

THE INFLUENCE OF ORGANISATIONAL CLIMATE ON
CREATIVITY AND INNOVATION
IN A TECHNOLOGY FIRM IN SOUTH AFRICA

by

E. SENEKAL

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Supervisor: PROF W.M. Conradie

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VOORWOORD

Die mens is immers geskep na die beeld van God, die Almagtige Skepper (Genesis 1:27). Skeppingsvermoë, of te wel kreatiwiteit, in die mens, asook sy of haar drang om aanhoudend die grense van die moontlike te probeer vergroot, is dus nie verbasend nie. Ek dra hierdie skripsie op aan my Hemelse Vader wat my geskep het en my die vermoë gegee het om te kan skep. Hierdie skripsie is 'n getuigskrif van die besondere geskenk – kreatiwiteit – gegee aan elke mens wat bereid is om dit te ontwikkel.

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SINOPSIS

Die doel van hierdie studie is om kreatiwiteit, innovasie en sekere aspekte van die interne besigheidsomgewing wat 'n bepalende invloed op eersgenoemde het, te ondersoek. Die studie is uitgevoer in Johannesburg, Suid Afrika in 'n organisasie wat handel dryf in die inligtingtegnologiese (IT) sektor.

Die IT-sektor is baie dinamies en die tempo van verandering is verbysterend. Sake-ondernemings in hierdie sektor moet voortdurend aanpas by aanhoudende veranderinge in die tegnologie, kliënte vereistes en veranderinge in die makro-omgewing. Navorsing toon aan dat sake-ondernemings moet aanpas by hierdie veranderinge indien sodanige ondernemings wil voortbestaan.

Kreatiwiteit en innovasie is van kardinale belang in 'n organisasie om by verandering aan te pas. Kreatiwiteit is vir die doeleindes van hierdie studie gedefinieer as 'n intellektuele proses waarvan die resultate in vier basiese komponente onderskei word, nl. die kreatiewe persoon, die kreatiewe produk, die kreatiewe proses, en die kreatiewe omgewing. Al vier hierdie komponente het 'n bepalende impak op kreatiwiteit en is belangrik vir die ontwikkeling en fasilitering van kreatiwiteit. Bewyse van kreatiwiteit en innovasie sluit oorspronklikheid en bruikbaarheid in asook nuwe en praktiese oplossings vir bestaande probleme binne 'n gegewe konteks. Oorspronklikheid en bruikbaarheid is dus tipiese bewyse vir die teenwoordigheid van kreatiwiteit.

Hierdie studie fokus op die kreatiewe omgewing en spesifiek die omgewingsklimaat van die mikro-organisasie. Organisasie-klimaat ondersteun of inhibeer kreatiwiteit en innovasie. Organisasie-klimaat het ook 'n bepalende invloed dwarsdeur 'n organisasie op ander sielkundige prosesse soos werkstevredenheid, besluitneming, kommunikasie, spanwerk asook motivering onder werknemers.

Die doel van hierdie studie is om klimaatsfaktore binne 'n organisasie te identifiseer en te meet. In hoeverre hierdie faktore kreatiwiteit en innovasie fasiliteer of inhibeer het 'n bepalende impak op die werksomgewing. Die studie is uitgevoer in 'n organisasie in die Suid Afrikaanse IT- sektor en die klimaat is gemeet om die impak daarvan op kreatiwiteit en innovasie te bepaal.

Die "Situational Outlook Questionnaire" (SOQ) is gebruik om die organisasie-klimaat te meet. Die SOQ word onder andere gebruik om organisasie-klimaat te meet en vas te stel of die klimaat kreatiwiteit positief of negatief beïnvloed. Die SOQ word ook gebruik om die organisasie-klimaat se vermoë om produktiwiteit en verandering te bevorder, te meet. Die SOQ is ontwikkel oor 'n vyftig jaar periode en is verskeie kere bewys as 'n betroubare en geldige meetinstrument.

Die SOQ meet nege dimensies wat 'n direkte impak het op 'n kreatiewe omgewingsklimaat. Die dimensies is: Uitdaging/betrokkenheid, vryheid, debatvoering, risikoneming, idee-ondersteuning, tyd vir die ontwikkeling van

nuwe idees, speelsheid/humor, vertrouwe en konflik. Die resultate van die SOQ ondersoek het aangetoon dat die IT organisasie wat ondersoek is baie goed vergelyk met die resultate van innoverende organisasies en dat die klimaat sterk ondersteunend is vir kreatiwiteit en innovasie. Die klimaat kan egter verbeter t.o.v. die vryheid- en debatvoering-dimensies.

Die laer resultaat gemeet in die debatvoeringdimensie kan aanduidend wees daarvan dat daar te veel gepraat word voordat besluite geneem word. Die vryheidsdimensie was ook laag en kan aanduidend wees van die feit dat werknemers nie genoegsaam toegelaat word om selfstandig belangrike besluite te neem nie. Werknemers voel dat hulle dalk eers moet rapporteer aan bestuurders voor 'n besluit geneem kan word.

Die organisasie se bestuur streef daarna om 'n klimaat te skep wat kreatiwiteit en innovasie ondersteun en bevorder. Sterk ondersteuning hiervoor is te vinde in die ander SOQ resultate asook in die innoverende produkte en dienste wat gelewer word en dit strek die organisasie tot eer.

SYNOPSIS

The purpose of this study is to investigate creativity, innovation and certain determining factors, which have an influence on creativity and innovation in the micro business environment and specifically in an information technology firm.

The information and communications technology (ICT) sector is very dynamic and very fast paced both in the world and in South Africa. Businesses in this sector have to adapt, almost constantly, to incessantly changing technology, customer demands and macro-environmental variables. A vast amount of research exists to suggest that businesses have to adapt to and embrace change in order to survive in this environment.

Creativity and innovation are central to change in the organisation. For the purposes of this study creativity is defined as an intellectual process evident in four discernible components, namely the creative person, the creative product, the creative process and the creative environment. Evidence for creativity and innovation includes novelty and usefulness of ideas and new or improved solutions to existing problems within a given context. Novelty and usefulness are therefore characteristic and typical evidence for the presence of creativity. All four components are important for the development and facilitation of creativity and innovation. The four components have a determining influence on creativity resulting in a feedback system.

The study specifically focuses on creative environment and in this case - the organisational climate. Organisational climate is the observed recurring behavioural patterns and attitudes in the organisation. This climate influences creativity and innovation by supporting or inhibiting it. An organisation's climate can also influence other psychological processes such as job satisfaction, decision-making, communication, team effort and motivation of workers across the organisation.

The goal of this study was to identify and measure organisational climate factors known to have a significant, determining influence on the work environment, conducive to creativity and innovation. The organisational climate of a firm in the South African ICT sector was measured and analysed.

The "Situational Outlook Questionnaire" (SOQ) was used to measure the organisational climate observable in the organisation. The SOQ is employed to assist organisations in assessing the organisational climate for its conduciveness to creativity and innovation, as well as the climate's ability to foster and promote productivity and change within the organisation. The SOQ was developed over a period of fifty years and is proven to be a reliable and valid measuring instrument.

The SOQ assesses nine dimensions that have a direct impact on a creative organisational climate. The nine dimensions are: Challenge/involvement, trust, risk-taking, playfulness/humour, freedom, conflict, debate, idea support, and idea-time.

The results indicated the organisation that has been assessed has a strong climate supportive of and conducive to creativity and innovation. The organisation's SOQ results across all dimensions, except the freedom and debate dimensions, compared very well with other innovative organisations.

This could indicate that there is too much debate around decisions, resulting in too much talking before important issues are decided upon. The freedom score was also somewhat low because employees are probably not allowed to make independent decisions related to their jobs. Employees are under obligation to report to superiors before deciding important issues.

This organisation's management strives towards promoting and fostering a climate that is supportive of and conducive to creativity and innovation. This is evident in the results provided by the SOQ as well as the innovative products and services delivered to customers.

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Chapter One: Background and Study Orientation

1.1 Introduction

At present the human race faces a myriad of challenges related to survival. Global warming, HIV and hunger are a few of the problems we, as a race, are faced with.

Global warming, or global climatic change, refers to recent increases in oceanic and atmospheric temperatures. World-wide a debate is raging about the causes of this increase in temperatures. Some argue that the human race is responsible for this change because of the high volumes of CO₂ emissions (greenhouse gases) we produce, while others maintain that solar activity, volcanic emissions and variations in the earth's orbit (orbital forcing) are responsible for this change.

At present, some effects on both the natural environment and human life are, partly at least, being attributed to global warming. Glacier retreat, ice shelf disruption such as the Larsen Ice Shelf, rising sea levels, changes in rainfall patterns, increased intensity and frequency of hurricanes and extreme weather phenomena, are being attributed, at least in part, to global warming. (Wikipedia, 2007).

According to the World Health Organisation (WHO, 2006) no less than 20.7% of the South African population are living with HIV and 380 000 people died of AIDS in 2005. It is further estimated that 370 000 children lost both their parents in 2005 due to the disease. HIV is a world-wide pandemic with far reaching effects.

The World Food Programme (WFP, 2006) states that the number of under nourished people in the developing world has increased by 42 million people in 2004. Hunger is a multi-dimensional problem that requires inter-sectoral interventions in relevant areas, such as health, economy, education and emergency preparedness. But too often the necessary financial investments have not been made.

The above-mentioned global problems are very real and require creative and innovative solutions. These solutions can only originate in the creative and innovative human mind.

Similarly, businesses in South Africa, today face ever-increasing challenges to survive in a rapidly changing and dynamic macro environment. As such, these businesses are faced with ever changing social, political and economical scenarios. These include, among others, high crime rates, a highly unionised labour market, globalisation and an unstable currency.

According to Slabbert and Swanepoel (2002:121) South Africa has a highly unionised labour market – By 2002 South Africa had more than 490 trade

unions. Trade unions have one goal in common: protecting the interests of the employee. Slabbert and Swanepoel (2002:41) further state that management perceptions, attitudes, prejudices and practices cannot be changed simply by promulgating laws and enforcing them. Instead, they indicate that creative management skills are essential in overcoming labour related obstacles.

Globalisation refers to a country's integration into the global market with respect to trade, finance, information and culture (Cronje, Du Toit and Motlatla. 2001:77).

Hill (2007:4) states that globalisation refers to a shift towards a more integrated and interdependent economy. This includes the globalisation of markets and production. In a global market a country will have to be more competitive in order to survive economically.

Countries and businesses can become more competitive either through a reduced cost in leadership or by increasing profits and global market share. According to Pearce and Robinson (2005:126-127) the following factors contribute to the complexity of the global environment: constant change in political, economic, legal, social, cultural environments in which multinational organisations operate.

Interactions between national and foreign environments are complex because of national sovereignty issues and widely differing social and economic

conditions. Geographic separation, national differences and variation in business practises tend to complicate control efforts between headquarters and overseas affiliates.

Multi nationals are restricted in their choice of competitive strategies due to trade regulations and economic blocks such as the European Economic Community, the European Free Trade Area and the North American Free Trade Area.

Globalisation and the global market present many challenges for management and therefore businesses have to become more creative, innovative and competitive. Businesses in South Africa, and around the world, should harness the power of creativity in order to be more innovative.

Creativity is a force inherent to each human being on this planet - in some more than in others. The ability to create is a gift from the Creator Himself. This ability has led the human race from horseback riding to outer space in just over a hundred years. Isaksen (1987:2-10) suggests that creativity is a normal, natural human activity that is observable and, therefore, measurable.

He further suggests that unless mankind is able to adapt creatively to his environment as quickly as science can change the environment, human culture will perish. It is envisaged that individual maladjustment and, ultimately, international annihilation will be the price to be paid for a lack of creativity.

