fischer-Tropsch reactor commissioned at Sasolburg.

- **1995:** Formation of international wax business (today Sasol Wax).
- **2001:** International Condea chemical businesses acquired. First agreement signed for developing the first gas-to-liquids (GTL) plant, Oryx GTL in Qatar.
- **2002:** Sasol Mining wins Platts/Business Week Global Energy Award for coal company of the year.
- **2003:** Sasol lists on the New York Stock Exchange in the United States of America.
- **2004:** Start of natural gas production in Mozambique's Temane field. Sasol Oil merges with Exel Petroleum and enters the South African fuel retail market.
- **2007:** First international GTL plant, Oryx, starts production in Qatar.
- **2008:** Commissioning of Arya Sasol Polymer Company facilities in Iran. Sasol concludes landmark R24 billion Inzalo broad-based black economic empowerment (BBBEE) transaction.
- **2009:** Project application report for CTL plant submitted to Chinese Government for approval. Sasol and Tata partnership awarded coal block in India. Joint-venture agreement signed for GTL plant in Uzbekistan. Memorandum of Understanding signed with Government of Republic of Indonesia to start screening studies. Creation of Sasol New Energy Holdings.
- **2010:** Conversion of mining rights in South Africa to new order rights. The world's first commercial flight using Sasol's fully synthetic jet fuel.

3.4 GROUP OF COMPANIES

Sasol comprises of a number of divisions that individually contribute to their vast product offerings. A brief description is provided below on each of these divisions.

3.4.1 Sasol Mining

Sasol Mining produces about 39 million tons of coal a year, mostly for gasification feedstock and utilities coal for the complexes at Secunda and Sasolburg. Its main operations comprise the Sigma: Mooikraal operation near Sasolburg and the

Bosjesspruit, Brandspruit, Middelbult, Syferfontein and Twistdraai export operations at Secunda (Hall-Green, 2010: 61).

3.4.2 Sasol Gas

Sasol Gas markets and distributes natural gas from Mozambique and methane-rich gas produced by Sasol Synfuels at Secunda. It delivers gas through a 2118 km pipeline network to 550 industrial and commercial customers in Gauteng, Free State, Mpumalanga and KwaZulu-Natal (Hall-Green, 2010: 61).

3.4.3 Sasol Synfuels

Sasol Synfuels operates the world's only commercial, coal-based synfuels manufacturing facility at Secunda. It produces synthesis gas (syngas) through coal gasification and natural gas reforming. It uses the proprietary Fischer-Tropsch technology to convert syngas into synthetic fuel components, pipeline gas and chemical feedstock for the downstream production of solvents, polymers, co-monomers and other chemicals (Hall-Green, 2010: 62).

3.4.4 Sasol Oil

Sasol Oil markets fuels blended at Secunda and refined through its 63.6% share in the Natref oil refinery at Sasolburg. Products include petrol, diesel, jet fuel, illuminating paraffin, liquefied petroleum gas, fuel oils, bitumen and lubricants. It imports fuels to balance its product slate and meet contractual commitments. Sasol Oil operates 411 (at 30 June 2009) Sasol and Exel retail convenience centres in South Africa and exports fuels to Southern Africa (Hall-Green, 2010: 63).

3.4.5 Sasol Petroleum International

Sasol Petroleum International (SPI) develops and manages the upstream interests in oil and gas exploration and production in Mozambique, South Africa, Gabon, Nigeria, the joint development zone between Nigeria and São Tomé and Príncipe in the Gulf of Guinea, and Papua New Guinea and Australia. It produces gas from

Mozambique's onshore Temane and Pande fields and oil from Gabon's offshore Etame field. SPI also pursues gas exploration opportunities to enable it to supply feedstock to potential future Sasol GTL plants (Hall-Green, 2010: 68).

3.4.6 Sasol Synfuels International

Sasol Synfuels International (SSI) pursues international synfuels opportunities based on CTL and GTL conversion technology. In partnership with Qatar Petroleum, SSI brought the first international GTL plant, Oryx GTL, into operation at Ras Laffan, Qatar in 2007. The company has established liaison offices in Beijing, Mumbai and Tashkent to promote CTL and GTL interests in these regions. New business development initiatives span the globe (Hall-Green, 2010: 71).

3.4.7 Sasol Polymers

Sasol Polymers has plants at Sasolburg and Secunda and supplies ethylene, propylene, polyethylene, polypropylene, polyvinyl chloride, chlor-alkali chemicals and mining reagents to domestic and international customers. It has joint-venture monomer and polymer interests in Malaysia and Iran. Sasol Polymers consists of three business units, namely; Polyolefins, Chlor Vinyls and Sasol Polymers International Investments.

The main business activities of the Polyolefins business are the manufacturing, purification and marketing of ethylene and propylene as well as the manufacturing and marketing of polyethylene (linear low-density and low-density) and polypropylene. The main business activities of the Chlor Vinyls business are the manufacturing and marketing of polyvinyl chloride (PVC) resins, chlor-alkali chemicals, including caustic soda solution, sodium hypochlorite, hydrochloric acid, calcium chloride and sodium cyanide solution (Hall-Green, 2010: 74).

3.4.8 Sasol Solvents

Sasol Solvents has plants in South Africa and Germany and supplies alcohols, ketones, acrylic acid esters, ethyl acetate, ethers, propionic acid, acetic acid, maleic anhydride joint venture with Huntsman (Hall-Green, 2010: 79).

3.4.9 Sasol Olefins and Surfactants

Sasol Olefins & Surfactants (O&S) has plants in Germany, Italy, the USA, China, Dubai, South Africa and the Slovak Republic. It supplies C6-C22 alcohols, linear alkylbenzene, surfactants, inorganic speciality chemicals and oleochemicals, ethylene oxide, alkylphenols and alkanolamines as well as other organic intermediate chemicals to customers worldwide. It has a joint-venture alcohols plant with Wilmar China Investment (Yihai) in China (Hall-Green, 2010: 85).

3.4.10 Sasol Nitro

Sasol Nitro has plants at Sasolburg, Secunda and Bronkhorstspuit in South Africa and supplies ammonia, nitric acid, explosives, fertilisers, ammonium sulphate, sulphuric acid, phosphates and blasting accessories. It markets the ammonia, sulphur and speciality gases produced by other Sasol businesses (Hall-Green, 2010: 90).

3.4.11 Sasol Wax

Sasol Wax has production and marketing operations in South Africa, Germany, Austria, the UK and the USA and sales offices in France, Egypt, Malaysia and Australia. It is a world-leading supplier of waxes, petroleum jellies and liquid paraffins to customers worldwide (Hall-Green, 2010: 92).

3.4.12 Sasol Infrachem

Sasol Infrachem provides a services platform for reforming natural gas and providing utilities, infrastructure and site support at the Sasolburg complex. It is responsible for the Sasolburg site governance and provincial reputation management in the Free State (Hall-Green, 2010: 94).

3.4.13 Merisol

Merisol is a joint venture with Merichem of USA and has plants in South Africa and the USA and joint-venture production facilities at Sasolburg. It supplies cresols, xyenols, alkylphenols and other phenolics and their derivatives to customers on all continents (Hall-Green, 2010: 95).

3.4.14 Sasol Technology

Sasol Technology manages the research and development, technology management and innovation, engineering services and project management portfolios. It helps the fuel and chemical businesses to maintain growth and competitive advantage through appropriate technology solutions and services (Hall-Green, 2010: 97).

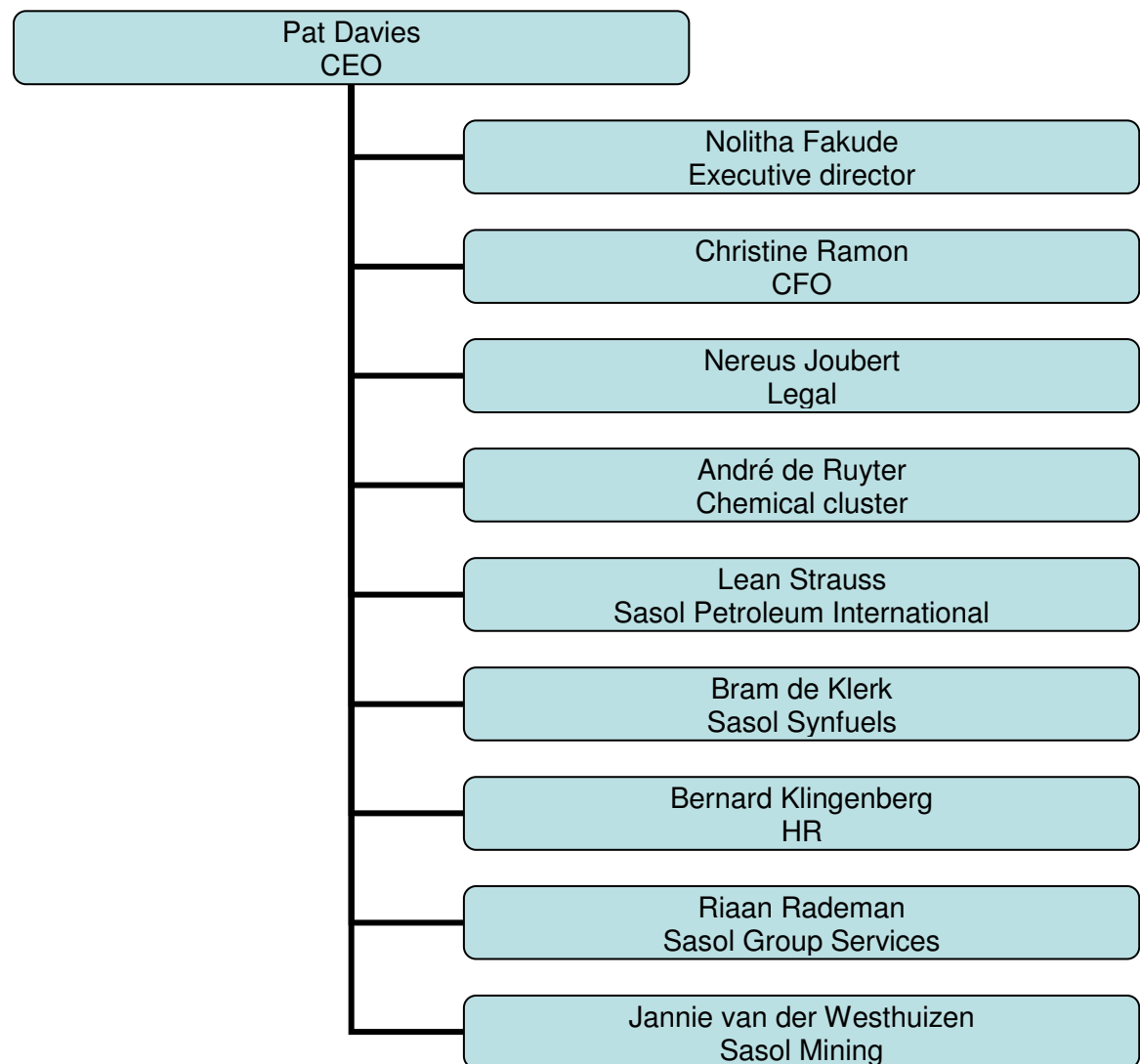
3.4.15 Sasol Financing

Sasol Financing is responsible for group cash and liquidity, credit-rating processes, in-house banking, financing arrangements, foreign exchange, interest-rate and treasury risk management, and general banking activities. It is also a business partner to Sasol businesses for specialised financing and financial risk mitigation strategies and arrangements (Hall-Green, 2010: 100).

3.5 ORGANOGRAM

Figure 3.2 below illustrates the Group Executive committee organogram of Sasol Limited.

Figure 3.2: Group executive committee organogram of Sasol Limited



Source: Adapted from Sasol facts (2010)

The organogram above represents the Group Executive Committee of Sasol Limited. The board of directors consists of 13 directors of whom three are executive directors. The nomination and governance committee of the board considered gender and racial diversity as well as diversity in business, geographic and academic backgrounds when making appointments. The board comprises 50% historically disadvantaged South Africans.

3.6 CTL PRODUCTION PROCESS

The Fischer-Tropsch CTL process is what puts Sasol at the frontier of innovation and is the process that basically turns coal into fuel. Annexure B illustrates the Synfuels CTL production process and must be studied in conjunction with the following process description. Sasol Mining supplies most of the coal feedstock that is needed for the Secunda petrochemical plant. Through Sasol Petroleum International (SPI) and Sasol Gas, natural gas is obtained through a cross-border pipeline linking the Temane field in Mozambique to the Secunda complex. This gas is used as the sole hydrocarbon feedstock at Sasolburg and as a supplementary feedstock to coal at Secunda.

The main Sasol CTL process at Secunda commences in the multi-unit gasification plant where coal is converted, with the aid of heat, pressure, steam and oxygen, into crude synthesis feed gas (syngas, a mixture of hydrogen and carbon monoxide). Once cooled and recovered from the gas stream, the gasification condensates yield the first generation of co-products: tars, oils and pitches, as well as ammonia, sulphur and phenols.

At Secunda, the purified syngas is sent to the suite of nine Sasol Advanced Synthol™ (SAS™) reactors where the syngas reacts, under pressure with the aid of an iron-based catalyst at a temperature of about 350°C, to yield hydrocarbons primarily in the C1 to C20 range. The SAS™ process also produces reaction water and oxygenated hydrocarbons, which is recovered, purified and marketed as solvents. The hydrocarbons from the SAS™ reactors are cooled successively in a product recovery plant until most components are liquefied.

Through fractionation, the differences in boiling points are exploited to yield separate hydrocarbon-rich fractions, as well as methane-rich gas, most of which is converted into syngas via autothermal reforming for further internal processing. Sasol sells the balance as pipeline fuel gas. The C2-rich stream is split into ethylene and ethane. Through a process of thermal decomposition, the ethane is cracked in conventional furnaces to produce ethylene for further purification before it is converted downstream into polyethylene.