He asserts that the investigation of creativity is at the forefront of contemporary national inquiry. Potentially, it can shed light on the crucial areas in the specific fields of behavioural sciences and philosophy. On a deeper level, creativity concerns an issue related to humanity's survival, namely its understanding and improvement of itself and of the world at a time when a conventional means of understanding and betterment seems outmoded and ineffective.

Creativity, as well as expression thereof, is a phenomenon that man is not unfamiliar with. History clearly shows that creative behaviour is evident in various walks of life. If one considers creations such as the Mona Lisa by Leonardo da Vinci, numerous inventions throughout the 20th and 21st centuries, symphony music by masters such as Mozart and Bach, one has no choice but to acknowledge the existence of this amazing, interesting force within the human design.

Some achievements of mankind during the 20th and 21st centuries include:

- Electrification - the vast networks of electricity that power the developed world.
- Automobile - revolutionary manufacturing practices made cars more reliable and affordable to the masses and therefore the automobile has become a major mode of transportation world-wide.
- Air travel - flying has made the world accessible, spurring globalisation on a grand scale.

- Safe and abundant water - preventing the spread of disease, increasing life expectancy.
- Electronics - vacuum tubes and, later, transistors that underlie nearly all of modern life.
- Radio and television – these media dramatically changed the way the in which the world receives information and entertainment.
- Agricultural mechanisation - leading to a vastly larger, safer, less costly food supply.
- Computers – these machines form the nucleus of the numerous activities and systems that impact on our lives.
- Telecommunication – has changed the way people all over the world communicate in personal and business affairs.
- Air-conditioning and refrigeration - beyond convenience; they prolong the shelf life of food and medicines, protect electronics, and play an important role in health care.
- Space exploration - reaching outer space vastly expanded humanity's horizons.
- Internet - a global communications and information system of unparalleled access.
- Imaging technologies - revolutionised medical diagnostics.
- Household appliances - eliminated strenuous, laborious tasks, especially for women.
- Health technologies - mass production of antibiotics and artificial implants led to vast improvements in the health sector.

- Petroleum and gas technologies - these fuels provided energy during the 20th century.
- Laser and fibre optics - applications are wide and varied, including world-wide communications, non-invasive surgery, and point-of-sale scanners.
- Nuclear technologies - atomic fission led to a new source of electric power, namely nuclear energy.
- High performance materials – these materials feature improved quality, lighter weight, greater strength and more adaptability.

The above examples are but a few in the engineering context. One could, however, include a vast amount of information on this topic.

Politis (2005:182) suggests that creativity and innovation are two key ingredients for any organisation to achieve and maintain a sustainable competitive advantage. Organisations therefore continually have to improve, adapt, innovate, create and develop. Politis argues that since employees' creative ability makes a significant contribution to organisational innovation, effectiveness and survival, there is a need for organisations to create an organisational context that is most supportive to the generating of ideas and creative thinking.

Some fundamental questions now come to mind:

- What is creativity?
- What are the dimensions of creativity?
- What are the factors influencing creativity?
- Can creativity and the impact of influencing factors be measured?
- Is it possible to improve creativity in people and, especially, within an organisational context?

This study investigates some of the questions listed above.

1.2 Problem statement

In the light of the above mentioned it seems that success in business around the world, as well as in South Africa, relies, to a large extent, on creativity and innovation. This study focuses on creativity within a business context. Factors influencing creative output in the business environment include the creative person, creative process, creative press (environment) and the creative product (Couger, 2005:4).

Each of these dimensions is a field of study in its own right. The focus of this study is on the business press i.e. the internal organisational environment. The research problem investigated by this study is the influence an organisational climate has on creativity and how it can be utilised and geared towards facilitating and fostering creativity among employees. The research

question, more specifically, can be stated as follows: “What does a corporate climate - conducive to creativity and innovation - look like in a specific information technology (IT) organisation in South Africa?”

1.3 Study objectives

Couger (2005:14-18) suggests there are over 1000 definitions of creativity in literature today. This amount possibly alludes to the complexity of the study field. The same can be said of the term “innovation”. Innovation and creativity are often used interchangeably in the literature. Couger suggests that innovation and creativity are two distinct and separate concepts and should be treated as such.

The purpose of this study is to investigate and explore the nature of a corporate climate in an IT organisation in South Africa and determine whether it is conducive to creativity and innovation. Creativity and its related themes are investigated in depth in this study.

The primary objective of this study is:

To define, organise and clarify terms such as creativity, innovation, organisational climate and to investigate the relationship between these concepts as found in contemporary literature. To identify major barriers to creativity with respect to organisational climate and to provide

recommendations in order to enhance creativity and innovation in a specific IT organisation.

Other specific objectives of this study include:

To identify and measure the climatic factors required by a specific technology organisation in South Africa that will contribute towards establishing an organisational climate that will facilitate and foster creativity and innovation within that organisation.

To provide empirical results obtained from data collection and analysis of responses, measuring the climatic factors necessary for an organisational climate that is conducive to creativity and innovation.

To provide conclusions and recommendations, in order to improve the organisational climate, based on the theoretical and empirical evidence gathered in this study.

1.4 Research methodology

This study aims to provide a comprehensive literature review related to creativity and innovation in the workplace as well as the influence of organisational climate on the aforesaid. A valid and reliable measuring instrument is used in this research project to measure the corporate climate's conduciveness to creativity and innovation.

The goal of the literature review is to provide a sound theoretical foundation for this empirical research project. This review is based on the following sources:

- Relevant literature and textbooks
- Academic articles and journals
- Academic theses and dissertations
- Electronic databases and the Internet

The literature review covers topics such as creativity, innovation, organisational climate and perspectives related to these topics. Further to this the study aims to identify and clarify the relationship between terms like creativity and innovation. The literature review aims to identify core dimensions that may have an impact on the corporate climate's ability to facilitate or tendency to inhibit creativity and innovation.

The measuring instrument utilised for this study is the Situational Outlook Questionnaire (SOQ). The SOQ measures nine dimensions of a creative organisational climate in a multi-method fashion i.e. utilising scale driven (Likert-scale) and open ended questions. The study includes the collection and analysis of the completed questionnaires by the respondents.

The study sample included all employees of a specific IT organisation in South Africa

1.5 Demarcation of the study

The organisational climate of the ICT firm Mint Net (Pty) Ltd (www.mint.co.za) will be assessed for its conduciveness to creativity and innovation. These results are compared with innovative and stagnating companies to establish the climate's conduciveness to creativity and innovation. Results are presented, conclusions are drawn and recommendations are made based on these results.

Mint Net is a world-class leader in its niche area and has had many successes with the technologies used in its sphere of competency. The core business of this organisation is custom software development on platforms such as Microsoft SharePoint Portal Server, Microsoft Commerce Server, Microsoft Content Management Server and the Microsoft NET framework.

Chapter Two of this study presents concepts such as creativity, innovation and organisational climate, and investigates the relationship between them. The factors influencing creativity are reviewed and discussed in detail. In order to understand creativity and innovation one has to understand the context within which it occurs. Several definitions of creativity are discussed and the commonalities are highlighted. This chapter serves the primary objective of this study and provides a theoretical foundation for the rest of the study.

The research design and framework are discussed in Chapter Three. The measuring instrument for this study is the Situational Outlook Questionnaire (SOQ). The history of this instrument is highlighted, followed by a discussion on its validity and reliability. The test environment and research sample are also described. Background information related to the industry in which the test organisation operates is discussed and summarised. This chapter encompasses the empirical research work done as part of this study and addresses the objective of measuring the chosen organisation's climate for creativity support.

The results collected using the SOQ are presented in Chapter Four. The SOQ responses were analysed by the Creative Problem Solving Group (www.cpsb.com) in New York. The results are presented, discussed and interpreted in this chapter.

Conclusions and recommendations are presented in Chapter Five. The results are discussed and compared with literature reviewed in earlier chapters. The chapter closes with a summary and conclusion of the research project.

Chapter Two: Literature Review

2.1 Introduction

This chapter provides a theoretical foundation for the study. The literature review is a critical analysis of key concepts in contemporary literature, relevant to this study. Definitions of creativity and innovation are reviewed and presented in this chapter. A definition of creativity and innovation is provided for the purposes of this study.

Concepts such as organisational culture and climate are defined and their relationship to creativity and innovation is investigated. The dimensions of corporate climate impacting on creativity, as measured by the SOQ, are highlighted. The relationship between creativity, innovation and the organisational climate is investigated.

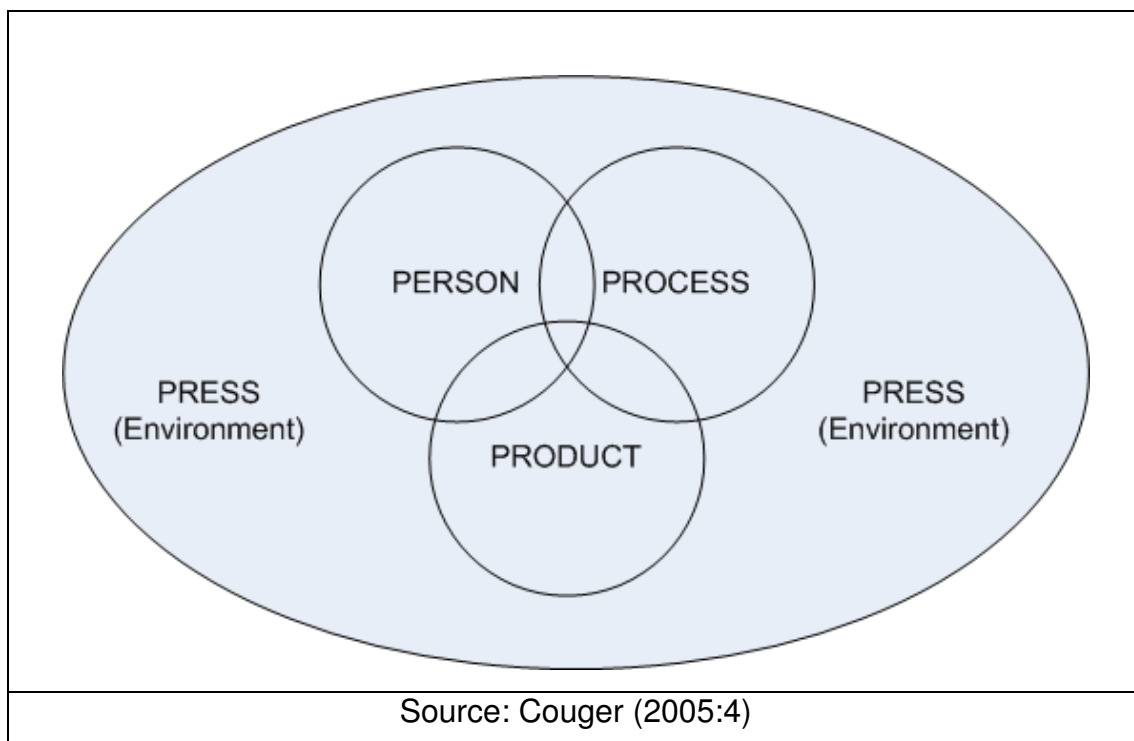
2.2 Creativity & innovation

Literature offers more than a thousand definitions of creativity (Couger 2005:14). It seems odd that there could be such a multitude of different definitions of this concept. It could be argued that creativity is a highly complex topic to research, thus the existence of so many definitions.

Isaksen (1987:9) provides commonalities found in 22 definitions of creativity:

- Creativity is a multi faceted phenomenon
- Creativity involves:
 - Person (personality, intellect, traits, attitudes, values and behaviour)
 - Processes (stages of thinking that people go through when trying to achieve a certain goal)
 - Product (characteristics of artefacts or outcomes of the new thought, idea or design)
 - Press (relationships and patterns between people and their environment and situation) and how this affects creativity)

Figure 2.1 Four P's Model of Creativity



This model indicates that creativity is dependent on, and influenced by, various factors and that these variables are interdependent. This view is adopted for the purposes of this study.