Propylene is also purified from the light hydrocarbon gases to provide feedstock for the two Secunda polypropylene plants and Sasolburg butanol and acrylates plants. Some of the ethylene and propylene is sold to third-party polymer producers. Through proprietary Sasol technology, three alpha Olefins are recovered and purified from the oil stream (comprising a broad slate of hydrocarbons with carbon numbers ranging from C4 to C20) from the SAS™ reactors: 1-pentene, 1-hexene and 1-octene. Some international customers use the hexene and octene as co-monomers for making speciality grades of polymers, while a few customers use the smaller quantities of pentene mostly as feedstock for producing certain agrochemicals.

The SAS™ purifies the oxygenates in the chemical workup plant to produce alcohols, acetic acid, ketones and ethyl acetate, all of which are solvents. On behalf of Sasol Olefins & Surfactants, Sasol Solvents also converts some of the higher alpha olefins (C11 – C12) into Safol™ detergent-range alcohols. At Sasolburg, natural gas is reformed with steam and oxygen at high temperature in two autothermal reformers (ATRs) to produce syngas. The iron catalyst-based fixed-bed tubular and Sasol Slurry Phase Fischer-Tropsch (FT) processes convert the syngas at a lower temperature than the SAS™ reactors to produce linear hydrocarbon waxes and paraffins.

When used with the advanced cobalt catalyst, the Sasol Slurry Phase FT reactor forms the heart of the three-step gas-to-liquids (GTL) process, the Sasol Slurry Phase Distillate™ (SPD™) process. The Sasol SPD™ process is used in the Oryx GTL plant in Qatar and will be used in the Escravos GTL plant under construction in Nigeria. Sasol Solvents converts some of the Sasolburg syngas into methanol and butanol. Sasol Nitro produces ammonia from synthesis gas and converts some of this ammonia into nitric acid and ammonium nitrate-based explosives and fertilisers.

The joint-venture Natref oil refinery at Sasolburg uses conventional refinery processing units to convert imported crude oil into petrol, diesel, jet fuel and illuminating paraffin, as well as ethylene and propylene feedstock, fuel oil, bitumen and sulphur (Hall-Green, 2010: 14).

3.7 INNOVATION AND RESEARCH AT SASOL

The culture of innovation began in the 1950s when the unique blend of coal gasification and Fischer-Tropsch (FT) technology was developed for the original CTL operations at Sasolburg. These operations have since evolved into fully fledged Research and Development (R&D) facilities that form the heart of the Sasol Technology R&D group. Focused FT R&D in the 1980s and 1990s led to the development of the low temperature FT Sasol Slurry Phase process used at Sasolburg, and the high-temperature SAS™ process used at Secunda. Another feature of the R&D work was the opening, in June 2009, of the Sasol Fuels Application Centre in Cape Town, where thorough emissions' testing is carried out.

Sasol have also developed processes for recovering and processing solvents, waxes and phenolics for the world market, as well as 1-pentene, 1-hexene, 1-heptene, 1-octene and higher alpha olefins, the last of which is converted into detergent-range alcohols. Sasol has developed and patented several base-metal catalysts for the FT synthesis processes. Sasol also supports R&D facilities at tertiary institutions, mostly in South Africa, through a 10-year commitment worth R250 million.

Sasol has also been innovative in coal exploration and mining, where Sasol Mining has developed or co-developed high-extraction mining methods, advanced directional drilling techniques, roof-bolting systems, continuous-miner systems and a virtual-reality training system for continuous-miner operators, among other performance enhancing innovations.

Sasol Technology's Fuels Technology division carries out fuels, lubricants, heating fuel and road binding material R&D and new-product formulation and testing at Sasolburg. The team also conducts fundamental fuels and combustion research at the Sasol Advanced Fuels Laboratory (SAFL) in Cape Town in collaboration with the University of Cape Town's mechanical engineering department. In addition, Sasol recently opened a state-of-the-art, engine and exhaust emission testing and research facility in Cape Town, the Sasol Fuels Application Centre (SFAC). SFAC enables Sasol to conduct sea-level engine and emissions tests in line with international standards. Sasol's fuels research ensures that the fuels meet the

highest quality standards and are suitable for use in current and future engines. Pioneering research in the use of synthetic fuels has also been done and Sasol was the first company to develop and get approval for synthetic jet fuel.

Sasol New Energy Holdings (SNE) was created to focus on new technologies that can be integrated with the core technologies to result in a lower greenhouse gas footprint. In an effort to reduce the production of CO₂ in the operations and integrate new technology into Fischer-Tropsch processes, SNE will look into renewable and lower carbon energy options such as solar, biofuels and biomass, as well as nuclear, hydro and natural gas. Along with the Central Energy Fund, Sasol has invested in Thin Film Solar Technology, a company planning to manufacture energy-efficient thin-film solar panels.

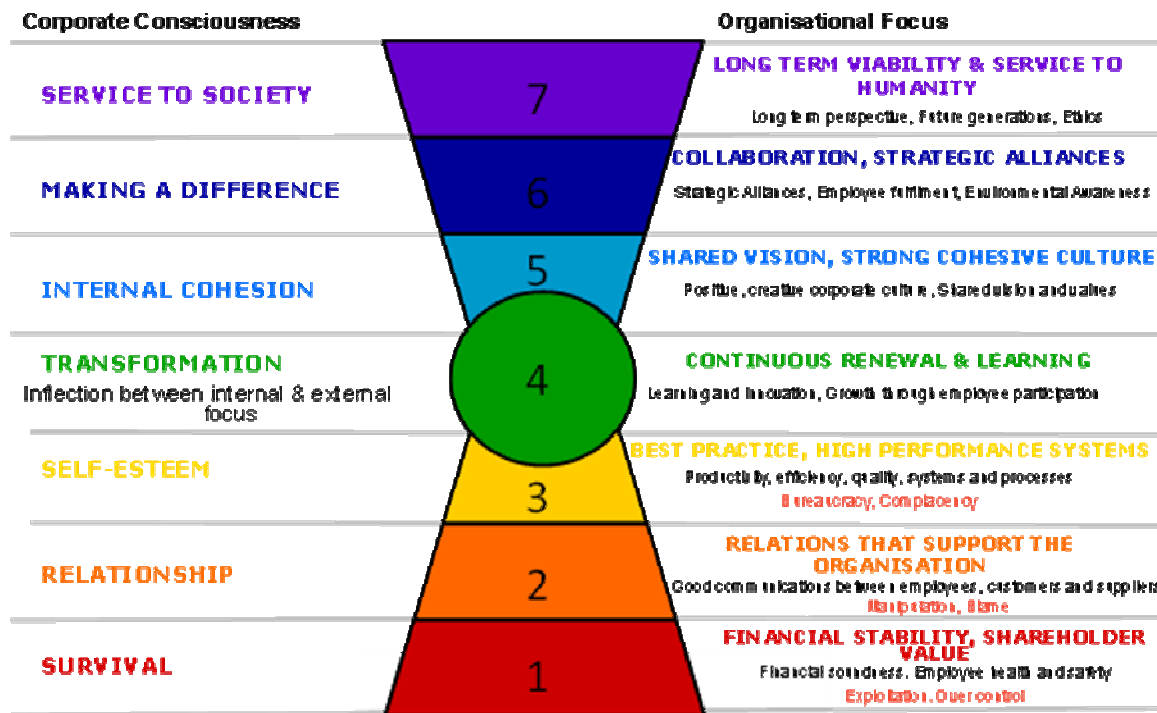
3.8 PREVIOUS ASSESSMENT OF CORPORATE CULTURE

All permanent employees of Sasol participate in an annual, unpublished review, called the Barrett survey. This survey aims to assess employees' value-supporting behaviours and attitudes in general. The survey is administered by external contractors and is completely confidential. The results plot employees' responses on the seven levels of consciousness as adapted from Maslow's hierarchy of needs.

The seven stages in the development and growth of the consciousness of an organisation are summarised figure 3.3. This model is applicable to all types of organisations, government departments, municipal agencies, institutions, non-governmental organisations, and educational establishments.

Ultimately, no matter what type of organisation is under consideration, it is the employees' experience of the organisation, and the leaders' ability to inspire them to unlock their discretionary energy that is fundamental factor in determining the organisation's level of success.

Figure 3.3: The Barrett instrument



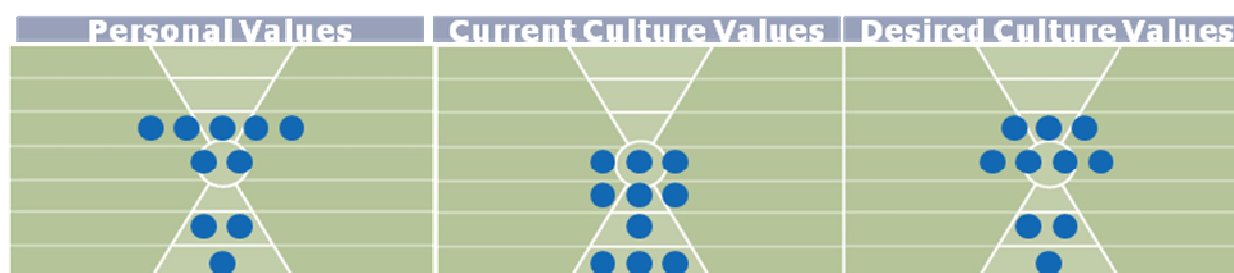
Source: Unpublished study commissioned by Sasol

Figure 3.3 illustrates the Barrett instrument used in the annual culture survey. The seven levels surveyed are:

1. Survival
2. Relationship
3. Self-esteem
4. Transformation
5. Internal cohesion
6. Make a difference
7. Service to society

Figure 3.4 below illustrates the results of the 2009 survey conducted at Sasol Polymers.

Figure 3.4: Sasol Polymers 2009 Barrett survey results



Source: Unpublished study commissioned by Sasol

The Barrett survey measures the respondents personal values, how the individual perceives the current organisational values and what the desired values of the organisation should be. From the 2009 results it is evident that the respondents' personal values were at level 5 with the dominant chosen values being honesty, integrity and commitment.

The results of the perceived current organisation values were mainly cost reduction, employee safety and customer focus. This was expected as the organisation was in the midst of the economic crisis when the survey was conducted. The results of the desired value were mostly on level four and mainly featured continuous improvement, accountability and customer focus. The ideal result is to have an even spread across all seven levels.

3.9 CAUSAL FACTORS

The scope of this study is confined to the Sasol Polymers division within the Sasol group of companies. The causal factors listed below have initiated this study and highlight the potential benefit that corporate entrepreneurship will have in Sasol Polymers, if embedded:

- Poor financial performance.
- Very competitive markets.
- Restructuring.
- Lack of innovation.

3.9.1 Poor financial performance

Sasol Polymers profits were adversely affected by the global crisis with a drop of 37% in operating profit for financial year 2009. The commodity price outlook is bleak and the organisation needs to implement major, sustainable cost savings initiatives. The planned action is similar to a business implementing bootstrapping measures.

3.9.2 Very competitive markets

The Government has recently removed the import parity protection on polymer products and this has significantly increased competition in the domestic market. The recent administrative penalties imposed by the Competition Commission on Sasol for anticompetitive behaviour has also resulted in the organisation adopting an extremely conservative approach regarding pricing and competition. Entrepreneurial actions are a means through which the competitive environment can be changed for the better benefiting the organisation (Kuratko *et al.*, 2001: 60).

3.9.3 Restructuring

Sasol Polymers historically consisted of six business units namely; Chemicals, International Trading, Monomers, Polypropylene, Polythene and Vinyls. The division recently vertically integrated and restructured the organisation to form two business units. Most of the newly appointed leaders are still in limbo and are struggling to come to grips with their new portfolios and wider span of control. It is now the opportune time to embed management support, vision and strategic intent, empowered teams and continuous and cross functional learning as the applicable constructs of an entrepreneurial climate.

3.9.4 Lack of innovation

Sasol Polymers recently abolished their recognition and reward system for innovation, called the Idea Champion Scheme. In this scheme any employee could submit an idea and receive 10% of the annual saving that the idea generated to a maximum of R50 000. One of the conditions was that ideas had to be outside the

individual's area of expertise. There has been a marked decrease in innovation since the abolishment of this scheme.

3.10 SUMMARY

This chapter has provided a background to Sasol. From its humble beginnings in 1950, the organisation has always been associated with innovation. It is also evident from the strategy that Sasol has a global agenda with operations spanning six continents. If one was to examine the historic milestones of Sasol and extrapolate it into the future then it is evident that the organisation is on an exponential growth path.

However if the current challenges of strained profitability, increased cash fixed costs largely due to weaker exchange rate and higher electricity costs, deteriorating safety record, substantial competition-related administrative penalties and challenging targets to reduce carbon footprint, are considered then it is evident that the cracks are starting to appear in the organisation. Drilling down to Sasol Polymers and examining the causal factors presented, it is concluded that this Sasol division has unique factors that necessitates this study.

This report aims to argue that by fostering a climate of corporate entrepreneurship, the newly restructured Sasol Polymers will realise its vision and become the preferred supplier of polymer to their customers. It is now an opportune time to embed the 13 constructs of the entrepreneurial climate, as presented in chapter two, into the vertically integrated organisation.

The scene has been set with the literature study in chapter two and the background to the organisation in this chapter. The following chapter explores the empirical study on the nurturing of an intrapreneurial climate within Sasol Polymers. The collected data is analysed and the findings are discussed comprehensively.

CHAPTER 4

RESULTS AND DISCUSSION OF EMPIRICAL RESEARCH

4.1 INTRODUCTION

The primary objective of this study is to evaluate the current entrepreneurial climate within Sasol Polymers and make suggestions on improving it. This chapter merges the literature study from chapter two with the background to the organisation given in chapter three. This is achieved by analysing the results of the empirical research conducted. The entrepreneurial climate questionnaire (Annexure C), constructed by Oosthuizen (2006) and adapted by Jordaan (2008), was used to perform the empirical research. This chapter will cover the data gathering process, survey response, demographical information, reliability of responses, status of entrepreneurial climate in Sasol Polymers and correlations between the constructs and the demographical data.