According to Isaksen (1987:2) some authors would assert that creativity is a mysterious phenomenon, one that defies systematic analysis. Creativity is only truly found in a few privileged individuals referred to as geniuses. Man is probably the most important factor in the manifestation of creativity.

According to Couger (2005:13) many authors have found that creativity can be taught:

- “It is a fallacy that we do not need to do anything specific to help intelligent individuals learn to be more creative. Even the literature on gifted education is replete with suggestions for teaching creative problem-solving skills to gifted children. One is led to the conclusion that both average and highly intelligent persons can benefit from instruction in CPS [creative problem solving]”
- “Five major studies demonstrate the validity of teaching creativity: Overwhelmingly, these show significant positive results”
- “An analysis of 142 studies shows that schools can help students recapture the natural creativity they had as preschoolers”
- “Virtually everyone’s personal creativity can be increased beyond its present level. University and professional level creativity courses regularly try to:

- Raise creative consciousness, which increases the likelihood of becoming involved in creative ventures
- Reach people about the topic of creativity itself, which helps them understand and further appreciate creative thinking.
- Teach creative thinking techniques and help people realize that creative thinkers consciously use idea-finding strategies.”

According to Couger (2005:367) research on the relationship between creativity and intelligence indicates that there is a positive correlating relationship between these two concepts. This relationship vanishes when the IQ increases above 120. The research further indicates that creativity is a distinct category of mental functioning that has a limited overlap with intelligence.

Synthesized from the work of Kneller, MacKinnon, Torrance, and Davis, Couger (2005: 368-371) lists a number of traits and abilities observable in creative people. These include:

Table 2.1: Personality traits of the creative person

Trait	Description
Analogical thinking	The ability to make analogies, to see familiar things in a new way, to see connections.
Analysis	The ability to analyse details, to break down problems into their constituent components.
Elaboration	The ability to expand an idea, including developing, embellishing and implementing the idea.
Extending boundaries	Thinking beyond the “usual” or “expected”.
Flexibility	The ability to approach problems from different angles, to be adaptive, to view problems from different perspectives.
Fluency	The ability to generate many ideas.
Imagination	The ability to fantasize, be original, to form mental images or visions.
Intuition	The ability to make “intuitive leaps” or sense relationships based on little, perhaps insufficient, information. A hunch is the start of problem solving, not the conclusion.
Logical thinking	The ability to separate relevant from irrelevant information in order to arrive at a reasonable conclusion.

Metaphorical thinking	The ability to bridge the gap between disciplines, to borrow ideas from one context and use them in another.
Non-Conformity	The ability to think in an unconventional way, not bound by accepted rules, beliefs or practices. A nonconformist feels compelled to be different.
Originality	The capacity to produce unusual ideas, solve problems in unusual ways, and use material and situations in an unusual manner. Uniqueness and nonconformity in thought and action.
Persistence	The ability to focus on a problem and to persevere until it is solved.
Playfulness	The ability to relax and enjoy one's surroundings and colleagues, and to examine problems light-heartedly.
Predicting outcomes	The ability to foresee the results of different solution alternatives and actions.
Regression	The ability to think like a child whose mind is less cluttered by habits, rules and barriers; to toy with ideas and to use humour.
Resisting premature closure	The ability to avoid seizing the obvious or adopting an acceptable idea when many other options

	could be generated.
Risk-taking	The ability to assess the pros and the cons of a project and to take calculated risks to achieve desired goals.
Self-starting	The ability to perceive a problem needs to be solved and to initiate action. Acting independently.
Sensitivity to problems	The ability to identify and pinpoint problems, to detect missing information, to see defects in inadequate solutions.
Synthesis	The ability to see relationships, to combine elements into a viable whole.
Transformation	The ability to find a new usage for something; to “see” new meanings, implications, and applications.

Source: Couger 2005, 368-371

The product refers to the artefact that comes into existence as the result of some creative effort. Prentkey (1980:22-23) suggests that creativity is evident in the creation. This means in order for something to be considered a creation it should have certain characteristics. These characteristics are:

- Originality: Something that comes into existence that was not there before the creation process was completed

- Creation typically is a synthesis and re-formulation of already existing experiences and ideas.
- Creation is spontaneously derived and not something that can be laboured over
- Incubation is necessary for the initial effort of generating revolutionary ideas
- Creation occurs within a social context influenced by times, the environment and a community consisting of colleagues.
- The inherent worth and value of the creation must be clearly evident. A triviality, no matter how original, is still trivial
- The derived change must be sustainable
- The creation must change the human condition in some way or other. The creation has to reach beyond the known existence.

According to MacKinnon (1987:124) the creative process can only start once an individual has realised that something is wrong, incomplete or mysterious. Wallas, as cited in Isaksen (1987:11), was among the first to divide the creative process into four phases. These phases are:

- Preparation
- Incubation
- Illumination
- Verification

Couger (2005:195-299) suggests a model for creative problem solving (CPS):

- Problem delineation
- Gathering pertinent information
- Generating ideas
- Evaluating and prioritising ideas
- Implementation and planning

The first phase involves defining the problem. Careful definition of the problem ensures that one is tackling the right problem.

The second phase in the CPS model refers to finding relevant information concerning the problem. This phase includes gathering, organising, and analysing data.

The third phase in this process is where new ideas are generated. This step includes asking questions such as why, when, where, who, how.

The fourth step involves the evaluation and prioritisation of ideas generated in step 3. It involves measuring ideas to determine what value they could add in solving the problem. Reliable and valid measuring tools should be used in the evaluation process.

The final step in the Couger CSP model involves action planning and implementation. This step involves ensuring the idea is implemented, as well

as canvassing support for the idea. Action planning ensures that there is a clear forward course in order to bring an idea to life.

The creative press refers to the relationship between individuals and their environment. Torrance (1962:143) synthesized the results of various investigations and listed the following necessary conditions for the healthy functioning of preconscious mental processes that will produce creativity:

- The absence of serious threat to the self and a willingness to take risk
- Self-awareness, i.e. to be in touch with one's feelings
- Both openness to ideas of others and confidence in one's own perceptions of reality and ideas
- Mutuality in interpersonal relationships i.e. a balance between an excessive quest for social relations and pathological reflections of them.

Guildford (in Isaksen 1987:32) states that a creative pattern is manifest in creative behaviour, which includes such activities as inventing, designing, contriving, composing and planning. People who exhibit these types of behaviour to a marked degree are recognised as being creative. This definition focuses especially on the person and exhibited traits that can be deemed creative.

Isaksen and Treffinger (in Isaksen 1987:106) define creativity as making and communicating meaningful new connections in order to:

- enable us to think of many possibilities
- enable us to think and experience in varied ways and using different points of view
- enable us to think of new and unusual possibilities
- guide us in generating and selecting alternatives

Cougar (2005:16) states that for an improvement to be creative it should:

- be new or unique
- have utility or value

Creativity clearly is a difficult concept to capture in a definition. The above definitions of creativity contain commonalities. These commonalities include:

- An action or creative-productive process
- An artefact coming into existence that is unique and have useable qualities (utility). This is the creation.
- The creation exists within a specific context or domain. This context is not aware of moral boundaries or any other boundaries except those that may render the creation useless and trivial

Creativity for the purposes of this study is defined as follows:

Creativity is the intellectual effort required for the production of a novel artefact, usable or valuable within a specific context.

Creativity is influenced by various factors, as specified earlier (see page 10). The creative effort is dependent on creative people, processes, press i.e. the environment, and the product. Creativity, therefore, requires a considerable input from a variety of sources. These sources could present, intentionally or unintentionally, a myriad of barriers and obstacles.

Cougar (2005:73-78) identifies the following barriers to creativity:

- Perceptual barriers
- Emotional barriers
- Cultural barriers
- Environmental barriers
- Intellectual barriers

Perceptual blocks refer to errors one make when perceiving one's environment. Although one might have physical evidence of a particular fact one might not be able to perceive this information accurately.

Emotional blocks prevent one from exploring new ideas or providing new ideas from a fear of failure or ridicule. Examples of emotional barriers include: Fear of failure and risk-taking, inability to take time and incubate ideas, lack of challenging work and ideas, distrust and fear of supervisors and other superiors in the organisation.

Cultural barriers stem from cultures that exist in societies, organisations and small groups. Culture can be compared to a mould - it shapes thinking patterns and determines what is socially acceptable or unacceptable within a given context.

Environmental barriers include lack of trust among employees, autocratic leadership styles, distractions, lack of executive support for action and drive novel ideas, punishment and intolerance of failure and risk-taking. These barriers are specifically relevant to this study since they might have a significant influence on the creative environment.

Intellectual barriers refer to inefficient mental and thinking processes. Resistance to change and a reluctance to try new solutions are examples of intellectual barriers.

Andriopoulos (2001:834) lists the following as determinants of creativity:

- organisational climate
- leadership style
- organisational culture
- resources and skills
- the structure and systems of the organisation.

VanGundy (in Isaksen 1987:361 – 363) identifies the following barriers to innovation in an organisation:

- Structural
- Social / Political
- Procedural
- Resource limitations
- Individual and attitudinal

It seems, from the above lists, that creativity in an organisation depends on the person, the environment (climate and culture) and the processes (leadership styles and structure of the organisation). The barriers identified by Couger relates to the person and the environment. The determinants as pointed out by Andriopoulos also refer to the person and environments but include the structure and systems i.e. the processes of the organisation.

Innovation is quite different from creativity in that it is specifically concerned with the creation of a product or service that adds commercial or economic value within its context. Couger (2005:18) states that: “Although the terms ‘creativity’ and ‘innovation’ are often used interchangeably, they should not be. Creativity is a much broader concept whereas innovation is the more restricted process of turning an idea into a product or service.”

Dumphy, Herbig & Howes (1996:291) describes innovativeness as follows:

An invention is the first working model of the technology or creation

Innovation is the first economically viable version of the invention.

They define a successful innovation on p 279 as “an idea processing through macro filters and micro filters to the diffusion of a commercially viable version of the invention.”

Macro filters include:

- Technological prerequisites
- A country’s socio-cultural tendencies
- Material, human and institutional infrastructure

Micro filters include:

- Structure of the particular industry
- Size and nature of the individual firm
- Attitudes of managers in the firm
- The establishing of standards for a widespread diffusion of the innovation
- Degree of competitiveness

The macro and micro filters as described above refer to obstacles that must be overcome before an idea can be considered to be an innovation. The macro and micro filters shape and form the original idea into an economically viable version of the original idea. The analogy of finding a rough diamond, cutting and polishing it to remove any impurities contained therein, thus resulting in a perfectly cut diamond is well suited to this definition.

Van de Ven (1994:590) defines innovation as follows:

“It’s the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order”

Von Stamm (2003:5) argues that innovation is a mindset of people and not limited to a creation capable of generating economic wealth. She further explains that innovative behaviour is an interconnected exercise that includes leadership, culture, strategy and vision, and proper processes.

West and Farr (1990) cited in Martins & Terblanche (2003:67) define innovation as: “the intentional introduction and application within a role, group or organisation of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organisation or wider society.”

The definition above broadens the definitional borders of innovation by stating the new idea is designed for significant benefit to the role-players within a

specific context. The context here can be the individual, the group, the organisation or society as a whole. One can therefore argue that solving a specific problem within a specific context is the primary purpose of innovation. One can argue that an innovation is an answer, which came into existence by means of some creative effort, to a specific problem. Monetary value derived from making the innovation available in a specific marketplace is a secondary benefit resulting from creating the innovation.