4.2 GATHERING OF DATA

The questionnaire was sent out through email with specific instructions on how to complete and return it. The sampling method that was used for this study was a non-probability, convenience sampling method. The subsequent sections below discuss the data gathering process in detail.

4.2.1 Study population

The total permanent staff compliment of Sasol Polymers is 1771 employees. The target population for this study was the lower, middle and top management. A database of the study population was obtained from the Human Resources Department. The database consisted of 404 employees at the specified management levels and this entire population was targeted for the study. Permission was obtained from the Managing Director of Sasol Polymers, Mr Marinus Sieberhagen, to distribute the questionnaires to the target population.

4.2.2 Questionnaire used in this study

The questionnaire used in this study was developed by Oosthuizen (2006) and adapted by Jordaan (2008), to determine the entrepreneurial climate within an organisation. The questionnaire uses a five-point Likert scale as measurement tool and respondents have to indicate the degree of agreement or disagreement with a specific statement. The following scale was used to measure the respondents agreement or disagreement with the statement under study: 1 = Strongly disagree, 2 = Slightly disagree, 3 = Neither agree nor disagree, 4 = Slightly agree, 5 = Strongly agree.

The questionnaire is divided into three sections. Through the research conducted by Oosthuizen (2006), he identified 13 constructs that measure the entrepreneurial climate in an organisation. These 13 constructs are measured in Section A of the questionnaire and covers visionary leadership; management support; sponsors/champions for projects; tolerance for risks, mistakes and failure; innovations and creativity; appropriate rewards and reinforcement; vision and strategic intent; discretionary time and work; empowered teams, multi-disciplined teamwork and diversity; resource availability and accessibility; continuous and cross-functional learning; strong customer orientation and a flat organisational structure.

Section B of the questionnaire utilises 17 statements to measure the perceived success of the organisation. In this section the facets of financial performance, customer satisfaction and retention, business processes, people development and long term success are evaluated.

The questionnaire concludes with Section C that records the respondents demographical information. Here respondents had to indicate their age group, gender, race, highest academic qualification, management level in the organisation and department in which they work.

4.2.3 Confidentiality

Confidentiality of all respondents was assured, even though names were known, as almost all of the questionnaires were sent back through email. The names on the reply emails were only used to keep track of the response rate. At no stage during or after this study will the individual results be made available.

4.2.4 Statistical analysis of data

The Statistical Consultancy Services of the North-West University: Potchefstroom Campus, was approached for assistance in the analysis of the collected data. The data was analysed using Statistica (Statsoft, 2009) and SPSS (SPSS, 2009). The analysis used both descriptive and inferential statistics. The validity of the questionnaire was assessed by calculating Cronbach alpha coefficients.

4.3 RESPONSES TO THE SURVEY

The survey was distributed via email to the target population. Table 4.1 below illustrates the response rate received.

Table 4.1: Response rate of survey

Details	Number	Percentage
Questionnaires distributed	404	100%
Questionnaires received	203	50.25%
Questionnaires rejected	1	0.25%
Questionnaires analysed	202	50%

Two follow-up emails were sent to the target population to remind them to complete the questionnaire. A total of 203 questionnaires were received over a period of 20 days. This represented a response of 50.2%, of these only one was rejected due to missing data. Three questionnaires were received after the deadline and were not analysed. The final response rate was eventually 50%.

4.4 DEMOGRAPHIC INFORMATION OF RESPONDENTS

Section C of the questionnaire captured the demographic information of the respondents. Here the age group, gender, race, highest academic qualification, management level in the organisation and department was recorded.

4.4.1 Age group classification of respondents

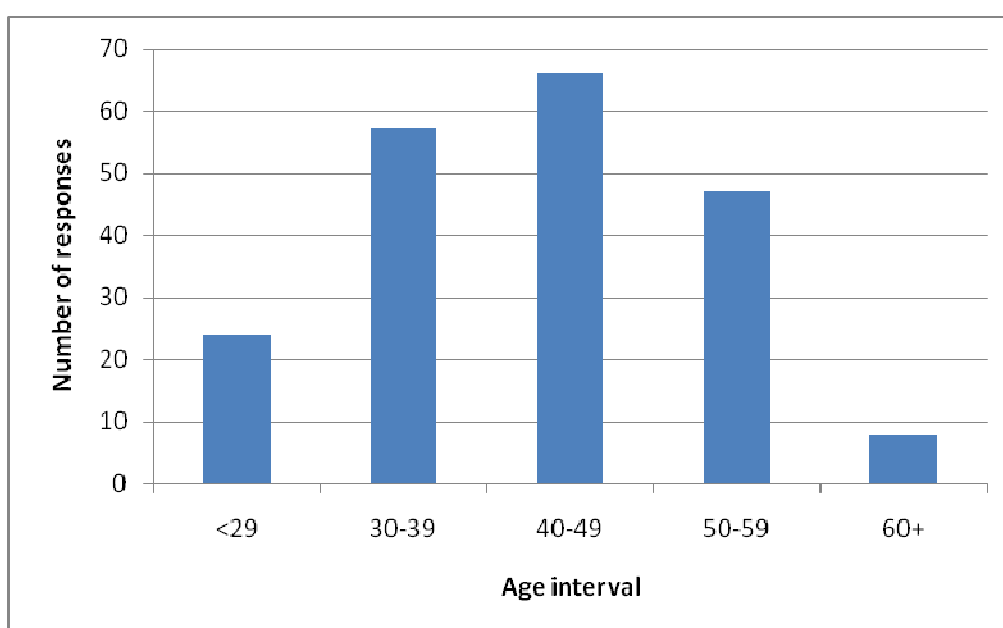
The results of the age group classification of the participating respondents are presented in table 4.2.

Table 4.2: Age distribution

Age group	Number	Percentage
< 29	24	11.88%
30 – 39	57	28.22%
40 – 49	66	32.67%
50 – 59	47	23.27%
60+	8	3.96%
Total	202	100%

The age of the respondents presented above show that managers less than 29 years represent 11.88%, and only a small minority representing 3.96% of the total group being 60 or older. The majority of the respondents (84.16 %) fall within the 30 to 59 years age group. Figure 4.1 below provides a graphical representation of the age distribution of respondents.

Figure 4.1: Age interval distribution of respondents



From figure 4.1 it can be seen that the age interval distribution of the respondents of Sasol Polymers is fairly normally distributed.

4.4.2 Gender of respondents

Table 4.3 depicts the results of the gender of the participants in this study.

Table 4.3: Gender distribution

Gender	Number	Percentage
Male	153	75.74%
Female	49	24.26%
Total	202	100%

From the 202 respondents that participate in the study, 153 (75.74%) are male and 49 (24.26%) female. Males thus out number their female colleagues 3:1.

4.4.3 Racial group classification of respondents

Respondents were requested to indicate their racial group. Table 4.4 below depicts the race distribution of the participating managers.

Table 4.4: Race distribution

Race group	Number	Percentage
Black	35	17.32%
White	132	65.35%
Coloured	5	2.48%
Indian	30	14.85%
Total	202	100%

There were a number of respondents that did not indicate their race and this information was then sourced from the Human Resources department and filled in. The majority of respondents were White (65.35%), while 34.65% were non-Whites. It is evident from the above data that the ratio of Whites to non-Whites is 2:1.

4.4.4 Highest academic qualification achieved by respondents

Table 4.5 depicts the results of the respondents' highest academic qualifications.

Table 4.5: Highest academic qualification of respondent

Qualification	Number	Percentage
< Grade 12	0	0%
Grade 12	3	1.49%
Certificate	3	1.49%
Diploma	39	19.31%
Degree	64	31.67%
Post graduate degree	92	45.54%
Not indicated	1	0.50%
Total	202	100%

Table 4.5 indicates that the largest group of respondents (45.54%) is represented by people holding a post graduate qualification. If diplomas, degrees and postgraduate studies are grouped together, then 96.52% of respondents have attained a tertiary qualification. One respondent did not indicate their qualification on the questionnaire.

4.4.5 Distribution of management level

The objective of this question was to determine the distribution of management level of the respondents. The information will be used to correlate the relationship between the level of management and corporate entrepreneurial behaviours. Table 4.6 presents the management level of the respondents in this study.

Table 4.6: Management level

Level	Number	Percentage
Top	7	3.46%
Middle	117	57.92%
Lower	77	38.12%
Not indicated	1	0.50%
Total	202	100%

Table 4.6 shows that the majority of respondents in this study (57.92%) were derived from middle level management. A total of 38.12% of respondents were from lower management level. The response was very poor from top level management with only a 3.46% response. One respondent did not indicate their management level.

4.4.6 Functional departments

A poor return on invested capital (ROIC) has recently forced Sasol Polymers to restructure. Employees now find themselves in different business units carrying vastly differently portfolios. This transformation has impacted innovation and is relevant to measure the presence or absence of an entrepreneurial climate within each department. This question required of respondents to select their specific

department from a choice of ten given. In table 4.7 the distribution of the departments is indicated.

Table 4.7: Department of respondent

Qualification	Number	Percentage
Chlor Vinyls	57	28.22%
International Investments	4	1.98%
Polyolefins	75	37.13%
Communication	2	0.99%
Finance	16	7.92%
Human Resources	12	5.94%
Information Management	7	3.47%
Legal	2	0.99%
Planning and Technology	20	9.90%
Procurement and Supply	7	3.47%
Total	202	100%

The majority of responses came from the two newly restructured business units; Chlor Vinyls (28.22%) and Polyolefins (37.13%). The survey was conducted while some departments were still busy with restructuring and employees were still uncertain as to where they belonged.

4.5 RELIABILITY OF THE QUESTIONNAIRE

Cronbach alpha coefficients were calculated to establish the internal consistency of the responses to the items in the questionnaire. The Cronbach alpha coefficient is based on the average correlation of variables within a test (Schimtt, 1996: 350). If a construct yields a large alpha coefficient, then it can be concluded that a large portion of the variance in the test results for the construct is attributable to general and group factors (Cortina, 1993: 103). Schimtt (1996: 351) suggests that the Cronbach alpha coefficient should be greater than 0.7, for the data to be regarded as reliable and internally consistent.

Generally, alpha values above 0.70 are acceptable although Field (2005: 668) states that, when attitudes and not abilities are tested, a score of lower than 0.70 could still be held as acceptable. Table 5.6 indicates the Cronbach alpha coefficients of the constructs measuring the entrepreneurial climate and perceived success of the organisation.

Table 4.8: Cronbach alpha coefficients per construct

Section A: entrepreneurial constructs		Cronbach alpha
1	Entrepreneurial leadership	0.802
2	Management support	0.763
3	Sponsors (champion)	0.756
4	Tolerance for risk, mistakes and failure	0.735
5	Innovation and creativity / New idea encouraged	0.739
6	Appropriate awards and reinforcement	0.815
7	Vision and strategic intent	0.755
8	Discretionary time and work	0.590
9	Empowered teams / Multi-disciplined teamwork and diversity	0.729
10	Resource availability and accessibility	0.829
11	Continuous and cross-functional learning	0.728
12	Strong customer orientation	0.855
13	Flat organisation structure with open communication and strong sense of belonging	0.752
Section B: perceived success of the organisation		
1	Financial measures	0.770
2	Customer/market measures	0.831
3	Process measures	0.782
4	People development	0.799
5	Future (long term) success	0.372

The results of Section A of the questionnaire, as indicated in table 4.8, suggest that the research instrument used in this study to assess the entrepreneurial climate within Sasol Polymers has acceptable reliability, as only one construct had a lower alpha coefficient than 0.7. The construct of **discretionary time and work** will however not be rejected based on the research by Field (2005: 668).

From Section B of the questionnaire, the variable of **future (long term) success** of the organisation will be rejected from future analysis due to the extremely low Cronbach alpha coefficient (0.372).

4.6 ASSESSMENT OF THE QUESTIONNAIRE

4.6.1 Variables measuring entrepreneurial climate

The results of the empirical research can now be scrutinised as the reliability of the questionnaire has been verified. Oosthuizen (2006) identified thirteen constructs that assess the entrepreneurial climate in an organisation. Using the Likert scale, five items for each dimension were randomised and put to respondents, resulting in a total of sixty-five statements.

Respondents had to indicate their degree of agreement or disagreement with each statement (1 = Strongly disagree, 2 = Slightly disagree, 3 = Neither agree nor disagree, 4 = Slightly agree, 5 = Strongly agree). Thus a higher number representing disagreement with the statement suggests that the statement is perceived to be untrue. Likewise a low number representing agreement with the statement suggests that the statement is perceived to be true.

For a normal distribution, majority of values lie within an interval of plus and minus one standard deviation above and below the mean. The more dispersed the data, the larger the standard deviation (Levine *et al.*, 2008: 120). The findings of the survey are ranked from the highest to lowest mean value and shown in table 4.9 below.

Table 4.9: Results of entrepreneurial climate

Construct		n	$\bar{x}$	s
7	Vision and strategic intent	202	3.619	0.795
12	Strong customer orientation	202	3.597	0.842
1	Entrepreneurial leadership	202	3.568	0.828
8	Discretionary time and work	202	3.490	0.638
9	Empowered teams / Multi-disciplined teamwork and diversity	202	3.445	0.703
11	Continuous and cross-functional learning	202	3.333	0.753
5	Innovation and creativity	202	3.092	0.767
13	Flat organisation structure	202	3.086	0.797
6	Appropriate awards and reinforcement	202	3.030	0.871
2	Management support	202	3.021	0.732
3	Sponsor/champions	202	2.977	0.750
4	Tolerance for risk, mistakes and failure	202	2.853	0.770
10	Resources availability and accessibility	202	2.655	0.807
	Total	202	3.213	0.620

Table 4.9 indicates that an average mean of 3.213 was recorded when considering all 13 constructs measuring an entrepreneurial climate and an average standard deviation of 0.620. The constructs which scored the highest (strongest agreement to the presence thereof in Sasol Polymers) are **Vision and strategic intent** ($\bar{x}$ = 3.619), **Strong customer orientation** ($\bar{x}$ = 3.597) and **Entrepreneurial leadership** ($\bar{x}$ = 3.568).