Various definitions for innovation focus on the monetary value that is created by inventing some novel concept i.e. the creation of some economically viable product capable of generating income. Although innovation often results in the creation of monetary value, it usually is not the primary purpose for which the innovation was created.

The goal of creative effort, in the case of an innovation, is to solve a specific problem within a specific context. If one considers a situation where a burglar finds a creative or new and effective way of entering a building or opening a bank vault, the question arises whether this can be considered to be an innovation? The effort could have been creative but the goal (the reason for which creativity was harnessed) was neither honourable nor ethical. This introduces an ethical dimension to the use of creative thinking abilities. The effort is of value to the burglar i.e. access was gained to the bank vault, providing possible access to cash. This value is understandable in the context of theft and robbery. This can indeed be seen as an innovation (ignoring ethical boundaries of course) since the burglar has, by utilising creativity,

found a solution to the “problem” of opening a bank vault or entering a building illegally.

Similarly, a general in the military who invents a new and effective technique to infiltrate enemy lines can be seen as an innovator and his technique is an answer to the problem of penetrating enemy lines and is therefore an innovation – a military innovation.

A painter may harness his/her creative ability to create a masterpiece, not for economic profit but as an expression of the artistic self. In this case, the painting is not an innovation since the goal of the creative effort was not to solve some problem or obstacle but rather to provide aesthetic value or as an expression of self.

Cummings (1998:22) defines innovation, based on a literature review he performed, as the “first successful application of a product or process” The successful application in this definition refers to the actual process of solving a problem by introducing the product or process. This definition alludes to the concept that an innovation is a solution to a problem born from the effort of creative thinking.

Innovation for the purposes of this study is defined as:

Innovation is a novel and useful solution, resulting from creative effort, to a problem within a specific context.

2.3 Organisational culture

Many authors have identified organisational culture as the deepest level of basic values, assumptions and beliefs that are shared by the organisation's members and are manifest in actions, especially of managers and leaders. (Locke and Kirkpatrick, 1995; Morgan, 1991; Johnson and Scholes, 1984; Cook, 1998) as cited in Andriopoulos (2001:835)

Martins and Terblanche (2003:65) state that culture epitomises the expressive character of organisations. It is communicated through symbolism, feelings, and meanings behind language, behaviours physical settings and artefacts. Organisational culture fills the gaps between what is formally stated and what actually takes place.

Many authors regard the open flow of communication as crucial for encouraging creativity in social settings and thus, norms that promote open information exchange should facilitate creative performance (Amabile 1998 as cited in (Andriopoulos 2001:835). Robinson and Stern (1997) as cited in Andriopoulos (2001:836) suggest that a creative culture should encourage self initiated activity, where individuals and teams own problems and solutions, so that intrinsic motivation is enhanced.

Ahmed (1998:32) states that organisational culture refers to deeply held beliefs and values. Culture is therefore, in a sense, a reflection of climate, but operates at a deeper level.

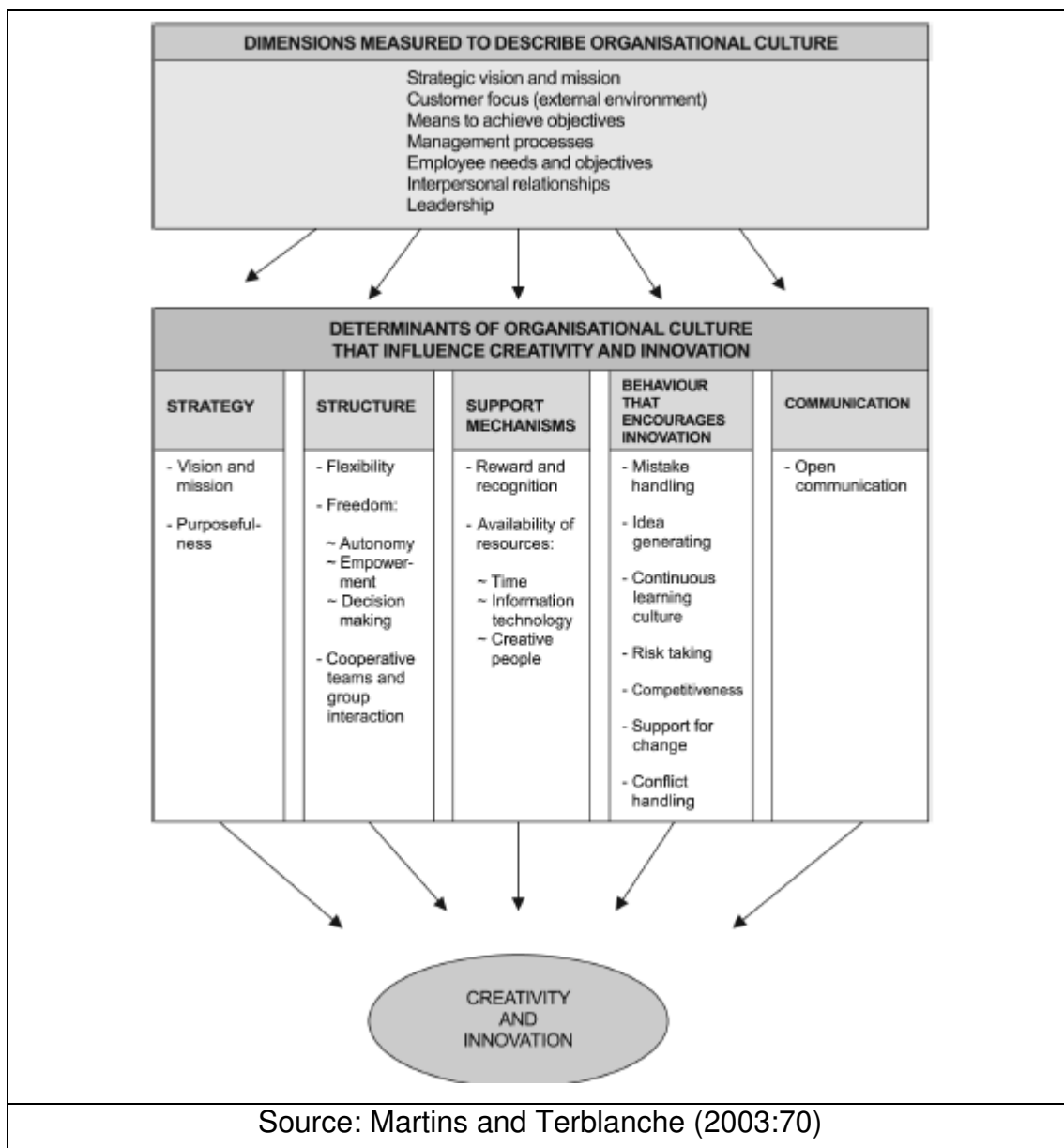
Martins and Terblanche (2003:66) suggests the following dimensions as encompassing of corporate culture:

- Mission and vision: determine personnel's understanding of the vision, mission and values of the organisation and how these can be translated into measurable individual and team goals and objectives.
- External environment: determines the degree of focus on external and internal customers and also employees' perception of the effectiveness of community involvement.
- Means to achieve objectives: determines the way in which organisational structure and support mechanisms contribute to the effectiveness of the organisation
- Image of the organisation: focuses on the image created by the organisation as perceived by the outside world as to whether it is a sought after employer
- Management processes: focus on the way in which management processes take place in the organisation. This includes aspects such as decision making, formulating goals, innovation processes, control processes and communication
- Employee needs and objectives: focus on the integration of employees' needs and objectives with those of the organisation as perceived by the employee
- Interpersonal relationships: focus on the relationship between managers and personnel and on how conflict is managed

- Leadership: focuses on specific areas that strengthen leadership as perceived by personnel

Martins and Terblanche (2003:70) provide the following model to describe the influence of organisational culture on creativity and innovation.

Figure 2.2 Organisational culture and creativity and innovation



Creativity is fostered when individuals and teams have relatively high autonomy in their daily conduct thus fostering a sense of ownership and control over their own work and their own ideas. (Amabile 1996 in Andriopoulos, 2001:835). Anderson et al 1992 in Andriopoulos (2001:838) suggest the idea of ensuring participative safety as an enhancing influence on organisational creativity. Participative safety refers to the provision of protection from criticism and punishment for ideas.

Andriopoulos (2001:838-840) suggests that in managing organisational creativity a key challenge is to create an organisational culture that nourishes innovative ways of addressing problems and outcomes. He further states that in order to encourage creativity within work environments, organisations need to develop what Brand (1998) defines as an “innovative” (divergent and learning) and “supportive” (empowering and caring) culture. “Controlling” (convergent and efficiency conscious) and “directive” cultures (profit before people) hinder creativity in the work environment.

2.4 Organisational climate

Isaksen, Ekvall & Lauer (1999:666) differentiate between culture and climate and define the latter as the observed and recurring patterns of behaviour, attitudes and feelings that characterize life in the organisation. Culture includes the values, beliefs, history and traditions of an organisation.

VanGundy (in Isaksen 1987:370-372) defines organisational climate as the internal psychological environment of an organisation that plays a major role in organisational creativity and particularly with regard to the generation of innovation proposals.

He further synthesized from literature ten interrelated climate factors that may have an impact on creativity and innovation:

- **Autonomy:** Cummings (1965), Sapolsky (1967), Thompson (1965) and Wilson (1966) have argued that innovative companies allow employees considerable freedom and discretion to innovate.
- **Performance reward dependency:** Innovation is more likely to occur when employees perceive that rewards are fair and appropriate, and based on ability and past performance.
- **Risk-taking:** The willingness to take risks appears to be a universally recognised pre-requisite for creative and innovative activity.
- **Support for creativity:** Openness to ideas and willingness to commit resources to the generating of ideas.
- **Tolerance of differences:** Diversity among organisational members will yield a diverse set of innovative and creative ideas and also increase conflict.
- **Personal commitment:** Creativity more frequently is seen in organisations where employees venture beyond his/her assigned routine tasks.

- Top management support: Literature agrees that support from top management is an essential ingredient for any creative climate (Chakrabarti, 1974; Schoen, 1969; Shepard, 1967)
- High sense of responsibility for initiating ideas: If employees believe they have a responsibility to the organisation to propose innovative ideas, they are more likely to do so.
- Job security: Employees who have a high degree of job security are more likely to be rated as “innovative” compared to those who do not.
- Moderate degree of ambiguity: Ambiguity leads to perceived performance gaps which in turn may lead to innovation.

Bower 1956 as cited in Andriopoulos (2001:834) states that a “working atmosphere” favourable to creativity and innovation requires participation and freedom of expression but also sets demanding performance standards. Feurer, cited in Andriopoulos (2001:834), comes to the conclusion that creativity is best achieved in open climates where a number of steps can be taken to achieve these ends.

These are:

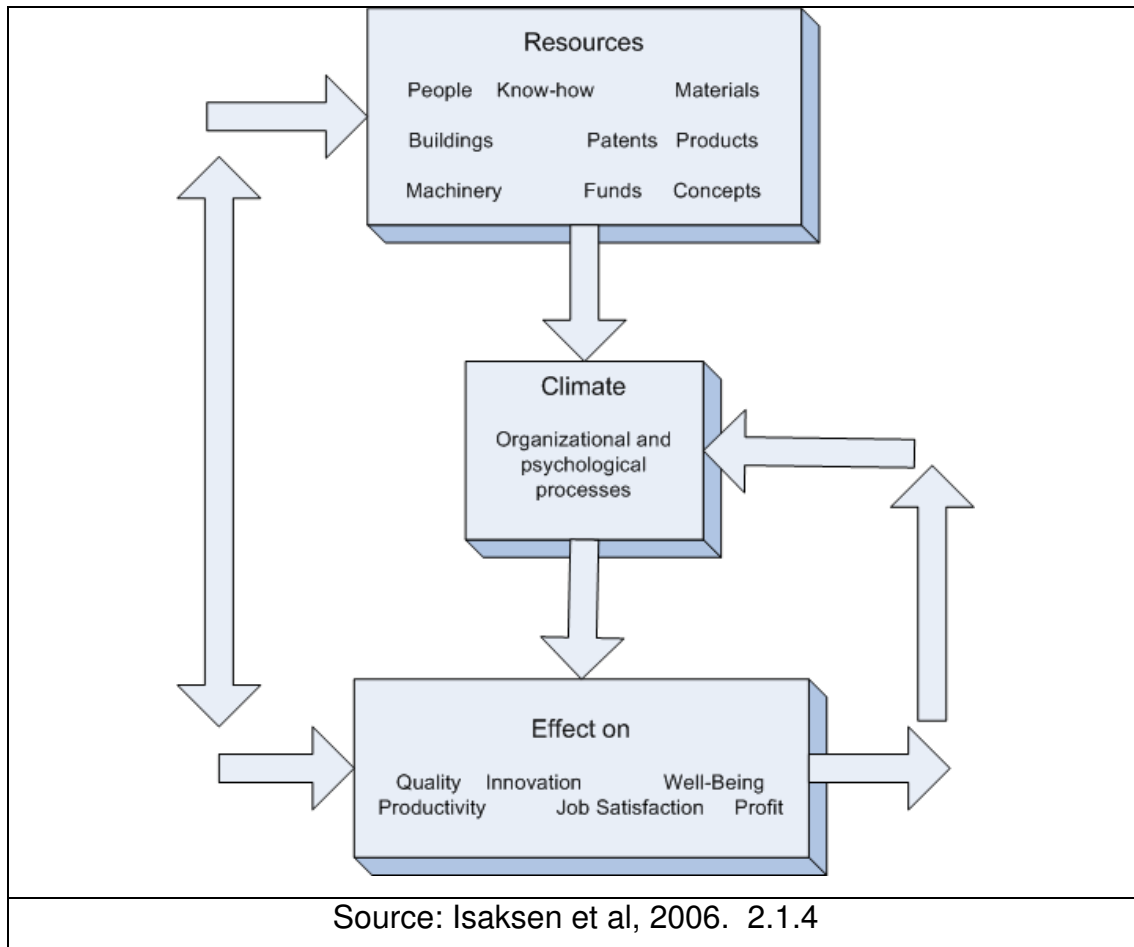
- Interaction with small barriers
- A large number of stimuli
- Freedom to experiment

Ahmed (1998:31) states that the climate of an organisation is inferred by its members through the organisation's practices, procedures and rewards systems that are in place and is indicative of the way business is conducted on a daily and routine basis.

Isaksen, Ekvall, Akkermans, Wilson, & Gaulin (2006: 2.1.3) suggest that organisational climate is an intervening variable in the organisation's psychological processes.

Climate acts as an intervening variable in the context of organisational processes that affect the results of the operations of the organisation. Climate has this power because it has an impact on organisational processes such as problem solving, decision making, communications, co-ordination, controlling and psychological processes of learning, creating, motivation, and commitment

Figure 2.3 Organisational climate as an intervening variable



The above diagram illustrates the influence of climate on other processes within the organisation. It is clear from the diagram that factors such as innovation and job satisfaction impact on the climate, thus creating a feedback system. Climate and the effects thereof are interdependent and affect one another.

Isaksen, Ekvall, Lauer & Britz (2001:175) suggest 9 dimensions of creative climate:

- Challenge / involvement

- Freedom
- Trust / openness
- Idea-time
- Playfulness / humour
- Conflict
- Support for ideas
- Debate
- Risk-taking

Challenge / involvement is defined as: “The degree to which people are involved in daily operations, long-term goals, and visions. Where a high degree of challenge and involvement is present people feel motivated and committed to making contributions. The climate, therefore, is dynamic, electric, and inspiring. People find joy and meaning in their work. In the opposite situation, people are not engaged, and feelings of alienation and apathy are present. Individuals lack interest in their work and interpersonal interactions consequently are dull and listless.”

The dimension of freedom is defined as follows: “Independence in behaviour exerted by the people in the organisation.” In a climate with much freedom, people are given the autonomy and resources to define much of their work themselves. They exercise discretion in their day-to-day activities. Individuals are afforded the opportunity and take the initiative to acquire and share information about their work. In a restrictive climate, people work within strict

guidelines and roles. They carry out their work in prescribed ways with little room in which to redefine their tasks.”

Trust / openness are defined as “emotional safety in relationships. Where a high degree of trust exists, individuals are able to be genuinely open and frank with each other. People count on each other for professional and personal support. People have a sincere respect for each other and give credit where credit is due. Where trust is absent, people are suspicious of each other, and therefore, they closely guard themselves, their plans, and their ideas. In these situations, people find it extremely difficult to communicate openly with each other.”

Playfulness / humour is defined as “spontaneity and ease displayed within the workplace”. A professional, yet relaxed, atmosphere where good-natured jokes and laughter occur often is indicative of this dimension. People are seen to be having fun at work. The climate is seen as easy-going and light-hearted. The opposite climate is characterized by gravity and seriousness. The atmosphere is stiff, gloomy, and cumbersome. Jokes and laughter are regarded as improper and intolerable.”

Conflict is defined as a “presence of personal and emotional tensions in the organisation. When the level of conflict is high, groups and individuals dislike, and may even hate, each other. The climate can be characterized by “interpersonal warfare.” Plots, traps, power, and territory struggles are usual elements of organisational life. Personal differences yield gossip and slander.

In the opposite case, people behave in a more mature manner; they have psychological insight and control of impulses. People accept and deal effectively with diversity.”

The dimension of idea-time is defined as the “amount of time people can use (and do use) for elaborating new ideas. In the high idea-time situation, possibilities exist to discuss and test suggestions not included in the task assignment. There are opportunities to take time to explore and develop new ideas. Flexible timelines permit people to explore new avenues and alternatives. In the reverse case, every minute is booked and specified. The time pressure makes thinking outside the instructions and planned routines impossible.”

Debate is defined as the “occurrence of encounters and disagreements between viewpoints, ideas, and differing experiences and knowledge. In the debating organization, many voices are heard and people are keen on putting forward their ideas for consideration and review. People can often be seen discussing opposing opinions and sharing a diversity of perspectives. Where debate is missing, people follow authoritarian patterns without questioning them.”

Risk-taking is defined as “tolerance of uncertainty and ambiguity in the workplace. Where risk-taking is on a high level, bold initiatives can be taken even when the outcomes are unknown. People feel as though they can “take a gamble” on their ideas. People will often “go out on a limb” to put an idea

forward. In a risk-avoiding climate, there is a cautious, hesitant mentality. People try to be on the “safe side” and often “sleep on the matter.” They set up committees, and they cover themselves in many ways.

Isaksen et al (2006: 3.2.36 – 3.2.37) provide the following table in support for the dimensions of a creative climate:

Table 2.2: Authors supporting the nine dimensions of organisational climate

Author(s)	Date	CH	FR	IS	PL	HU	DE	TR	OP	CO	RT	IT
Abbey, A & Dickenson, J.W.	1983		X	X							X	
Abetti, P.A.	1986	X	X								X	
Amabile, T.M.	1983b	X	X	X	X						X	X
Amabile T.M	1988	X	X	X	X		X				X	X
Amabile, T.M. & Associates	1990	X	X		X						X	
Amabile T.M & Gyskiewicz, N	1989	X	X	X			X	X	X	X	X	X
Arieti, S	1976		X	X	X	X	X		X	X		X
Chirstie, J.F.	1980		X		X	X						
Chistie, T.	1970		X				X		X	X		
Crutchfield, R.S.	1962	X	X	X					X	X	X	
Csikszentmihalyi,	1990											

M.												
Danksy, J.L. & Silverman, I.W.	1975				X							
Dentler, R.A. & Mackler, B.	1964											
Dimock, M	1986		X					X		X	X	
Feitelson, D. & Ross G.S.	1973				X							
Feldhusen, J.F & Hobson, S.K.	1972		X		X	X			X		X	
Gibb, J.R.	1972	X	X		X			X	X	X	X	
Glover, J.A.	1977										X	
Goyal, R.P	1973		X	X					X			
Gruber, H.E.	1989a	X	X		X					X	X	X
Guildford, J.P	1950	X	X									
Guildford, J.P	1975	X	X			X			X		X	
Hall, J	1980	X	X	X	X	X		X	X	X	X	X
Harrington, D.M	1990	X	X	X	X		X	X	X		X	X
Hinton, B.	1968											
Hoffer, E	1968		X		X						X	
Irwin, D.W. & Rule, E.G.	1988		X	X								
Kanter, R.M.	1986	X	X	X	X		X		X			
Leham, H.C.	1953	X		X								

Lieberman, J.N.	1965				X	X						
Lieberman, J.N.	1967				X	X						
Maslow, A.H.	1971		X	X	X	X		X	X	X	X	X
Mumford, M.D & Gustavson, S.B.	1988	X	X	X	X			X	X		X	
Osborn, A.F.	1953	X	X	X				X	X			X
Peavy, V.R.	1979		X		X			X	X			X
Roe, A.	1958		X	X	X	X		X	X			X
Rogers, C.R.	1954		X	X	X		X	X	X		X	
Rogers, C.R.	1961	X	X		X		X	X	X			
Stein, M.I.	1953	X	X									
Stein, M.I.	1974	X	X	X	X					X	X	
Stein, M.I.	1975		X	X	X		X	X	X	X	X	
Stein, M.I.	1985	X	X									X
Taylor, I.A.	1975		X	X	X		X	X	X	X	X	
Taylor, I.A.	1976		X				X		X			
Torrance, E.P.	1962a	X	X	X								
Torrance, E.P.	1979		X	X	X	X	X	X		X	X	X
VanGundy, A.G.	1984	X	X	X	X	X		X		X	X	X
Wesenberg, P.	1986		X					X				
Winslow, E.K.	1990	X	X					X			X	
Ziv, A.	1976		X			X						
Totals		23	41	23	28	13	12	20	22	14	25	14
		CH	FR	IS	PL	HU	DE	TR	OP	CO	RT	IT

Key	
CH = Challenge	FR = Freedom
IS = Idea support	PL = Playfulness
HU = Humour	DE = debate
TR = Trust	OP = openness
CO = Conflict	RT = Risk-taking
IT = Idea-time	

Source (adapted): Isaksen et al. 2007, 3.2.36 – 3.2.37

It seems from the above table that a substantial number of authors support these dimensions. These are, not surprisingly, the dimensions measured by the SOQ.

2.5 Summary

Researching creativity is clearly a complex undertaking. Literature provides endless definitions for creativity. Creativity is evident in products, people, processes and the environment or context. Characteristics of creativity include novelty or originality and utility or value. Some authors believe that a person cannot be trained to be creative but that some are born to be creative and others are not. Other authors, however, argue that every human being is creative – to some extent – and, therefore, a person can be trained to be more creative. Some authors argue that creativity is the product of a combination of elements including the environment, process, product and the person.

A conclusion that can be drawn is that creativity exists within a certain context. For example a painter paints a masterpiece. This painting exhibits the creative ability of the painter. The painting can be called the creative product. The context here is art or expression. An engineer who creates a brilliant, new solution to a difficult problem is creative in the context of problem solving. Creativity and creative thinking processes ultimately remain to be neuro-physiological processes. Evidence of this process, i.e. novelty and utility, is evident in the creation, the environment, the process and the person.

Creativity for the purposes of this study is therefore defined as follows:

Creativity is the intellectual effort required for the production of a novel artefact, usable or valuable within a specific context.