The constructs that scored the lowest and indicated a negative sentiment were **resource availability and accessibility** ($\bar{x}$ = 2.655), **tolerance for risk, mistakes and failure** ($\bar{x}$ = 2.853) and **sponsors/champions** ($\bar{x}$ = 2.977). The result of the survey is graphically represented in a clustered bar chart in figure 4.2 and compares the mean values of the constructs ranked from the highest to lowest.

Figure 4.2: Entrepreneurial climate analysis cluster bar graph

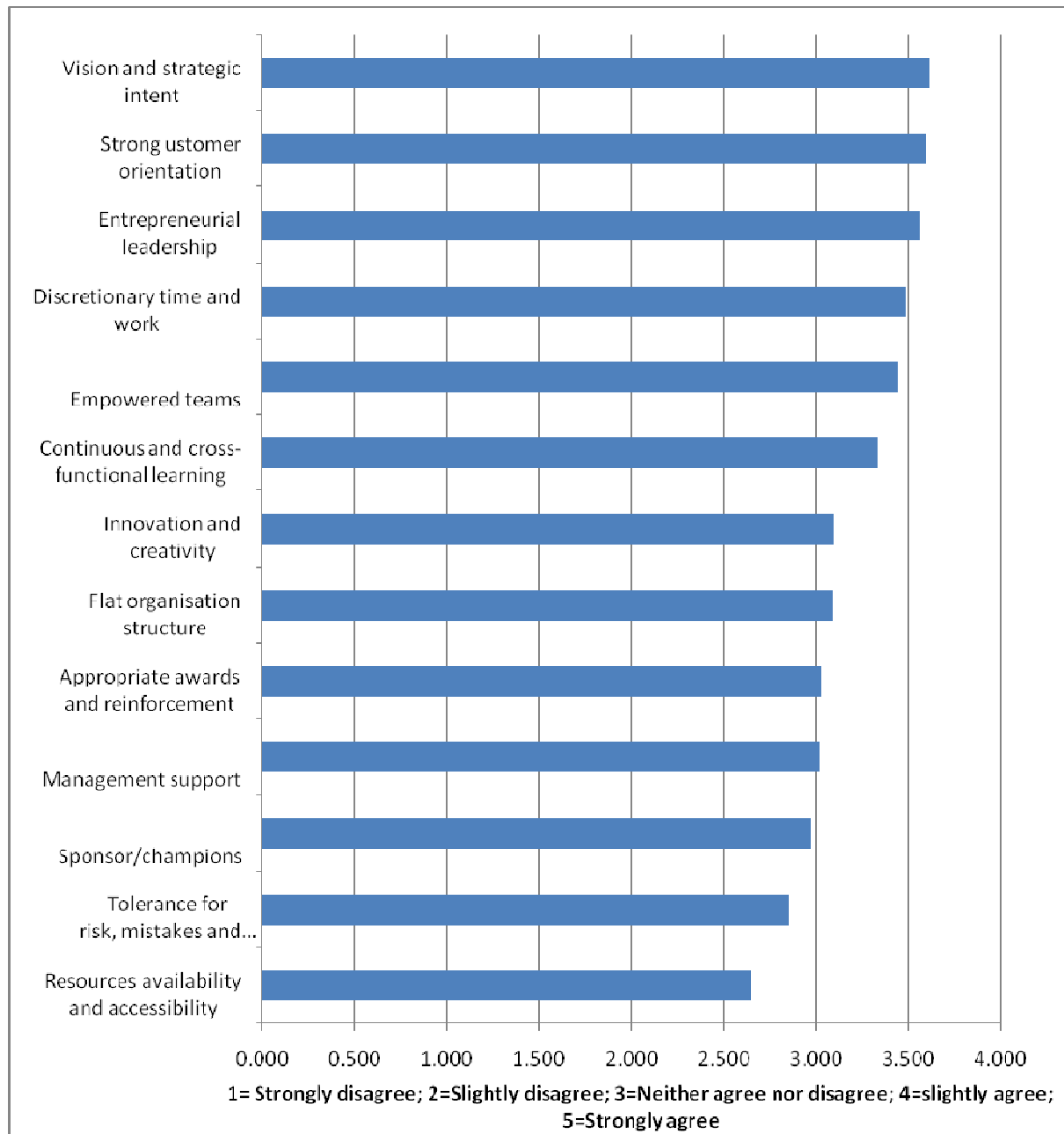


Figure 4.2 compares the mean values across the constructs ranked from the highest to lowest. As there are no norms in interpreting a Likert scale, it is assumed that a score of greater than three out of five is an indication of a positive inclination towards the statement.

From this assumption it is evident that the leaders of Sasol Polymers had a positive sentiment to eight of the 13 constructs measuring an entrepreneurial climate. These

were **vision and strategic intent, strong customer orientation, visionary leadership, discretionary time and work, empowered teams, multi-disciplined teamwork and diversity, continuous and cross-functional learning, innovations and creativity and a flat organisational structure.**

The mean values of two constructs scored below three out of five on the Likert scale, thereby indicating a negative attitude from the leaders of Sasol Polymers. These were **management tolerance for risks, mistakes and failure** and **resource availability and accessibility.**

4.6.2 Variables measuring the perceived success of the organisation

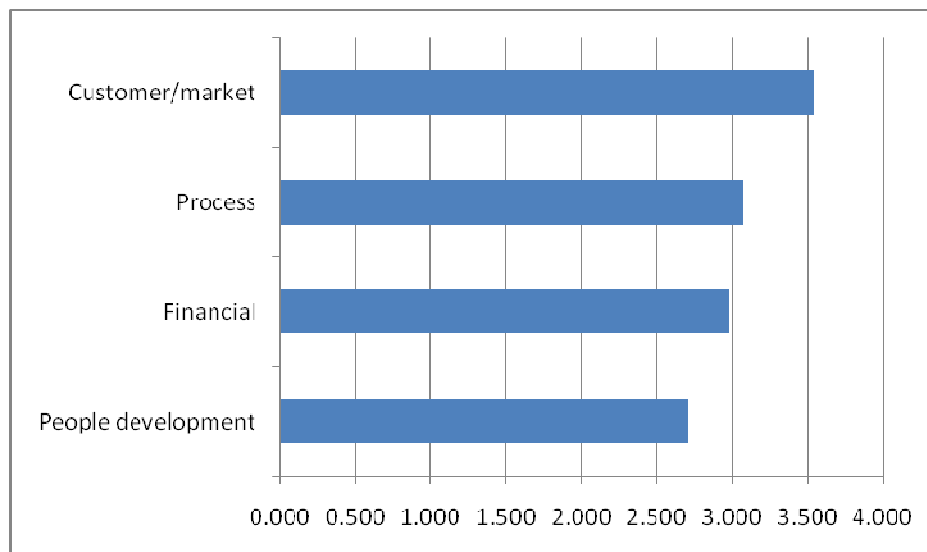
Table 4.10 presents the results of the mean analysis of the variables determining the perceived success of the organisation. The variable **Future success** was excluded due to a very low Cronbach alpha coefficient (0.372), as discussed in section 4.5.

Table 4.10: Perceived success of the organisation

Variable	n	$\bar{x}$	s
Customer/market	202	3.542	0.767
Process	202	3.076	0.952
Financial	202	2.974	0.966
People development	202	2.705	1.006
Total	202	2.970	0.750

Table 4.10 presents the result of the analysis on perceived success of the organisation from highest to lowest mean scores. This information is further graphically represented in a clustered bar chart in figure 4.3.

Figure 4.3: Perceived success of the organisation cluster graph



Customer/market measures ($\bar{x} = 3.542$), with the highest mean, is relatively strong while **people development** ($\bar{x} = 2.705$) is the weakest.

Only one of the variables measuring the perceived organisational success was reported by respondents to have a mean above three. This was **customer/market** with a mean of 3.524 and is interpreted as the leaders of Sasol Polymers perceive that the organisation takes good care of their customers, the organisation has a high customer retention rate keeping customers' needs in mind and customers are relatively satisfied with the organisation's product/service offerings.

The variable **process** ($\bar{x} = 3.076$) and **financial** ($\bar{x} = 2.974$) can be regarded as a neutral perception in the organisation. The variable with the lowest score was **people development** ($\bar{x} = 2.705$) and is interpreted as the leaders of Sasol Polymers perceive employees to be moderately committed to the organisation, are seldom viewed as the most valuable asset and morale (job satisfaction) is on the decline.

4.7 RELATIONSHIP BETWEEN ENTREPRENEURIAL CONSTRUCTS AND DEMOGRAPHIC VARIABLES

An empirical analysis was done to determine the effect of demographical variables on the entrepreneurial constructs measured by the questionnaire. Before one can proceed, quantitative tests need to be performed to verify whether any observed influence of demographical variables is significant enough to be discussed further. In order to test for statistical significance, the two-sample *t*-test was used. The results of the *t*-test are *p*-values and *d*-values.

For the purpose of this study, the simple conservative approach was applied and the *t*-test that does not assume equal variances was used. A small *p*-value indicates a low probability of equal means and is therefore indicates statistical significance. A smaller *p*-value (<0.05) is considered as sufficient evidence that there is a statistically significant difference (Ellis & Steyn, 2003: 51). Ellis and Steyn (2003: 51) however also cautions against the drawback of using the *p*-value as a larger sample size tends to result in smaller *p*-values without necessarily indicating statistical significance.

In order to overcome the effect of the sample size on the *p*-value, the *d*-value was also calculated. The *d*-value is employed to test the practical significance of a standardised difference between the means of two populations. The effect sizes which will be held to signify practical significance are presented in Table 4.11.

Table 4.11: Classification of *d*-values

<i>d</i> -value	Interpretation
> 0.8	Large effect
0.5 to 0.8	Medium effect
0.2 to 0.5	Small effect

Source: Cohen (1992: 155)

The *d*-values are thus interpreted as follows: small effect (*d* = 0.2), medium (*d* = 0.5) and large effect (*d* = 0.8)

4.7.1 Relationship between entrepreneurial constructs and the gender of respondents

Demographical information was captured in section C of the questionnaire and is analysed in this section. This analysis was done to determine if there is a significant difference between the evaluations based on the mean scores of male and female respondents with regard to a specific construct. Table 4.12 below indicates the relationship between the 13 constructs measuring entrepreneurial climate and the demographic variable gender, with mean ($\bar{x}$), standard deviation (s), *t*-test (*p*) and effect sizes (*d*).

Table 4.12: The relationship between gender and the constructs

Constructs		Male			Female			<i>p</i>	<i>d</i>
		<i>n</i>	$\bar{x}$	<i>s</i>	<i>n</i>	$\bar{x}$	<i>s</i>		
1	Entrepreneurial leadership	153	3.590	0.833	49	3.502	0.818	0.521	0.10
2	Management support	153	3.056	0.690	49	2.911	0.850	0.230	0.17
3	Sponsor/champions	153	3.011	0.740	49	2.870	0.780	0.255	0.18
4	Tolerance for risk, mistakes and failure	153	2.860	0.774	49	2.831	0.766	0.816	0.04
5	Innovation and creativity	153	3.136	0.741	49	2.954	0.837	0.150	0.22
6	Appropriate awards and reinforcement	153	3.034	0.831	49	3.016	0.996	0.900	0.02
7	Vision and strategic intent	153	3.626	0.826	49	3.596	0.695	0.819	0.04
8	Discretionary time and work	153	3.541	0.608	49	3.332	0.706	0.045	0.30
9	Empowered teams / Multi-disciplined teamwork and diversity	153	3.477	0.689	49	3.347	0.744	0.261	0.17
10	Resources availability and accessibility	153	2.704	0.809	49	2.502	0.789	0.128	0.25
11	Continuous and cross-functional learning	153	3.333	0.762	49	3.331	0.734	0.983	0.00
12	Strong customer orientation	153	3.646	0.840	49	3.446	0.839	0.149	0.24
13	Flat organisation structure	153	3.127	0.794	49	2.957	0.803	0.196	0.21

The results from table 4.12 indicate a statistical significant difference ($p < 0.05$) in the mean values between the perception of male and females with regard to the construct **discretionary time and work** ($p = 0.045$). Although male participants rated this construct more positively than their female counterparts, the differences were not practical significant and only a small effect ($d = 0.30$) could be determined.

The results indicate that, although the average mean for male leaders are higher than those for female leaders, it could not be regarded as a practically significant difference between the perceptions of male and female employees regarding **discretionary time and work**.

4.7.2 Relationship between entrepreneurial constructs and the management level of respondents

This analysis determines if there is a significant difference between the evaluations based on the combined mean scores of the top and middle management level compared to that of the lower management level. Table 4.13 below illustrates the results of the *t*-test and effect size analysis.

Table 4.13: The relationship between management level and the constructs

Constructs		Top and Middle			Lower			<i>p</i>	<i>d</i>
		<i>n</i>	$\bar{x}$	<i>s</i>	<i>n</i>	$\bar{x}$	<i>s</i>		
1	Entrepreneurial leadership	124	3.479	0.888	77	3.706	0.710	0.059	0.26
2	Management support	124	2.984	0.750	77	3.083	0.709	0.353	0.13
3	Sponsor/champions	124	2.881	0.751	77	3.128	0.733	0.023	0.33
4	Tolerance for risk, mistakes and failure	124	2.731	0.757	77	3.029	0.745	0.007	0.39
5	Innovation and creativity	124	2.983	0.782	77	3.254	0.715	0.015	0.35
6	Appropriate awards and reinforcement	124	3.000	0.884	77	3.065	0.854	0.611	0.07
7	Vision and strategic intent	124	3.606	0.831	77	3.638	0.743	0.784	0.04
8	Discretionary time and work	124	3.488	0.650	77	3.491	0.625	0.971	0.01
9	Empowered teams / Multi-disciplined teamwork and diversity	124	3.396	0.729	77	3.527	0.660	0.201	0.18
10	Resources availability and accessibility	124	2.570	0.804	77	2.790	0.804	0.061	0.27
11	Continuous and cross-functional learning	124	3.274	0.773	77	3.416	0.715	0.196	0.18
12	Strong customer orientation	124	3.498	0.897	77	3.764	0.724	0.029	0.30
13	Flat organisation structure	124	3.049	0.829	77	3.151	0.747	0.378	0.12

When comparing p -values, all values smaller than 0.05 implies that there is a statistical significant difference between the means of the management levels regarding the specific construct. The constructs with p -values showing a statistical significant difference between the means are: **sponsors/champions for projects** ($p = 0.023$); **tolerance for risks, mistakes and failure** ($p = 0.007$); **innovations and creativity** ($p = 0.015$) and **strong customer orientation** ($p = 0.029$). When taking the d -values into account, there is no practical significant difference ($d > 0.8$) in the mean values between the perceptions of top and middle compared to lower level managers with regard to the 13 constructs measuring the entrepreneurial climate.