Innovation is a subset or context of creativity and a result of creative effort. An innovation is specifically created to solve a specific problem within a specific context. Innovation for the purposes of this study is therefore defined as follows:

Innovation is a novel and usable solution, resulting from creative effort, for a problem within a specific context.

Organisational climate defined as: “the observed and recurring patterns of behaviour, attitudes and feelings that characterise life in the organisation” (Isaksen, Ekvall & Lauer, 1999:666). Dimensions of creative organisational climate include challenge, freedom, trust, humour and playfulness, idea support, idea time, debate, conflict and risk-taking. A number of authors support the fact that these dimensions have a significant impact on creativity.

The organisational climate and its influence on creativity and innovation is the primary focus of this study.

Chapter Three: Research Methodology

3.1 Introduction

Chapter one briefly refers to the research methodology and research design followed in this study. The following aspects of the research methodology are described in this chapter:

- Research design
- Measuring instruments
- The Situational Outlook Questionnaire
- Reliability and validity of the SOQ
- Data collection method and sampling
- Mint Net (Pty) Ltd (study population)

Zikmund (2003:6) defines business research as the systematic and objective process of gathering, recording, and analysing data for aiding decision-making in business. It is clear from this definition that business research is a process and involves many steps. De Vos (1998:19) defines research as a structured enquiry that utilises acceptable scientific methodology to solve problems and create new knowledge that is generally acceptable.

Business research and the results it yields aim to reduce uncertainty around the research topic and in so doing improve the quality of business decisions taken by managers. Zikmund (2003:54) suggests that decision-making in

business is improved by the information produced through business research. He further notes that business research can be classified according to the technique used to investigate the business problem. Business research is classified as follows:

Exploratory research: Research to clarify and define the business problem and its nature. This type of research is especially useful to identify key topics for future research.

Descriptive research: This research design aims to describe the characteristics of a population or a phenomenon. Descriptive research is based on existing knowledge in the research field.

Casual research: This research aims to identify cause-and-effect relationships among variables once the research problem has already been narrowly defined.

De Vos (1998:78) suggests that all research designs belong in either of two categories:

- Qualitative research
- Quantitative research

Quantitative research provides numerical, quantified results based on some statistical computation. This is usually based on results gathered from the

responses recorded by using close-ended questions e.g. Likert-scales. Qualitative research provides attitudinal responses and attempts to explain phenomena that are not as easily quantified by numbers., Open-ended questions, i.e. questions that allow the respondent to formulate his/her answers in his/her own words, are utilised to gather qualitative research data.

Zikmund (2003:65) defines research design as a master-plan specifying the methods and procedures for collecting and analysing the required information. He further states that there are basically four research methods or designs for descriptive and causal research:

- Surveys
- Experiments
- Secondary data studies
- Observation

The survey technique involves a questionnaire completed by the participants in the study. The design of both the questionnaire and the questions is of critical importance to the research project. The most promising method to establish causal (cause-and-effect) relationships is through business experiments. The use of experiments allows the researcher to investigate one variable while adjusting one or two others and observing the effect. Secondary analysis is a technique where mathematical models are developed and used to identify new relationships and causal elements. Formal secondary analysis has benefits and limitations similar to explorative

research. The observation technique involves the recording of observable phenomena.

This study availed itself of all three classes of research. In the literature review (Chapter 2 & 3) explorative research is used to discover subtleties about the concepts at hand. In Chapter 5 & 6 descriptive and causal research is used to illustrate correlations between variables involved in this study. Climatic factors and creativity are measured and correlated providing evidence that this climate is indeed conducive to creativity and innovation.

3.2 Measuring instruments

A number of measuring instruments exist for measuring creativity in a person or an organisation. Torrance contributed significantly towards advancing the measuring of creativity. Torrance (1994:11) found that children learn best when they are allowed to study in the way they choose and in ways that most suit their capabilities and motivation.

Maddox (1997:453 – 527) refers to a couple of measuring instruments that have been developed:

- The “Creativity Assessment Packet”, developed by Williams (1980), measures the cognitive factors related to the creative process
- The “Creativity Attitude Survey”, developed by Schaefer (1971), measures attitudes towards creativity

- The “Torrance Test of Creative Thinking”, developed by Torrance (1962), measures the ability of individuals to determine, visualise and change the meaning of words, concepts and patterns.
- The “Cree Questionnaire”, developed by Thurstone & Mellinger (1995), which is used to measure the creative ability of individuals
- The “Creativity Questionnaire”, developed by Cameron (1994), measures the correlation between creativity, innovation, rules and regulations.

3.3 The “Situational Outlook Questionnaire” (SOQ)

The study makes use of a valid, reliable, measuring instrument to measure the organisational climate for its conduciveness to creativity and innovation.

An instrument identified for this purpose is the Situational Outlook Questionnaire (SOQ). The SOQ was created based on a questionnaire originally developed by Goran Ekvall (1983) called the “Creative Climate Questionnaire (Isaksen et al 1999:666).

A historical background is presented here as an introduction to the SOQ.

As of 2006 the SOQ boasts over 50 years of history (Isaksen et al. 2006, 2.1.1). Ekvall’s doctoral work formed the cornerstone for identifying organisational climate or work atmosphere as a critical aspect for organisational effectiveness. The SOQ was developed from the Creative Climate Questionnaire (CCQ) developed by Ekvall in the 70’s.

The following table provides a historical perspective on the development of the SOQ.

Table 3.1 SOQ development time line

Version Name	Date	Dimensions measured	Number of items	Reasons for change
Creative Climate Questionnaire (CCQ)	1981	Mutual trust Challenge and motivation Freedom Pluralism	50	Seminal work
Creative Climate Questionnaire II (CCQ II)	1982	Same as CCQ	44	Based on factor analysis – 12 items removed, 6 added
Creative Climate Questionnaire III (CCQ III)	1983	Challenge Support for ideas Freedom in the organisation Freedom in the job Dynamism Tension “Global”	50	Removed, expanded, and added additional items to better assess an organisation’s innovative capacity

Creative Climate Questionnaire IV (CCQ IV)	1986	Challenge Freedom Idea support Dynamism Playfulness Debate Trust Conflict Risk-taking Idea time	50	12 dimension version refined to those 10 dimensions that seem to account for the greatest amount of variance when assessing an organisation's innovative capacity
Creative Climate Questionnaire IA (CCQ IA)	1986	Same as CCQ III	50	Swedish CCQ translated into English
Creative Climate Questionnaire IIA (CCQ IIA)	1989	Same as CCQ IV	51	Revised and edited items to improve evidence of validity and reliability. Order changed and omnibus item added.
Climate for Innovation	1991	Same as CCQ IV	60	CIQ becomes multi-method

Questionnaire IIIA (CIQ IIIA)				assessment with the addition of three open response questions. Name changed to clarify purpose of the instrument. Some older items dropped with new ones added.
Situational Outlook Questionnaire IV (SOQ IV)	1995	Challenge / Involvement Freedom Trust / Openness Idea Time Playfulness / Humour Conflict Idea Support Debate Risk-taking	50	Name changed to reflect ecological function of assessment. Dynamism deleted but still present under other dimensions in translation.
Situational Outlook Questionnaire V	1998	Same as SOQ IV	53	Variety of statistical methods used to

(SOQ V)				<p>analyse items with weak items elected for edit. Some items edited for clarity with major focus on Risk-Taking and Trust / openness dimensions.</p>
<p>Situational Outlook Questionnaire VI (SOQ VI)</p>	<p>2001</p>	<p>Same as SOQ IV</p>	<p>53</p>	<p>Found some 1998 improvements around Risk-Taking and Trust / Openness did not tighten the measure but made it less structured. Additional analysis led to effective changes that improved both scales' reliability factors.</p>

				Current version is tighter and measures more of an organisation's creative climate.
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Source: Isaksen et al. 2006, 2.2.1 – 2.2.3

The SOQ VI measures 9 dimensions in organisational climate: They are:

Table 3.2: Organisational dimensions measured by the SOQ

Dimension	Description	Sample Item
Challenge / Involvement	The degree of emotional involvement, commitment and motivation in the operations and goals	The work atmosphere here is filled with energy
Freedom	The level of autonomy, discretion, and initiative in behaviour exercised by individuals to acquire information, make decisions, etc.	Here employees make choices about their own work
Trust / Openness	The degree of emotional	Here employees do not

	safety, and openness found in relationships.	steal each others' ideas
Idea Time	The amount of time people can use (and do use) for elaborating new ideas	Time is available to explore new ideas
Playfulness / Humour	The display of spontaneity, ease, good natured joking and laughter that is displayed	Here employees exhibit a sense of humour
Conflict	The presence of personal and emotional tensions and hostilities	Power and territory struggles are apparent
Idea Support	The degree to which new ideas and suggestions are received with appreciation	Here people usually feel comfortable when presenting new ideas
Debate	Expression of and considering many different view-points, ideas, and experiences	A wide variety of viewpoints is expressed.
Risk-taking	Tolerance of ambiguity and uncertainty	Here employees often venture into unknown

		territory
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Source: Isaksen et al (1999:668)

These dimensions are widely supported in the literature (see Chapter Two: Literature Review). This study utilises SOQ version 6 as the measuring instrument.

3.4 Reliability and validity of the SOQ

Reliability and validity are two compulsory prerequisites for any measuring instrument used in business research. Isaksen et al. (2007:3.0.1-3.0.9) explains reliability and validity as follows:

Reliability: The degree to which an instrument consistently measures the construct.

Validity: The degree to which an instrument actually measures the construct it purports to measure

Reliability refers to the instrument's ability to consistently give the same results when applied to similar situations. The following types of reliability can be distinguished:

Test – retest reliability: Consistency over time

Internal consistency: Split-half or odd-even formula; Kuder-Richardson formula; Cronbach's alpha

Zikmund (2003:300) defines reliability as the degree to which measurements are free from error and therefore yield consistent results

Validity refers to an instrument's ability to measure the variable(s) it claims to measure. A ruler for example measures short distances and can be used accurately, to determine the distance between any given two points. The ruler, for obvious reasons, cannot be used to measure two distinct points in time and would therefore provide invalid, i.e. incorrect, results when applied to measuring time. Zikmund (2003:301) defines validity as the ability of a scale or measuring instrument to measure what it is intended to measure

Types of validity can be distinguished as follows:

Construct validity: The degree to which the instrument measures the variable it intends to measure

Predictive validity: The possibility to predict future results

Content validity: The degree to which the instrument assesses the domain it intends to measure. Does it cover all elements in the research domain?

Concurrent validity: The instrument's relation to other valid instruments in the same domain variables.

Isaksen et al. (2007:3.1.1 – 3.7.4) provide over 50 years of empirical evidence for reliability and validity of the SOQ. Therefore, the SOQ can be used successfully as a valid and reliable measuring instrument.

3.5 Data collection method

The SOQ has been completed in two formats: an electronic version (web version) and a paper version. The web version has been completed on an internet web page while the paper version has been completed in the office environment. The two formats were completed over a three week period. The web version was completed first and thereafter the paper version. An email was sent to all respondents instructing them on how to complete the SOQ.

The questionnaire consists of 2 sections, section A and section B. Section A consists of 53 close-ended questions. Section A questions make use of a Likert-scale. Questions in section A are formulated in such a way that the respondent can provide answers as an objective observer. The scale ranges from 0 – 3 and is presented as follows:

0 = Not applicable at all

1 = Applicable to some extent

2 = Fairly applicable

3 = Applicable to a high degree.

The dimensions are scored between 0 and 300. The average for each dimension is calculated by adding all respondent values and dividing that by the number of questions for the particular dimension.

The following normative data (see Figure 3.1 & 3.2) emerged from research done by Ekvall in the 1970's. The normative data are used to compare with the results obtained in this study.

The first column reports the averages for 10 innovative organisations, and the other column reports averages for five stagnating organisations. This study yielded the normative data that were used to compare an organisation's climate with that of both innovative and stagnating companies.