4.7.3 Relationship between entrepreneurial constructs and departments

This analysis determines if there is a significant difference between the evaluations based on the mean scores of the respondents from the Chlor-Vinyls and Polyolefins departments, with regard to a specific construct. These two departments were selected from the total of ten, as they are newly formed from the restructuring process. Chlor-Vinyls and Polyolefins also have the most representation in Sasol Polymers with the most employees. Table 4.14 below illustrates the results of the t -test and effect size analysis.

Table 4.14: The relationship between departments and the constructs

Constructs		Chlor-Vinyls			Polyolefins			p	d
		n	$\bar{x}$	s	n	$\bar{x}$	s		
1	Entrepreneurial leadership	57	3.519	0.831	75	3.771	0.781	0.077	0.30
2	Management support	57	2.950	0.715	75	3.158	0.682	0.092	0.29
3	Sponsor/champions	57	2.939	0.755	75	3.113	0.716	0.177	0.23
4	Tolerance for risk, mistakes and failure	57	2.777	0.785	75	2.947	0.767	0.215	0.22
5	Innovation and creativity	57	3.024	0.861	75	3.213	0.662	0.155	0.22
6	Appropriate awards and reinforcement	57	2.868	0.926	75	3.157	0.798	0.056	0.31
7	Vision and strategic intent	57	3.632	0.705	75	3.715	0.819	0.541	0.10
8	Discretionary time and work	57	3.418	0.674	75	3.681	0.556	0.015	0.39
9	Empowered teams / Multi-disciplined teamwork and diversity	57	3.456	0.745	75	3.631	0.667	0.158	0.24
10	Resources availability and accessibility	57	2.516	0.864	75	2.849	0.789	0.023	0.39

11	Continuous and cross-functional learning	57	3.337	0.854	75	3.403	0.706	0.629	0.08
12	Strong customer orientation	57	3.707	0.760	75	3.651	0.842	0.692	0.07
13	Flat organisation structure	57	3.000	0.841	75	3.237	0.750	0.090	0.28

The department Chlor-Vinyls rated the two constructs of **discretionary time and work** and **resource availability and accessibility** as statistical significant ($p < 0.05$) and higher than their Polyolefins colleagues. Although the managers of Polyolefins were more positive regarding these constructs, the differences are not practically significant. The differences between the two departments also have a small effect size for these two variables ($d < 0.50$).

4.8 RELATIONSHIP BETWEEN PERCEIVED SUCCESS AND DEMOGRAPHIC VARIABLES

An empirical analysis was done to determine the effect of demographical variables on the perceived success of the organisation, as measured by section C in the questionnaire. The same test of statistical significance as discussed in section 4.7 was used for the perceived success of the organisation.

4.8.1 Relationship between perceived success factors and the gender of respondents

Table 4.15 indicates the relationship between the factors measuring the perceived success of the organisation and gender of the respondents, with mean ($\bar{x}$), standard deviation (s), t-test (p) and effect sizes (d).

Table 4.15: The relationship between gender and the perceived success of the organisation

Constructs		Male			Female			<i>p</i>	<i>d</i>
		<i>n</i>	$\bar{x}$	<i>s</i>	<i>n</i>	$\bar{x}$	<i>s</i>		
1	Financial	153	2.971	0.949	49	2.986	1.027	0.921	0.02
2	Customer/market	153	3.558	0.777	49	3.490	0.742	0.589	0.09
3	Process	153	3.111	0.948	49	2.966	0.965	0.354	0.15
4	People development	153	2.767	1.011	49	2.510	0.974	0.120	0.25

The results indicated no statistical significant difference ($p < 0.05$) in the mean values between the perceptions of male and female managers with regard to all the perceived success variables. Although male participants rated three of the four variables more positive than their female counterparts, the differences were not practical significant ($d < 0.8$).

4.8.2 Relationship between perceived success factors and the management level of respondents

Table 4.16 indicates the relationship between the factors measuring the perceived success of the organisation and the management level of the respondents, with mean ($\bar{x}$), standard deviation (*s*), t-test (*p*) and effect sizes (*d*).

Table 4.16: The relationship between management level and the perceived success of the organisation

Constructs		Top and Middle			Lower			<i>p</i>	<i>d</i>
		<i>n</i>	$\bar{x}$	<i>s</i>	<i>n</i>	$\bar{x}$	<i>s</i>		
1	Financial	124	2.862	0.927	77	3.139	0.927	0.047	0.28
2	Customer/market	124	3.429	0.826	77	3.717	0.826	0.009	0.35
3	Process	124	2.909	0.991	77	3.351	0.991	0.001	0.45
4	People development	124	2.624	1.025	77	2.840	1.025	0.140	0.21

Lower management perception of the success of the organisation was on average more positive than their counterparts. Although the difference in the perception between top/middle management in direct comparison with lower management is statistical significant for the constructs **financial** ($p = 0.047$), **customer/market** ($p = 0.009$) and **process** ($p = 0.001$), the difference is not practical significant and only a small effect size ($d = 0.28$, $d = 0.35$ and $d = 0.45$ respectively) could be determined.

4.8.3 Relationship between perceived success factors and departments

Table 4.17 indicates the relationship between the factors measuring the perceived success of the organisation and the Chlor-Vinyls and Polyolefins departments, with mean ($\bar{x}$), standard deviation (s), t-test (p) and effect sizes (d).

Table 4.17: The relationship between departments and the perceived success of the organisation

Constructs		Chlor-Vinyls			Polyolefins			p	d
		n	$\bar{x}$	s	n	$\bar{x}$	s		
1	Financial	57	2.901	1.002	75	3.016	0.917	0.494	0.11
2	Customer/market	57	3.658	0.702	75	3.470	0.788	0.157	0.24
3	Process	57	3.170	1.012	75	3.107	0.914	0.709	0.06
4	People development	57	2.725	0.986	75	2.867	0.989	0.417	0.14

The above results indicated no statistical significant difference ($p < 0.05$) in the mean values between the perceptions of the Chlor-Vinyls and Polyolefins departments, with regard to all the perceived success variables.

4.9 SUMMARY

The empirical research done in this chapter was of a quantitative nature, as it consisted of a survey questionnaire. The questionnaire was used to measure the entrepreneurial climate at Sasol Polymers, based on the 13 constructs discussed in chapter 2. The data gathering process, response to the survey and demographical information of the respondents was discussed.

Cronbach's alpha coefficient values were used to determine the internal consistency among items in the questionnaire. Only one of the constructs and one of the perceived success of the organisation's alpha values were less than 0.70, indicating a relatively high level of internal reliability of the research instrument.

The questionnaire was then assessed against the 13 constructs as determined by Oosthuizen (2006). It was concluded that corporate entrepreneurship is prevalent in Sasol Polymers as the average mean of all constructs was 3.213 as it is above the threshold of three out of five on a Likert scale. From the perceived success of the organisation assessment, it was determined that the constructs **process measures** and **financial measures** could be regarded as neutral in the organisation. **customer/market measures** are relatively strong while **people development** is the weakest. The p -value and effect size (d -value) were used to determine statistical significance and practical significance respectively, of the constructs and a few demographical properties. This analysis was also done for the perceived success of the organisation.

In the following chapter conclusions will be drawn from the findings discussed in this chapter and recommendations will be made on how to foster an entrepreneurial climate within Sasol Polymers.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The vision of Sasol is: “To be a respected global enterprise, harnessing our talents in applying unique, innovative and competitive technologies to excel in selected markets in the energy, fuels, chemicals and related sectors in Southern Africa and worldwide.” Innovation is core to Sasol’s illustrious 60 year history. This final chapter on the assessment of corporate entrepreneurship within Sasol Polymers comprises of two main sections.

In the first section of this chapter, conclusions will be drawn based on results of the literature study and findings of the empirical study. This section will begin with establishing the reliability of the empirical study by examining the Cronbach alpha coefficients. Thereafter conclusions will be drawn on the demographical information of the respondents, assessment of the corporate entrepreneurship climate and the assessment of the perceived success of the organisation.

In the second section of the chapter, recommendations will be put forward on the fostering of an entrepreneurial climate within Sasol Polymers. To facilitate this process, an action plan which is aligned to the recommendations, is presented. This section will conclude with an evaluation of the achievement of objectives and make suggestions for further research.

5.2 CONCLUSIONS

Conclusions will follow the basic structure of the questionnaire, by firstly assessing the reliability of the survey by evaluating the Cronbach alpha coefficients, thereafter the basic demographic information will be addressed, after which the 13 entrepreneurial constructs measuring the entrepreneurial climate will be evaluated. The factors indicating perceived success of the organisation will then be evaluated,

followed by comments on the correlation between the demographical variables and the entrepreneurial constructs and perceived success of the organisation.

5.2.1 Reliability of the entrepreneurial climate questionnaire

Field (2008: 668) stated that there are different evaluation criteria for the Cronbach alpha coefficient. When an attitude is measured rather than an ability, as is the case for the 13 constructs identified, then measures lower than 0.7 are acceptable. Following the results of the survey only one of the constructs measuring the entrepreneurial climate, **Discretionary time and work**, obtained a Cronbach alpha coefficient below 0.7 (0.590). Based on the criteria from Field (2008: 668), all 13 constructs can therefore be regarded as being reliable, and the results of section B of the questionnaire could be statistically analysed.

Only one variable from section C of the questionnaire, measuring perceived success of the organisation, obtained a Cronbach alpha coefficient well below 0.7. For the purpose of this study the variable of **Future (long term) success**, which measured a coefficient of 0.372, was deemed to be too low and was excluded from the analysis. A lower score in this study might be attributed to respondents' lack of understanding of questions. It is generally accepted that values below 0.7 can be expected when dealing with diverse constructs (Oosthuizen, 2006; Field, 2005: 668).

Owing to the fact that the Cronbach alpha coefficient values exceeding 0.8 were recorded on four of the constructs measuring the corporate entrepreneurial climate, and one of the variables measuring perceived success of the organisation, it is concluded that the research instrument used in this study to assess the corporate entrepreneurial climate in Sasol Polymers has acceptable reliability.

5.2.2 Demographical information

Demographic information of respondents was obtained regarding age, gender, race, highest academic qualification, management level and functional department. From the demographical data received, only one respondent out of 202 did not indicated their highest qualification and another respondent did not indicate their management

level. The following general conclusions are drawn regarding demographic information:

- The majority of managers are between 40 and 49 years of age with an almost equal split between managers in the 30 to 39 years range (28.22%) and managers in the 50 to 59 years range (23.27%). The finding that majority of the managers are younger than 49 years (72.77%) suggests that young people are lured to a career in the organisation which could impact positively on innovativeness in general terms in the organisation.
- The results of the gender suggest that Sasol Polymers is a male dominated organisation with males outnumbering their female colleagues 3:1.
- Most managers, who responded to the item on race, were white (65.35%).
- The largest group (45.54%) of respondents has a post-graduate qualification which is indicative of the industry requirements.
- The response rate was poorer as the management levels increased, as only 29% of top management (level 3), 49% of middle management (level 4 and 5) and 56% of lower management (level 6C) responded to the survey.
- The majority of responses came from the two newly restructured business units; Chlor Vinyls (28.22%) and Polyolefins (37.13%). Care should be exercised when interpreting findings concerning the respondents' departments, as the survey was conducted while some departments were still busy restructuring and employees were uncertain as to where they belonged.

Detailed conclusions on the relationships between selected demographic variables and entrepreneurial climate constructs are presented in section 5.2.5.

5.2.3 Conclusions on the corporate entrepreneurial climate

A score of 3.000 on the five point Likert scale is regarded, for the intent of this study, as an average score. The average mean of all constructs measuring the entrepreneurial climate at Sasol Polymers was 3.213 which can be regarded as a just above average score. For the purpose of this study, a mean score of $\bar{x} < 3.000$ is interpreted as the perceptions that managers of Sasol Polymers hold that a specific construct has a lower prevalence in the organisation and needs development.

A mean score of $\bar{x} > 3.000$ is interpreted as being evident in the organisation and identify areas that could be developed to augment the corporate entrepreneurial climate in the organisation. Based on the results presented in chapter 4, it would seem that the constructs for an entrepreneurial climate has a fairly strong presence in Sasol Polymers as six of the constructs measured were significantly above average, four were slightly above average and only three were below average.

Conclusions for each individual construct are:

5.2.3.1 Entrepreneurial leadership

Burns (2004: 13) describes **entrepreneurial leadership** as the ability to lead and manage the entrepreneurial organisation, encouraging opportunity and innovation to create a competitive advantage. The construct, **entrepreneurial leadership**, received the third highest score with $\bar{x} = 3.568$ meaning that the participating managers in general slightly agree with the statements measuring this construct.

It seems that respondents feel that leaders take a long term view when determining the strategy of the organisation. It is also the perception of the respondents that leaders in the organisation have performed well in instilling the organisational values, challenging the status quo and leading by example to seek to maximise opportunities. The recent Value Driven Leadership initiative by Sasol can be credited for managers ranking **entrepreneurial leadership** relatively high.