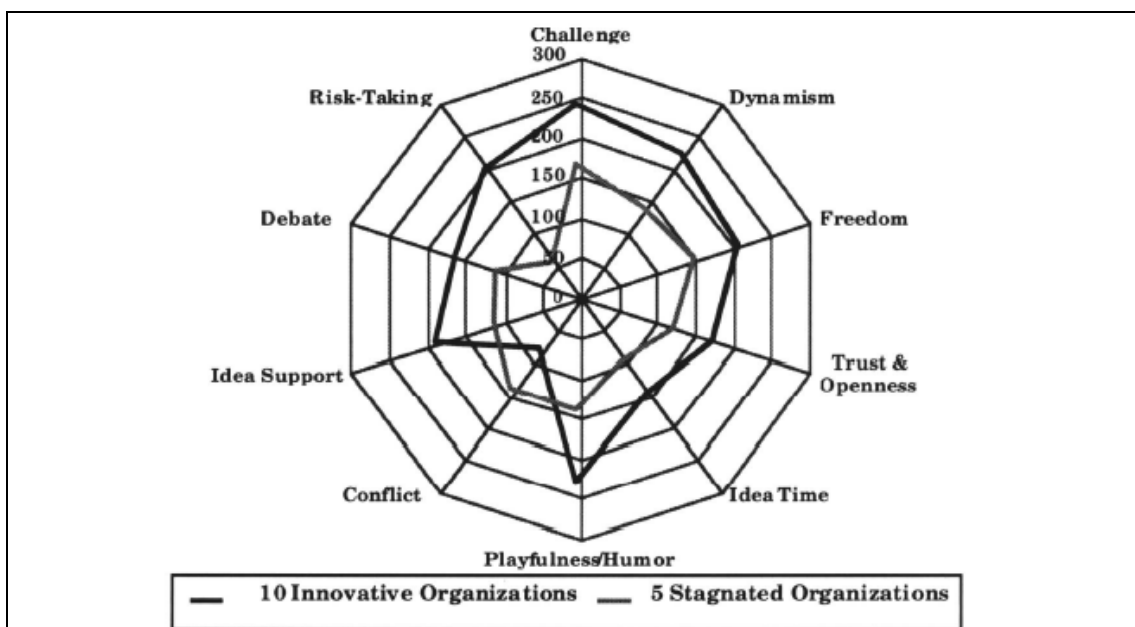
Figure 3.1: Ekvall's CCQ Normative Information – Numeric data

Dimension	Innovative Organizations ^a			Stagnated Organizations ^b		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Challenge and Involvement	238	27	219–300	163	10	154–176
Dynamism	220	33	182–290	140	22	120–166
Freedom	210	16	185–240	153	32	114–192
Trust/Openness	178	36	90–212	128	29	89–168
Idea Time	148	13	123–168	97	26	70–130
Playfulness/Humor	230	31	148–260	140	21	105–158
Conflict	78	31	56–150	140	14	126–162
Idea Support	183	14	166–200	108	23	80–132
Debate	158	31	110–204	105	6	98–112
Risk-Taking	195	27	153–240	53	15	34–70

^a*n* = 10. ^b*n* = 5.

Source: Isaksen et al (2001:178)

Figure 3.2: Ekvall's CCQ Normative Information – Spider Chart data



Source: Isaksen et al (2001:179)

This normative information is provided as a benchmark and will be used to compare with Mint Net's results in Chapter four. The normative information serves to place the results obtained in this study into perspective.

3.6 Mint Net (Pty) Ltd

This study has been conducted in a company called Mint Net (hereafter referred to as Mint). Mint is a South African information technology solution provider with both local and international customers.

Mint connects people, inside as well as outside the organisation, across traditional business boundaries via technology and innovative solutions. Mint provides customers with a personalised view of relevant information and enables interaction with automated business processes. As a result, people are provided with better information to make informed business decisions and consequently users are more willing to share their knowledge with each other.

Mint started trading in January 2000 using Microsoft technology to build functional and elegantly designed websites. Mint is recognised globally by Microsoft for its comprehensive understanding of their portal and content management technologies. Mint is also a leading player in the enterprise collaboration and knowledge management field.

Mint's mission statement is as follows:

“We help people to become more productive, reducing costs in the business. We do this by connecting people with a personalised view of quality information and processes across business boundaries, enabling superior decision making and knowledge sharing.”

(<http://www.mint.co.za/sections/aboutus/>)

Mint's values can be listed as follows:

- We have a passion for delivering value to our customers
- We aspire to get it right the first time
- We improve through our ongoing learning
- We work in a supportive culture
- We have a positive attitude

As noted in the literature review, a supportive culture, arising from a supportive management style, is conducive to creativity and innovation. The organisation has 25 employees. The organisational hierarchy is not very deep and managers maintain an open door policy. In some cases, managers and operational staff are personal friends who share strong trust relationships.

Most of the organisation's projects are large and complex. Mint has developed the “Mint Project Methodology”, based on the Microsoft Solutions Framework (<http://msdn2.microsoft.com/en-us/teamsystem/aa718800.aspx>), to ensure

that the solutions that are constructed meet the strict quality standards, which Mint has set for itself.

In brief, the Mint Project Methodology allows each project to be broken down into phases:

- Envisioning: this covers the common vision, objectives and scope of the project
- Planning: the solution requirements, design and project plan are addressed in this phase.
- Developing: this includes development of application and code; customisation of software and applications; installation of hardware and software; and test preparation
- Stabilising: the emphasis is on **use** and operation under realistic environmental conditions. **This** phase includes testing of the system, its integration and user acceptance.
- Deployment: the project is handed over to the operations team and final customer approval is obtained. Finally a project review and customer satisfaction survey is conducted.

The organisation runs all projects according to this methodology and development teams are different for each project. This gives employees the chance to work with a variety of other employees, strengthening social bonds and exposing employees to assorted technologies and team personalities.

Organisation climate was defined in Chapter two as “the observed and recurring patterns of behaviour, attitudes and feelings that characterise life in the organisation” (Isaksen, Ekvall & Lauer, 1999:666). Mint employees maintain a positive and light-hearted attitude with regard to their work. Humour plays an important role in daily activities. Humorous emails are sent on a daily basis often resulting in long email trails with increased humour.

Projects are seen as learning opportunities for team members and for the company as a whole. The organisation constantly engages in “bleeding edge” technologies and often has to research new technologies in order to acquire a working understanding of the specific technology. The organisation often utilizes unknown technologies resulting in constant learning and change in the organisation. Employees are encouraged to explore new technologies and educate themselves on the details of such technologies. However, time constraints and project deadlines often hinder employees to spend a satisfactory amount of time on researching and exploring new ideas.

The organisation encourages risk-taking and employees are not punished for failures. Instead, failures are seen as opportunities to learn from. Past mistakes are lessons to be learned from in order to avoid repeated failures.

'Post mortems' are carried out on most projects to analyse what was done well, what could have been done better and what should have been avoided on a given project. Information created by this post- project feedback session is communicated to all employees in the organisation and feedback is linked to the team member who provided it. This practice promotes transparency, openness and trust among employees.

Every employee is part of one or more project teams at any given point in time. A project manager is responsible for delivering projects on time, within budget and scope. Team members, therefore, have limited control over the work that is assigned to each member.

Teams make use of brainstorming sessions to better understand problems, customer requirements and the technologies they work with. As a result, many opinions and ideas are raised. Teams often debate the best ways and the direction a project should take. Sometimes this would result in postponing the deadlines or reworking components of the solution.

The organisation's management team fosters and supports a climate and culture of transparency and approachability. Conflict in the organisation is minimal and employees are afforded the liberty to air grievances and issues.

The organisation is a Microsoft gold certified partner. This means that the organisation is recognised by Microsoft as a competent service provider for two or more specific Microsoft technologies

<https://partner.microsoft.com/global/program/programoverview/goldcertpartner>

3.7 Summary

The chapter describes the research approach that was followed for this study. The research design, data collection method and the research group are described. The measuring instrument used in this study is the SOQ. This instrument is reliable and valid and has been redefined and improved over the last 50 years. Results obtained by administering the SOQ are presented in the next chapter.

Chapter Four: Results

4.1 Introduction

The results of the research project are presented and analysed in this chapter. Using the SOQ, the corporate climate of a software development firm - Mint Net (Pty) Ltd - was assessed. The chapter outlines the results derived from the data collection. Mint's results are presented in the framework of the nine dimensions as measured by the SOQ. The qualitative results are presented as narratives.

4.2 Execution

The SOQ was provided by the CPSG in two formats. A paper version and an online, web based, version. Completing the SOQ in the two formats was a request of the SOQ sponsor. Comparing the paper and web version results contributes towards proving the reliability and validity of the SOQ in different formats.

The paper version SOQ was distributed by hand to all respondents in the organisation while a web address, with security credentials, was provided to respondents in order to complete the web version. The web version was completed first and thereafter the paper version. This was done to avoid intentional duplication of the responses. The researcher participated as a respondent in this study.

The researcher obtained approval from Mint Net's management team to proceed with the study during working hours.

The goals and objectives of the study were communicated to the respondents both verbally and by e-mail. The purpose of the study and the parameters of the study were explained to the respondents. Respondents were instructed to complete the SOQ based on their perception of the work environment and its influence on creativity. A research policy statement was e-mailed to all respondents. This policy is available in Appendix A.

A three-week window was set to complete all SOQs. Reminder e-mails were sent bi-weekly reminding respondents to complete the SOQ. In total 21 employees, 84% of the population (25), completed both formats of the SOQ. Data collection was terminated after the three-week period and no more responses were recorded. The responses were analysed and included in the set of results where a respondent completed the SOQ in both formats

The paper version of the SOQs were scanned and emailed to the CPSB in the USA while the online SOQ responses were captured directly into the research database. The quantitative data were analysed by the CPSB group. The results were provided as both numerical data and graphical representations.

Statistiese Konsultasiediens at the University of Johannesburg provided statistical correlations between the paper and web version responses. The

results indicated close correlations between the web and paper responses. This indicates, statistically, that the web and paper responses are the same

4.3 Mint Net's SOQ results

Mint's results compare very well with innovative companies. At a glance, all of Mint's dimension scores are high except for debate; conflict and freedom (see Figure 4.1). There is too much debate around decisions, causing too much talking and indecision on important issues. The Freedom score was also low, possibly because in many instances employees are not allowed to make their own decisions. . Employees feel they have to report to a senior before deciding on an issue.

As mentioned in the Chapter four, a total of 21 individuals completed the paper and the web version of the SOQ. The sample constitutes 84% of the population. This represents a statistically viable sample for this study.

Figure 4.1: Mint SOQ: Overall results (Paper version)

Climate Variables	Innovative Company Averages	PAPER/MINT Averages	Stagnated Company Averages
Challenge/Involvement	238	238	163
Freedom	210	146	153
Trust/Openness	178	208	128
Idea-Time	148	142	97
Playfulness/Humor	230	230	140
Conflict	78	33	140
Idea-Support	183	195	108
Debate	158	197	105
Risk-Taking	195	166	53
Number of Comps. or Inds.	10 Companies	21	5 Companies

The results presented in Figure 4.1 paint a positive picture with regard to the nine climate dimensions measured. Comparing Mint's results with those of innovative companies (n=10), Mint's results are exactly on par with the innovative companies on the challenge/involvement and the playfulness/humour dimensions. The scores of the freedom (146) and risk-taking (166) dimensions are lower than those of the innovative companies. This reflects the fact that the employees at Mint are not often allowed to make independent decisions and that they feel obliged to report to colleagues before making decisions.