5.2.3.2 Management support

Kuratko and Hornsby (1998: 32) describe **management support** as the willingness of management to facilitate and promote entrepreneurial activity in the organisation. Developing an appropriate corporate entrepreneurship climate requires firm commitment from top management and can be considered as one of the most important steps in creating an entrepreneurial climate.

The construct, **management support**, obtained a score of $\bar{x} = 3.021$ implying that the respondents are on average neutral. This suggests that respondents “neither agree nor disagree” that managers encourage idea development; managers is receptive to ideas and suggestions; managers encourage employee participation and managers tolerate rule bending in order to keep promising ideas on track. Sasol Polymers operates within ridged policies and procedures and does not easily tolerate rule bending.

5.2.3.3 Sponsors for projects

The construct, **sponsors for projects**, obtained the third lowest score ($\bar{x} = 2.977$). This falls below the average of $\bar{x} = 3.000$, indicating that respondents perceive this construct as negative. Many of the respondents agreed that the organisation's managers lack the skills, commitment and courage to be effective champions of corporate entrepreneurial initiatives.

Respondents furthermore do not feel that their managers help them to get their work done by removing obstacles in their way. There is a perception that the organisation does not have people with influence that support, coach, protect, and find resources for a corporate entrepreneurial project and its team. Originators of new ideas thus find it difficult to implement because of the lack of support rendered by influential people within the organisation.

5.2.3.4 Tolerance for risks, mistakes and failure

Encouraging innovative and risk-taking behaviour by employees in an environment of flexibility and adaptability are the hallmarks of a corporate entrepreneurship culture (Kemelgor, 2002: 70). This construct, **tolerance for risks, mistakes and failure**, obtained the second lowest score ($\bar{x} = 2.853$). Respondents agreed that the organisation did not favour taking calculated risks; this could be as a result of the negative consequences of safety incidents and reputation damage. They also felt that failure is never forgiven and that high risk projects are never supported because of the possibility of failure. Taking the low average score into consideration, Sasol Polymers will have to develop an action plan to enhance the tolerance for risks, mistakes and failure in the organisation.

5.2.3.5 Innovation and creativity/New ideas encouraged

Kuratko and Hodgetts (2004: 121) argue that an organisations sustained effort in corporate entrepreneurship is contingent upon individual members continuing to undertake innovative activities. The construct, **innovation and creativity**, was ranked seventh and obtained a mean score of $\bar{x} = 3.092$. This suggests that respondents “neither agree nor disagree” that the organisation quickly implements improvement ideas by employees; that there is a considerable number of employees that are involved in generating and implementing innovative ideas; that effective training is provided with regard to the implementation of innovative ideas and that employees are encouraged to “think-out-of-the-box”. The average rating for this construct is a reflection of the impact of discontinuing the Idea Champion Scheme, as discussed in section 3.9.4.

5.2.3.6 Appropriate rewards and reinforcement

Kuratko and Welsch (2004: 237) state that organisations need to have a rewards system in place where recognition is given to individuals who attempt to capitalise on innovative opportunities. Given that **appropriate rewards and reinforcements** are one of the best ways in which to shape the desired behaviour of employees, it is

concerning that this construct received a neutral rating with a mean score of $\bar{x} = 3.030$. This suggests that respondents “neither agree nor disagree” that individuals receive additional rewards and compensation; that recognition rather than criticism is emphasised and that supervisors give special recognitions for outstanding performance.

5.2.3.7 Vision and strategic intent

Burns (2004: 17) comments that the vision of an organisation encompasses the values upheld by the organisation and is a key element of both entrepreneurship and leadership. The construct, **vision and strategic intent**, obtained the highest score with a mean of $\bar{x} = 3.619$. This is somewhat surprising as Sasol Polymers had not, at the time of the study, rolled out the new vision.

Respondents may have interpreted the term “organisation” in the questionnaire to refer to Sasol and therefore indicated that they were well informed about the vision and strategies. Respondents agreed that great effort has been made to clarify what the vision and strategy of the organisation mean to employees in their respective departments. This could be communicated during the regular meetings with their managers where information is shared between them. It also implies that employees have adopted the values of the organisation.

5.2.3.8 Discretionary time and work

With a mean score of $\bar{x} = 3.490$ the construct, **discretionary time and work**, is ranked fourth of the 13 constructs evaluating the entrepreneurial climate. Innovation is one of every employees key performance areas (KPA) and therefore an employee with a good idea is often given time to develop that idea within working hours. A staff member who has initiated a new project/process is allowed to carry it through to completion/implementation. Ample opportunities is also provided for leaning and development.

5.2.3.9 Empowered teams/Multi-disciplined teamwork and diversity

The construct relating to **empowerment of teams and the presence of multi-disciplined teamwork and diversity** was ranked fifth out of the 13 measure constructs and received a mean score of $\bar{x} = 3.445$. This implies that respondents tended to agree that cross-functional or cross-business unit teams are used effectively.

Although working together in project teams is encouraged in the organisation and cross-functional teams are characterised by diversity based on the skills required by the project, projects have limited choice in recruiting and selecting new team members.

5.2.3.10 Resource availability and accessibility

According to Antoncic and Hisrich (2003: 14), organisational support in terms of **resource availability** is an important driver of entrepreneurial activities in an established organisation. Of all 13 entrepreneurial constructs assessed, **resource availability and accessibility** received the lowest rating with a mean score of $\bar{x} = 2.655$. It seems as if money is not easily available to get new ideas off the ground which include the lack of options within the organisation for individuals to get financial support for their innovative projects and ideas.

Managers perceive the process for accessing and acquiring resources to pursue new opportunities as too bureaucratic and that it takes time for approval of resources to be granted. They also feel that it is very difficult to attract resource commitment for entrepreneurial ventures in the organisation.

5.2.3.11 Continuous and cross-functional learning

Continuous learning is rated the sixth strongest construct and with mean score of $\bar{x} = 3.566$. Respondents agreed with the statement that people are keen to share knowledge within the organisation; that employees are encouraged to exchange

ideas with other department regarding their projects; that the organisations has open communication channels and that employees are encouraged to stay abreast of technological developments in their field.

5.2.3.12 Strong customer orientation

The construct, **strong customer orientation**, obtained the second highest rating of $\bar{x} = 3.597$. Respondents tend to strongly agree that customers are treated as very important stakeholders and that product and service innovation are driven by a strong customer orientation. Managers agree with the statement that customers are involved in service and product development, and evaluating the perceptions and opinions of customers regarding the organisation's service and product offerings forms part of their involvement. It seems as if a fairly great deal of resources is spent in determining customer needs and satisfaction.

5.2.3.13 A flat organisational structure and open communication

Entrepreneurial organisations need a flatter structure which results in better communication, greater delegation of authority and faster decision making (Burns, 2005: 19). The managers rated this construct at number eight, with an average mean score of $\bar{x} = 3.086$. This suggests that respondents "neither agree nor disagree" that employees are allowed to make decisions without elaborate justification processes; that employees are given ample opportunity for independence and freedom; that employees have autonomy to decide how to do their work; that the degree of hierarchical control is relatively low and that employees determine their key performance areas in co-operation with their supervisors. The recent restructuring of Sasol Polymers could have contributed to the neutral rating of **a flat organisational structure and open communication**.

5.2.4 Assessment of the perceived success of the organisation

The 5 point Likert scale was also used to assess how middle managers perceive the success of the organisation. Initially, five factors indicative of organisational success were tested in order to serve as dependent variables being influenced by a climate of corporate entrepreneurship. Of these, the factor of **future success**, had to be discarded due to a too low Cronbach alpha coefficient.

The average mean score of all five variables is $\bar{x} = 2.970$. This is relative low in comparison with other similar studies; Nel (2009: 115) $\bar{x} = 3.297$ and Van Rensburg (2009: 86) $\bar{x} = 3.373$, among others. Due to a lack in norms, it must also be noted that the average rating is not scientific and is therefore only relative.

5.2.4.1 Financial measures

With an average mean score of $\bar{x} = 2.974$ this variable was rated below the average of $\bar{x} = 3.000$. This variable consisted of only three statements. Respondents disagreed that the organisation has experienced growth in turnover; growth in profits and growth in market share over the past few years.

5.2.4.2 Customer/market measures

This variable of **customer/market** consisted of six statements and was rated the highest of all the organisational success variables with $\bar{x} = 3.542$. Respondents therefore strongly agreed that taking care of customers is the organisation's top priority; the organisation will therefore develop product/services with customers' needs in mind which results in the customers being satisfied with the organisation's product/service offerings.

5.2.4.3 Process measures

With a mean score of $\bar{x} = 3.076$, this variable was ranked second of the four perceived organisational success variables evaluated. Respondents agreed with the statements that the competitive position, the effectiveness (doing the right things) and the efficiency (doing things right) of the organisation has improved over the past few years.

5.2.4.4 People development

The mean score of the variable **people development** ($\bar{x} = 2.705$) is ranked as the lowest of the four perceived organisational success variables. The managers disagreed that employees are viewed as a relative important asset of the organisation. Managers perceived the employees as not having a moderate to highly commitment towards the organisation and did not think that the morale (job satisfaction) of the employees has improved over the past few years.

5.2.5 Relationship between selected demographic variables and entrepreneurial constructs

The demographic variables gender, management level and department will be correlated with the constructs measuring a corporate entrepreneurial climate and the perceived success of the organisation.

5.2.5.1 Relationship between gender and corporate entrepreneurial climate constructs

Overall, male managers are more positive regarding the entrepreneurial climate of the organisation when compared to their female colleagues. In fact, they have a more positive view regarding all 13 constructs measuring the entrepreneurial climate. The study indicated, however, that the difference between the mean values of gender is statistical significant with regard to only **discretionary time and work** ($p = 0.045$). No practical significant difference could however be found for the mean values between the perceptions of male and female managers.

5.2.5.2 Relationship between gender and perceived organisational success variables

The results indicated no statistical significant difference ($p < 0.05$) in the mean values between the perceptions of male and female managers with regard to any of the perceived organisational success variables. Females rated financial factors marginally higher than their male manager colleagues. Male managers rated the customer market, process factors and people development in the organisation marginally higher than their female counterparts. The differences were not practical significant and only a small effect ($d = 0.02$, $d = 0.09$, $d = 0.15$ and $d = 0.25$ respectively) could be determined. Since there is such a marginal difference in mean values, an outsider without the statistical data in front of him/her, will not observe a difference between the views of male and female managers.

5.2.5.3 Relationship between management level and corporate entrepreneurial climate constructs

Overall, lower level managers are more positive regarding the entrepreneurial climate of the organisation when compared to top and middle level managers. The lower level managers rated all 13 constructs measuring the entrepreneurial climate more positively than top and middle level managers. The study indicated, however, that the difference between the mean values of management level is statistical significant with regard to **sponsors/champions for projects** ($p = 0.023$), **tolerance for risks, mistakes and failure** ($p = 0.007$), **innovations and creativity** ($p = 0.015$) and **strong customer orientation** ($p = 0.029$). This means that in practice that although lower level managers rated all the constructs higher, in direct comparison with top and middle level managers, the difference was not practically significant.

5.2.5.4 Relationship between management level and perceived organisational success variables

Lower level managers' perceptions are on average more positive regarding the success of the organisation than their higher level counterparts. This could be because lower level managers do not have easy access to the organisation's financial statements and are not aware that the company is in the red.

5.2.5.5 Relationship between departments and corporate entrepreneurial climate constructs

The managers of Polyolefins were more positive regarding 12 of the 13 constructs, than the managers from Chlor-Vinyls. The difference in mean values for the constructs of **discretionary time and work** and **resource availability and accessibility** is visible but not practical.

5.2.5.6 Relationship between departments and perceived organisational success variables

From the study, no statistical or practical significant difference could be found between the perceptions of managers from the two departments with regard to the constructs measuring the perceived success of the organisation.

5.3 RECOMMENDATIONS

From the conclusions made on the 13 constructs measuring entrepreneurial climate and the five variables (only four analysed) measuring the perceived success of the organisation, it was evident that the overall entrepreneurial climate in Sasol Polymers is not ideal. From the literature study it was evident that to create and foster an entrepreneurial climate in any organisation top management's support and commitment is vital. Commitment will only be attained from top management if conclusive advantages of corporate entrepreneurship can be shown.

At the time of the study, there were several causal factors, as addressed in chapter three, which highlighted the need for an assessment regarding fostering a corporate entrepreneurial climate in the organisation. However the organisation is still recovering from the recent transformation and is not ready for yet another major initiative. It is therefore recommended that only the constructs that scored a mean of less than 3.0 be addressed in the short term. Thus detailed recommendations will only be made on **sponsors/champions for projects, tolerance for risks, mistakes and failure** and **resource availability and accessibility**. Recommendation will also only be made on the variable of **people development** from the results of the perceived success of the organisation. This section will end with further recommendation that could be implemented in the long term.

5.3.1 Sponsors/champions for projects

A support structure is very important, especially since corporate entrepreneurship is unlikely to be the primary focus area. If proper support is not in place, the entrepreneurial focus is destined for failure. A mentorship program would be a good overlap in building the proper support structure. A formal mentorship program, only for young graduates exists, at Sasol Polymers. It is recommended that influential mentors and coaches be identified and assigned to help corporate entrepreneurs succeed.

Burgelman (1983: 1353) suggests the importance of the role of a middle level manager champion, in addition to the more familiar operational level product champion role, in implementing new business ideas. Sasol Polymers do assign sponsors to high profile projects, however this practice is lacking for corporate entrepreneurial initiatives. Garvin and Levesque (2006: 105) state that new entrepreneurial ventures that fails to attract influential sponsors, won't receive sufficient resources or attention, to survive. Sponsors have a sincere belief in the vision and aid the corporate entrepreneur in gaining access to resources and information. It is recommended that high level sponsors be dedicated to corporate entrepreneurial projects.

5.3.2 Tolerance for risks, mistakes and failure

Des and Lumpkin (2005: 152) stress that to be successful through corporate entrepreneurship, firms usually have to take on riskier alternatives, even if it means forgoing the methods or products that have worked in the past. Successful entrepreneurs are typically not risk takers and they instead, take steps to minimise risks carefully by understanding them.

The Polymers Executive Committee (PEC) should allow employees to take calculated risks and practical trialling. Mistakes should be tolerated and viewed as part of a learning process. A reward and penalty system should be implemented, this implies that individuals and teams could lose their bonuses, freedom, research support or other resources if projects fail or under perform, and they are rewarded well when projects succeed. A knowledge management system must be implemented to ensure that failures are documented and made available for all to use as learning opportunities.

5.3.3 Resource availability and accessibility

A streamlined system should be implemented through which resources are made readily available and accessible to pursue new ideas and opportunities. It is recommended that a new cost centre be added to the annual budget specifically for corporate entrepreneurial projects. The latest technology should be employed to increase productivity levels, and where new technology is employed, staff should be given the necessary training.

Another vital resource required is skilled manpower. While one aim of corporate entrepreneurship is to raise operational efficiency, it must be realised that short-term manpower utilisation will increase as corporate entrepreneurial activities occupy specialists' time. Similarly, other resources will partly be directed away from their strictly operational focus towards innovative but uncertain projects. Provision must therefore be made for additional manpower and resources.

5.3.4 People development

Two of the values of Sasol are winning with people and continuous improvement. Employees must be committed to the organisation by knowing exactly what their role and purpose is. This can be achieved by having the correct measures in their performance contracts that aligns and have line of sight to the overall vision of Sasol.

Managers need to realise that they achieve through people and need to treat and rewards their employees accordingly. One of the main deficiencies and possible root cause of the low morale is the lack of credible information. It is recommended that an internal social network be created to facilitate timeous communication.

5.3.5 Further recommendations

In addition to the recommendations made above, the following should be considered to foster a climate of corporate entrepreneurship in Sasol Polymers:

- The organisational structure should allow for a free-flow of ideas and participation from employees by reinstating the Idea Champion Scheme.
- The turnaround time to resolve customer complaints needs to be improved by implementing a standard complaint procedure across all departments.
- Customer Intelligence (CI) must be implemented to keep track of customers' needs, preferences and changes in buying behaviour, by means of customer satisfaction surveys, management information systems and tracing systems.
- Management needs to timeously communicate the results of the Barrett survey along with an action plan to improve.
- Flexible procedures regarding selection of cross-functional team members must be developed and implemented.
- Training in creative thinking should be encouraged.
- Sharing of information and rendering assistance across divisions should be encouraged.

- State-of-the-art technology should be employed to increase productivity levels, having taken into consideration financial constraints. Whenever new technology is employed, staff should be given the necessary training.
- A flexible working hours policy exists in the organisation however employees should be made aware of it and empowered to use it.

The above recommendations focus on the deficiencies revealed from the empirical study. It should however be noted that focus must also be kept on those variables that were rated relatively highly by the managers of Sasol Polymers. It is therefore also recommended that the positive variables of **Vision and strategic intent**, **Strong customer orientation**, **Entrepreneurial leadership** and **Customer/market** be reinforced.

5.4 ACTION PLAN

An action plan is proposed to facilitate the fostering of a corporate entrepreneurial climate within Sasol Polymers. The plan is aligned to the recommendations made and includes specific activities, managers responsible and time lines for executing these activities. The action plan is presented in table 5.1 below.

Table 5.1: Action plans to establish corporate entrepreneurship in Sasol Polymers

Implementation steps		Responsible	Target date
1.	Give feedback to top management on findings of study	Researcher	31/03/2011
2.	Develop the corporate entrepreneurship value proposition for the organisation	Researcher	31/03/2011
3.	Develop a strategic plan to ensure incorporation of the corporate entrepreneurship constructs	PEC	30/06/2011
4.	Ensure resource commitment from the onset.	PEC	30/04/2011
5.	Develop a proposal to reinstate the Ideas Champion Program	Researcher	31/05/2011
6.	Implement a formal mentorship program in all departments	Human Resources	31/05/2011
7.	Performance contracts must include relevant corporate entrepreneurship constructs	Human Resources	31/06/2011
8.	Identify training need and incorporate into the training matrix.	Training and Development	31/05/2011
9.	Develop a new risk model to evaluate high risk projects	Risk Engineering	31/06/2011
10.	Develop a corporate entrepreneurship communication protocol for the organisation	Communication department	31/05/2011

5.5 ACHIEVEMENT OF OBJECTIVES

The measurement of success of this study is based upon the achievement of the primary and secondary objectives, as presented in section 1.3 of this study.

5.5.1 Primary objective

The primary objective of this study was to evaluate the current entrepreneurial climate within Sasol Polymers. This study further aimed to make suggestions on improving the entrepreneurial climate and thus, not only promoting innovative cost cutting ideas but also to generate new income streams. The primary objective was achieved by realising the secondary objectives of the study.

5.5.2 Secondary objectives

The secondary objectives, which support the primary objectives, are listed below together with an evaluation of whether they were achieved:

- To define corporate entrepreneurship.
Evaluation: Achieved in section 2.2 (Definition of concepts)
- To conduct a literature review to gain insight into corporate entrepreneurship.
Evaluation: Achieved, a literature review on corporate entrepreneurship was done in chapter 2.
- To measure the current entrepreneurial climate in Sasol Polymers with the use of a questionnaire.
Evaluation: Achieved, the corporate entrepreneurial climate was evaluated by means of the questionnaire as discussed in chapter four.
- To determine the reliability of the questionnaire by means of statistical analysis.
Evaluation: Achieved as presented in section 4.5 of this study.
- To examine the relationship between the demographic variables and the entrepreneurial climate constructs.
Evaluation: Achieved as presented in the empirical results in section 4.7 of this study.
- To suggest practical recommendations to ensure and enhance corporate entrepreneurship in Sasol Polymers.
Evaluation: Achieved by combining findings of the empirical study with information gathered in the literature study. The recommendations are presented in section 5.3, followed by an action plan in section 5.4.

5.6 SUGGESTIONS FOR FURTHER RESEARCH

Based on the findings of the study, the following suggestions are put forward for consideration pertaining future research on corporate entrepreneurship in the petrochemical industry.

This research is confined to only one division of Sasol, namely Sasol Polymers. For the sample to be considered representative of the petrochemical industry in South Africa or within Sasol, it should be done in other divisions and also in other companies in the same industry.

There would be benefit from expanding the study to a larger population, as this would enable higher level statistics like exploratory factor analysis to be performed. This study provides some evidence of construct validity, but further research is needed before the instrument could be utilised to diagnose corporate entrepreneurship.

Similar studies to date tended to focus on the benefits which could be realised by implementing corporate entrepreneurship and the characteristics of a corporate climate which would support it. A study needs to be performed on an actual implementation of corporate entrepreneurship in a South African organisation, in order to assess the success, obstacles, improvements and consequences experienced.

5.7 SUMMARY

This chapter concludes the study on the assessment of corporate entrepreneurship in Sasol Polymers. Conclusions drawn from the empirical research results, as presented in chapter four, was discussed.

The Cronbach alpha coefficient established the reliability of the items testing each construct, after which the demographics of age, gender, race, highest academic qualification, managerial level and department was discussed. Thereafter each of the 13 constructs measuring an entrepreneurial climate was discussed in relation to

the results of the empirical study. The managers of Sasol Polymers felt the most positive regarding **Vision and strategic intent** ($\bar{x} = 3.619$), **Strong customer orientation** ($\bar{x} = 3.597$) and **Entrepreneurial leadership** ($\bar{x} = 3.568$). The constructs to which the managers had a negative sentiment were **Resource availability and accessibility** ($\bar{x} = 2.655$), **Tolerance for risk, mistakes and failure** ($\bar{x} = 2.853$) and **Sponsors/champions** ($\bar{x} = 2.977$).

Of the variables measuring the perceived success of the organisation, managers felt the most positive about **Customer/market** with a mean of 3.524. Managers were least positive about **People development** ($\bar{x} = 2.705$). This suggest that managers of Sasol Polymers perceive employees to be moderately committed to the organisation, are seldom viewed as the most valuable asset and morale (job satisfaction) is on the decline.

Various demographical variables were found to influence perceptions regarding the presence of the items of a climate of corporate entrepreneurship as well as the success of the organisation. These variables were tested for statistical significant variances in perceptions, and there was no notable difference in perception found.

Section 5.3 dealt with recommendations and practical ways in which a corporate entrepreneurial climate could be enhanced and maintained in Sasol Polymers. Systems and processes should be revisited and adapted to ensure adherence to the requirements of a corporate entrepreneurial climate. Procedures must be simplified to facilitate the rapid implementation of new processes. An action plan is also presented to facilitate the recommendations made.

The chapter concludes by addressing the achievement of all of the objectives, and makes recommendations on possible future research that could be undertaken based on this study.

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ANNEXURE A: SASOL GLOBAL OPERATIONS

global activities

North America: 14 692 (329)

- Houston (Texas, USA)
- Lake Charles (Louisiana, USA)
- Oil City (Pennsylvania, USA)
- Richmond (California, USA)
- San Francisco (California, USA)
- Tucson (Arizona, USA)

Europe: 31 230 (3 050)

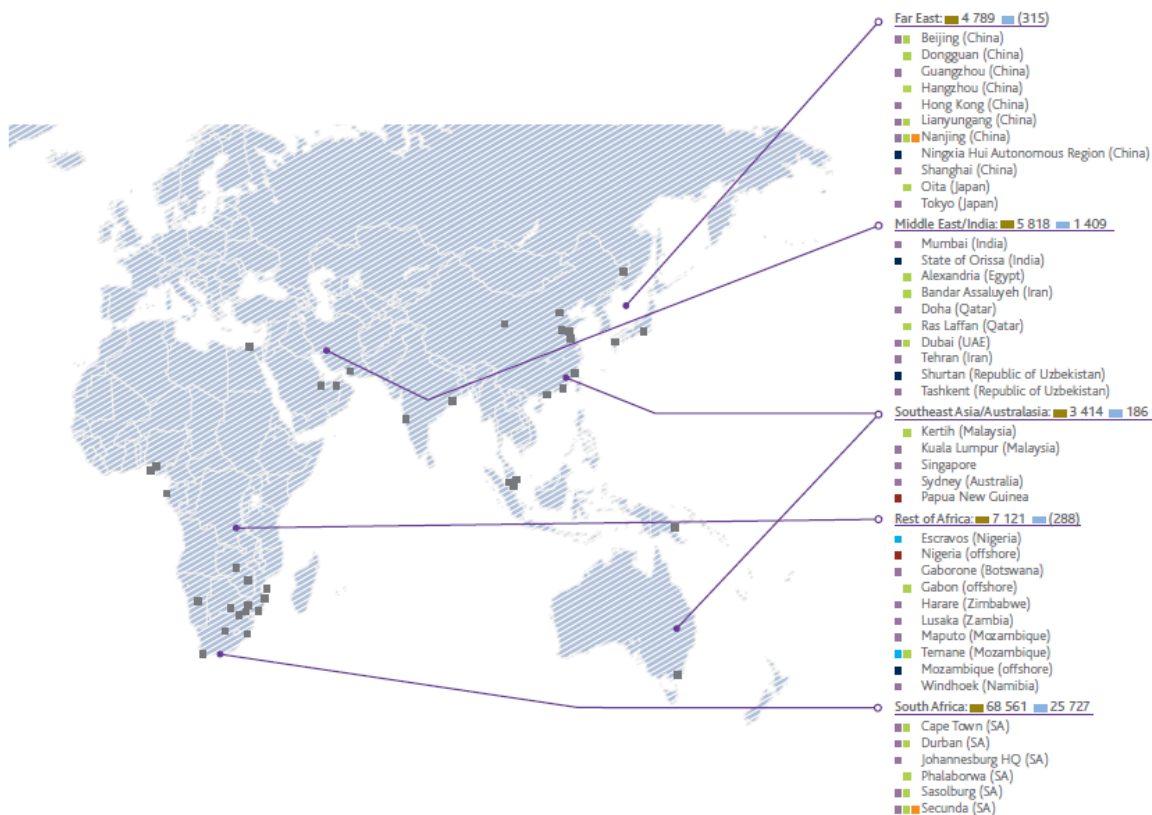
- Birkenhead (UK)
- Birmingham (UK)
- Castletown (Isle of Man)
- Farnham (UK)
- London (UK)
- St Andrews (UK)
- Antwerp (Belgium)
- Barcelona (Spain)
- Bratislava (Slovak Republic)
- De Meern (The Netherlands)
- Linz (Austria)
- Moscow (Russia)
- Nováky (Slovak Republic)
- Paris (France)
- Warsaw (Poland)
- Vordingborg (Denmark)
- Brunsbüttel (Germany)
- Hamburg (Germany)
- Heme (Germany)
- Marl (Germany)
- Moers (Germany)
- Witten (Germany)
- Augusta (Italy)
- Milan (Italy)
- Samoch (Italy)
- Terranova dei Passerini (Italy)

South America: 2 211 (668)

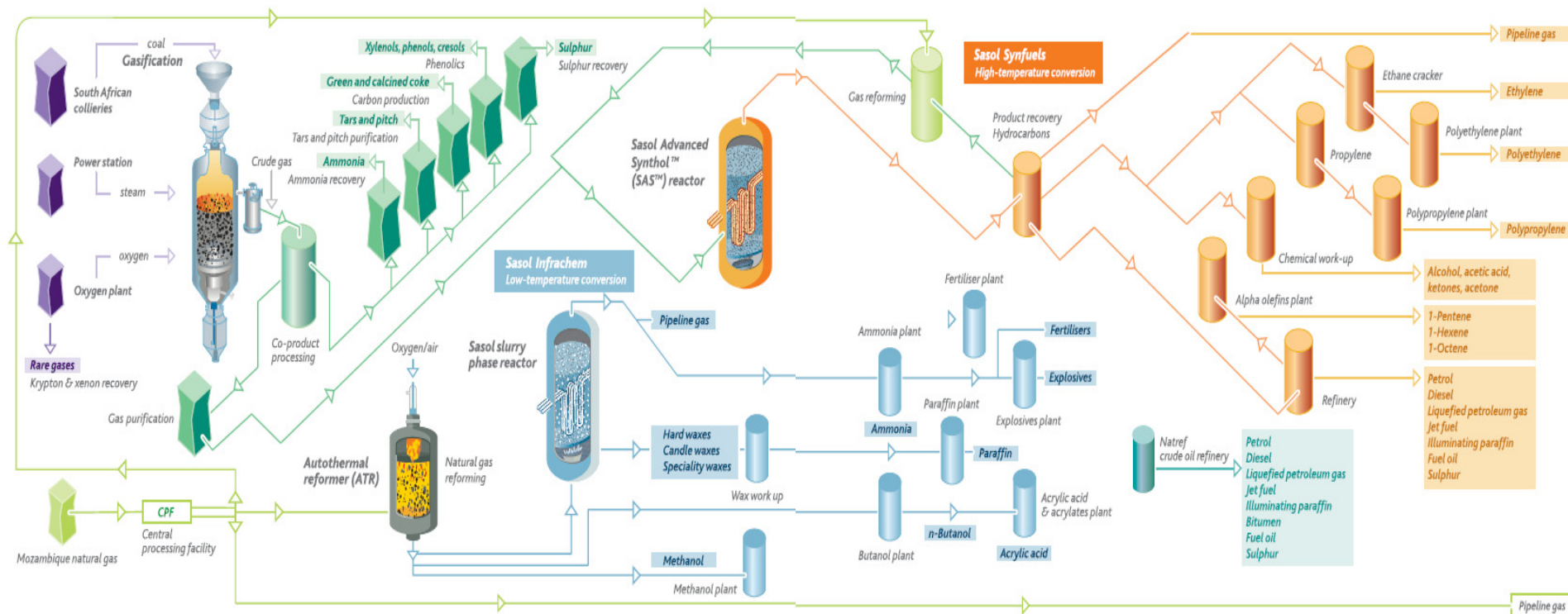
- Sao Paulo (Brazil)

Key to map

- Manufacturing/production
- Office
- Exploration
- Project
- New projects
- Research
- Turnover 2009
- Operating profit/(loss) 2009



ANNEXURE B: CTL PROCESS FLOW DIAGRAM



ANNEXURE C: ENTREPRENEURIAL CLIMATE QUESTIONNAIRE

Code number:

**CORPORATE ENTREPRENEURIAL
CLIMATE QUESTIONNAIRE**

CONFIDENTIAL

Note: All responses are confidential and neither the individual nor the organisation would be identified in any report or release.

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CORPORATE ENTREPRENEURIAL CLIMATE QUESTIONNAIRE

Dear Respondent

Innovation traditionally comes from entrepreneurs or small companies. Large organisations, like Sasol, are inherently bureaucratic and there is usually strong opposition to innovative activities in the corporate environment. It can be assumed that in such organisations there would be numerous ideas that go unnoticed because of red tape and the lack of innovation incentive schemes.

Over the last decade or two, there has been growing interest in corporate entrepreneurship as a vehicle for large organisations to enhance the innovative abilities of their employees and, at the same time, gain competitive advantage. Corporate entrepreneurship is becoming increasingly important for the competitiveness of Sasol Polymers as we face dynamic competition unleashed by globalisation.

Very little to no research has been conducted on corporate entrepreneurship in the chemical sector in South Africa. Corporate entrepreneurship in Sasol Polymers should therefore emphasise the establishment of business models, processes and structures in the corporate sector so as to increase the level of innovation in the various departments within Sasol.

The main objective of the study is to measure the corporate entrepreneurial climate within Sasol Polymers in order to determine whether it is conducive to foster an entrepreneurial spirit, as well as to indicate possible barriers or trigger factors. Your contribution is highly valued and appreciated. Your response will be treated with the strictest confidentiality and anonymity for the purpose of this research.

Please complete every question / statement to ensure the validity and reliability of the study.

GENERAL INSTRUCTIONS

Virtually all questions may be answered by ticking (X) or **highlighting** the relevant block.

Use the following key to indicate your preference:

SCALE	TERM USED
5	Strongly agree
4	Slightly agree
3	Neither agree nor disagree
2	Slightly disagree
1	Strongly disagree

Please select the number which best describes your opinion about a specific question or statement. In the example beneath, the respondent slightly agreed to the statement listed.

		Strongly Disagree	Slightly Disagree	Neither agree nor disagree	Slightly agree	Strongly Agree
A03	My manager helps me to get my work done by removing obstacles in my way.	1	2	3	4	5

SECTION A: CORPORATE ENTREPRENEURIAL CLIMATE

This section consists of 65 statements. Please indicate to what extent you agree or disagree with each statement. Please mark the applicable block with a cross (X).

		Strongly Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Strongly Agree
A01	Our leaders take a long-term view of our organisation.	1	2	3	4	5
A02	Management encourages us to develop ideas that would improve the organisation.	1	2	3	4	5
A03	My manager helps me to get my work done by removing obstacles in my way.	1	2	3	4	5
A04	Development at our organisation is based on taking calculated risks at the right time.	1	2	3	4	5
A05	Our organisation quickly implements improved work methods that are developed by employees.	1	2	3	4	5
A06	Individuals implementing successful innovative projects receive additional rewards and compensation.	1	2	3	4	5
A07	I am well informed about our organisational vision and strategies.	1	2	3	4	5
A08	An employee with a good idea is often given time to develop that idea within working hours.	1	2	3	4	5
A09	Working together in project teams is encouraged at the organisation.	1	2	3	4	5
A10	There are several options within the organisation for individuals to get financial support for their innovative projects and ideas.	1	2	3	4	5
A11	People are keen to share knowledge within the organisation, even over departmental or functional boundaries.	1	2	3	4	5
A12	A great deal of resources is spent in determining customer needs and satisfaction.	1	2	3	4	5
A13	People are allowed to make decisions about their work processes without going through elaborate justification and approval procedures.	1	2	3	4	5
A14	Our leaders challenge the status quo and they inspire us to think and act in innovative ways.	1	2	3	4	5
A15	Top management is receptive to my ideas and suggestions.	1	2	3	4	5
A16	Originators of new ideas find it easy to implement because of the support rendered by influential people at the organisation.	1	2	3	4	5
A17	Projects involving calculated risk are highly valued, even when things do not always turn out according to plan.	1	2	3	4	5
A18	There is considerable number of employees at the organisation that are involved in generating and implementing innovative ideas.	1	2	3	4	5
A19	In this organisation recognition rather than criticism is emphasised.	1	2	3	4	5
A20	I have regular meetings with my manager where information is shared between us.	1	2	3	4	5
A21	A staff member who has initiated a new project/process is allowed to carry it through to completion/implementation.	1	2	3	4	5
A22	We use cross-functional teams effectively at the organisation to develop and implement new ideas.	1	2	3	4	5
A23	Money is often available to get new project ideas off the ground.	1	2	3	4	5
A24	Employees are encouraged to talk to their colleagues in other departments of the organisation about ideas for new projects.	1	2	3	4	5
A25	Product and service innovation are driven by a strong customer orientation.	1	2	3	4	5

		Strongly Disagree	Slightly Disagree	Neither agree nor	Slightly Agree	Strongly Agree
A26	Employees are given ample opportunity for independence and freedom in how they do their work.	1	2	3	4	5
A27	This organisation has a specific value system which we all know and live up to.	1	2	3	4	5
A28	Those employees who come up with innovative ideas on their own receive management's encouragement for their activities.	1	2	3	4	5
A29	Our organisation has people with influence that support, coach, protect, and find resources for an intrapreneurial project and its team.	1	2	3	4	5
A30	We occasionally take big risks to keep ahead of our competitors.	1	2	3	4	5
A31	This organisation provides me with the chance to be creative and try out new methods of doing my job.	1	2	3	4	5
A32	My supervisor will give me special recognition if my work performance is outstanding.	1	2	3	4	5
A33	Great effort has been made to clarify what the vision and strategy of the organisation mean to us in our own department.	1	2	3	4	5
A34	Nobody at the organisation is forced to develop new ideas.	1	2	3	4	5
A35	Top management encourages the establishment of teams from various departments whenever needed for a project.	1	2	3	4	5
A36	Resources are readily accessible in pursuance of new ideas and opportunities.	1	2	3	4	5
A37	Our organisation has open communication channels in which all employees participate.	1	2	3	4	5
A38	Our organisation involves customers in service and product development.	1	2	3	4	5
A39	I have autonomy to decide how to do my work.	1	2	3	4	5
A40	Our leaders lead by example and people are eager to voluntarily follow them.	1	2	3	4	5
A41	The creation of innovative ideas is a regular occurrence in our organisation.	1	2	3	4	5
A42	Our organisation's managers have the skills, commitment and courage to be effective champions of intrapreneurial initiatives.	1	2	3	4	5
A43	This organisation supports many small and experimental projects realising that some will undoubtedly fail.	1	2	3	4	5
A44	Training is provided to ensure that innovative new processes are implemented effectively.	1	2	3	4	5
A45	In this organisation effective intrapreneurs are generally rewarded.	1	2	3	4	5
A46	The vision and strategies of the organisation often help me in setting priorities in my work.	1	2	3	4	5
A47	I am allowed time at work to explore new ideas I believe have potential.	1	2	3	4	5
A48	Project teams have choices in recruiting and selecting new team members.	1	2	3	4	5
A49	The process for accessing and acquiring resources to pursue new opportunities is streamlined so that approval is quickly granted.	1	2	3	4	5
A50	Employees are encouraged to stay abreast of developments in their functional fields and to share their knowledge with others.	1	2	3	4	5
A51	We regularly ask our customers to give their opinions of our service and product offerings.	1	2	3	4	5
A52	The degree of hierarchical control is relatively low in our organisation.	1	2	3	4	5
A53	Our leaders seek to maximise value from opportunities.	1	2	3	4	5
A54	Senior managers allow innovators to bend rules and rigid procedures in order to keep promising ideas on track.	1	2	3	4	5
A55	In this organisation it is easy to build coalitions of sponsors to help projects succeed.	1	2	3	4	5

		Strongly Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Strongly Agree
A56	If you make a mistake in this organisation you will be forgiven.	1	2	3	4	5
A57	Employees are inspired to push their boundaries and to think "out-of-the-box."	1	2	3	4	5
A58	Employees are rewarded in relation to their job performance.	1	2	3	4	5
A59	There is considerable buy-in from employees into the value system of the Organisation.	1	2	3	4	5
A60	Our organisation provides ample opportunities for learning and growth.	1	2	3	4	5
A61	Cross-functional teams are characterised by diversity based on the skills required by the project.	1	2	3	4	5
A62	Attracting resource commitment for entrepreneurial ventures in this organisation is relatively easy.	1	2	3	4	5
A63	Employees are willing to assist others and share knowledge and skills even if it is not required from them.	1	2	3	4	5
A64	Customers are treated as very important stakeholders.	1	2	3	4	5
A65	Employees determine their key performance areas in co-operation with their supervisors.	1	2	3	4	5

SECTION B: SUCCESS OF THE ORGANISATION

This section consists of 17 statements. Please indicate to what extent you agree or disagree with each statement. Please mark the applicable block with a cross (X).

		Strongly Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Strongly Agree
B01	Our organisation develops product/services with customers' needs in mind.	1	2	3	4	5
B02	The competitive position of our organisation has improved over the past few years.	1	2	3	4	5
B03	Our organisation has experienced growth in market share over the past few years.	1	2	3	4	5
B04	Our employees are highly committed to our organisation.	1	2	3	4	5
B05	During difficult economic periods, investments in research and development/ innovative projects continue and no significant financial cuts are made.	1	2	3	4	5
B06	Our organisation has a high customer retention rate.	1	2	3	4	5
B07	Our customers are loyal to our organisation.	1	2	3	4	5
B08	In our organisation, employees are viewed as the most valuable asset of the organisation.	1	2	3	4	5
B09	Taking care of customers is our organisation' top priority.	1	2	3	4	5
B10	The morale (job satisfaction) of our employees has improved over the past few years.	1	2	3	4	5
B11	Our customers are satisfied with our organisation's product/service offerings.	1	2	3	4	5
B12	The image (stature) of our organisation, relative to our competitors, has grown over the past few years.	1	2	3	4	5
B13	Our organisation has experienced growth in turnover over the past few years.	1	2	3	4	5
B14	The effectiveness (doing the right things) of our organisation has improved over the past few years.	1	2	3	4	5
B15	Employees in our organisation understand the needs of our customers.	1	2	3	4	5
B16	Our organisation has experienced growth in profits over the past few years.	1	2	3	4	5
B17	The efficiency (doing things right) of our organisation has improved over the past few years.	1	2	3	4	5

SECTION C: BACKGROUND INFORMATION

The following information is needed to help with the statistical analysis of data for comparisons among different interest groups. All your responses will be treated confidentially. Your assistance in providing this important information is appreciated.

Please mark the applicable block with a cross (X).

C01	Indicate your age group	☐ ≤ 29	☐ 30 - 39	☐ 40 - 49	☐ 50 - 59	☐ 60+
------------	--------------------------------	-------------------------------	----------------------------------	----------------------------------	----------------------------------	------------------------------

C02	Indicate your gender	☐ Male	☐ Female
------------	-----------------------------	-------------------------------	---------------------------------

C03	Indicate your race	☐ Black	☐ White	☐ Coloured	☐ Indian
	Other: (Specify):				

C04	Indicate your highest academic qualification	
	Lower than Grade 12	☐
	Grade 12	☐
	National certificate	☐
	National diploma	☐
	3-year degree	☐
	Post graduate qualification	☐

C05	Indicate your management level	☐ Level 3+	☐ Level 5B - 4	☐ Level 6C
	Other: (Specify):			

C06	Indicate your department	
	Chlor Vinyls	International Investments
	Human Resources	Information Management
	Polyolefins	Legal
	Communication	Planning and Technology
	Finance	Procurement and Supply

THANK YOU VERY MUCH FOR YOUR VALUED INPUT.