The average scores of the different dimensions can be presented as follows:

Figure 4.2 Overall results – Spider Graph (Paper version)

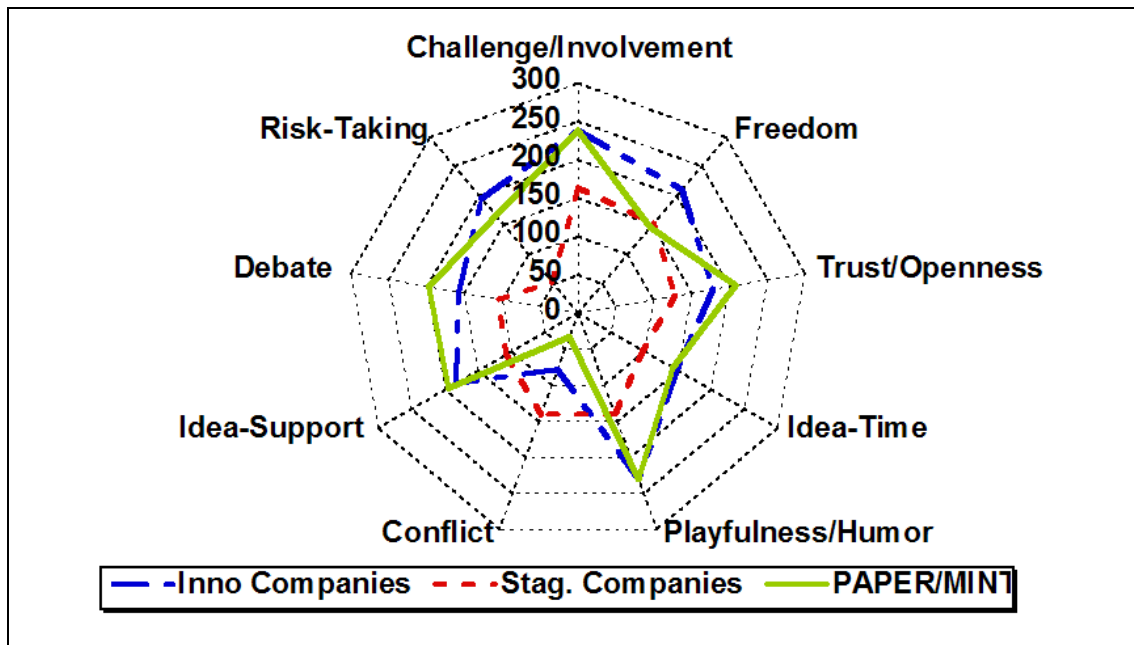


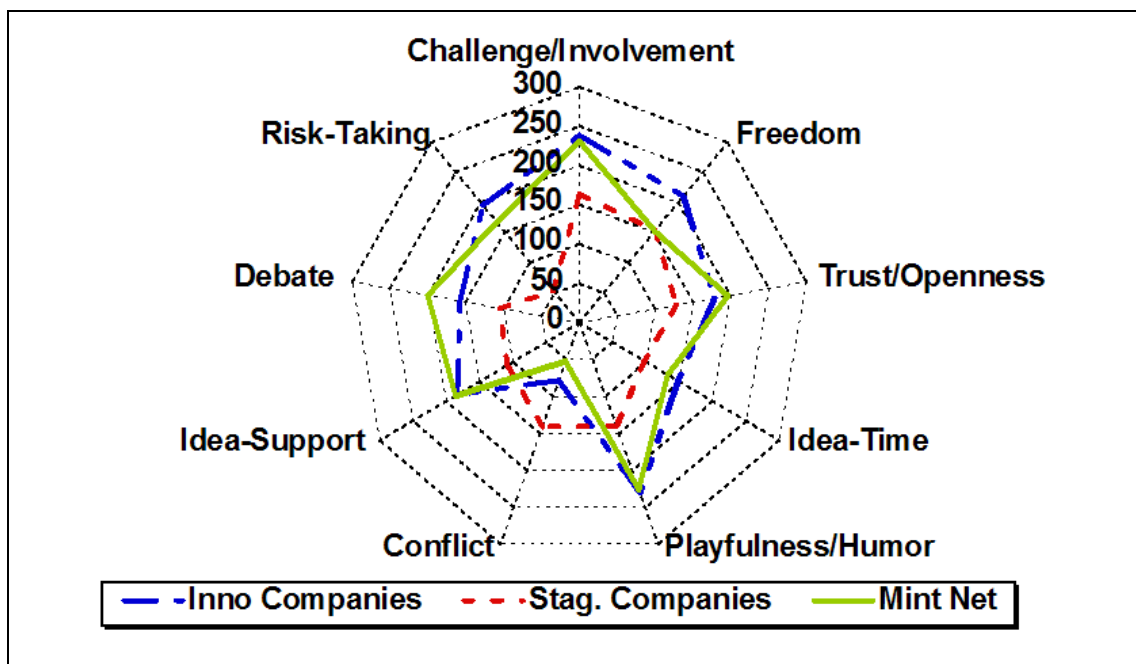
Figure 4.2 provides a graphic representation of the results tabulated in Figure 4.1. The spider graph provides a visual interpretation of the numbers. It is clear from the image that Mint's results are similar to those of the innovative companies. Interesting to note, is the Conflict dimension (33). Mint scored exceptionally low in this dimension. Although a low score on the Conflict dimension is positive, between 47-109 for innovative companies (see Ekvall's normative data – Chapter Three Figure 3.1), the low conflict score could indicate that employees avoid conflict to the detriment of projects. Meetings are “tell and forget” events rather than seeking consensus at the risk of generating conflict.

The web version of the SOQ yielded similar results:

Figure 4.3: Mint SOQ: Overall results (Web version)

Climate Variables	Innovative Company Averages	MINT NET Averages	Stagnated Company Averages
Challenge/Involvement	238	231	163
Freedom	210	152	153
Trust/Openness	178	196	128
Idea-Time	148	133	97
Playfulness/Humor	230	225	140
Conflict	78	52	140
Idea-Support	183	186	108
Debate	158	200	105
Risk-Taking	195	167	53
Number of Comps. or Inds.	10 Companies	25	5 Companies

Figure 4.4 Overall results – Spider Graph (Web version)



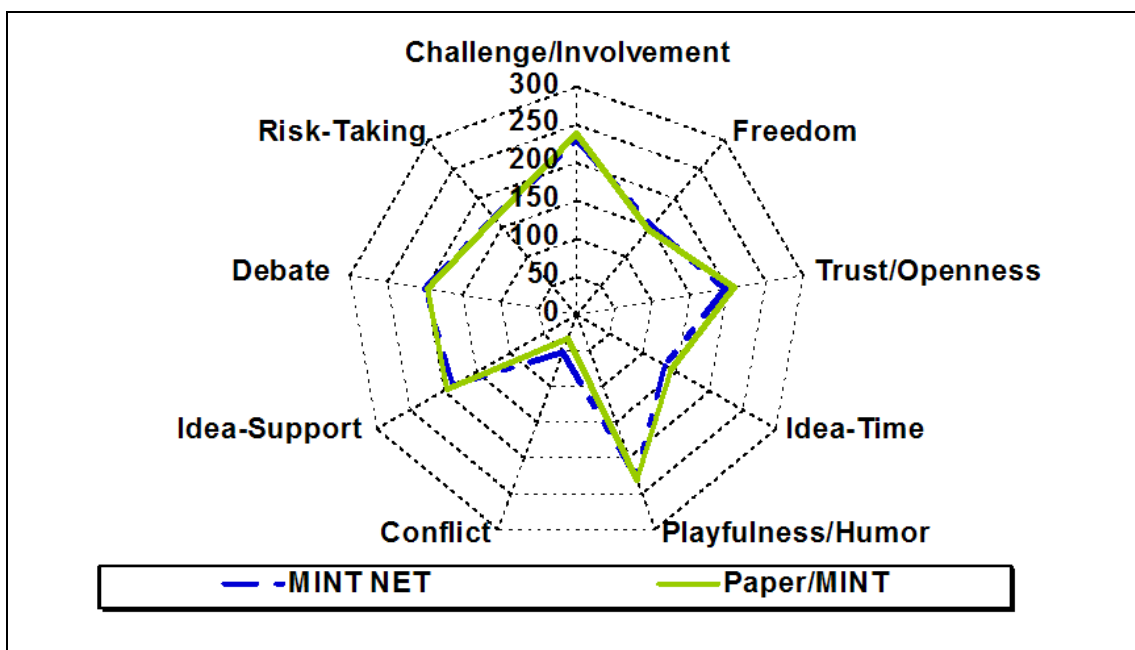
Comparing the web and paper results yields the following results:

Figure 4.5 Mint SOQ: Web vs. Paper averages

Climate Variables	Innovative Company Averages	PAPER/MINT Averages	WEB MINT Averages
Challenge/Involvement	238	238	231
Freedom	210	146	152
Trust/Openness	178	208	196
Idea-Time	148	142	133
Playfulness/Humor	230	230	225
Conflict	78	33	52
Idea-Support	183	195	186
Debate	158	197	200
Risk-Taking	195	166	167
Number of Comps. or Inds.	10 Companies	21	25

The web and paper versions are almost identical as can be seen from Figure 4.5 & 4.6. This indicates that respondents answered consistently for both formats (web and paper).

Figure 4.6 Mint SOQ: Web vs. Paper spider graph



In order to use the data from both data collection methods, the responses provided in the two formats have to correlate and prove to be statistically equal. Tables 4.1 and 4.2 provide statistical evidence proving that the responses are statistically equal. This equality contributes toward proving the reliability of the two formats.

The correlation between the two formats can be tabulated as follows:

Table 4.1 Paired sample statistics – correlations

Paired sample statistics	N	Correlation	Sig.
Paper.CHALLENGE & Web.CHALLENGE	21	.776	.000
Paper.FREEDOM & Web.FREEDOM	21	.682	.001
Paper.TRUST & Web.TRUST	21	.776	.000
Paper.TIME & Web.TIME	21	.729	.000
Paper.PLAYHUMOR & Web.PLAYHUMOR	21	.755	.000
Paper.CONFLICT & Web.CONFLICT	21	.871	.000
Paper.IDEA.SUPPORT & Web.IDEA.SUPPORT	21	.769	.000
Paper.DEBATES & Web.DEBATES	21	.709	.000
Paper.RISK.TAKING & Web.RISK.TAKING	21	.885	.000

Table 4.1 correlates the dimensions for the web and the paper versions of the SOQ. The correlations are significant (> 0.5) and the responses provided can be considered statistically equal in both formats.

Table 4.2 Independent sample test

Independent sample test		Levene's Test for Equality of Variances	
		F	Sig.
CHALLENGE	Equal variances assumed	.344	.561
FREEDOM	Equal variances assumed	.400	.531
TRUST	Equal variances assumed	.477	.494
TIME	Equal variances assumed	.406	.528
PLAY/HUMOR	Equal variances assumed	.003	.960
CONFLICTS	Equal variances assumed	.035	.852
IDEA SUPPORT	Equal variances assumed	.387	.537
DEBATES	Equal variances assumed	.835	.366

Proving the validity of the two formats was not an explicitly stated objective of this study. However, it does provide confidence to use the results from both formats.

4.4 Interpretation of results

This section provides an interpretation of the results as measured by the SOQ. The results are discussed with respect to creative climate strategies and tactics provided by Isaksen et al (2007: 4.3.1 - 4.3.20). Themes that emerged from the open-ended (qualitative questions) are also presented in this section. Since the researcher also participated in the study and is currently (at time of writing) an employee at the organisation observations made by the researcher are included.

4.4.1 Challenge / Involvement

Mint scored high in this dimension in both formats of the SOQ (web = 231, paper = 238). This indicates that the members of the organisation is emotionally connected to the organisation and share the passions of the organisation. Innovative companies' score around 238 (see Figure 4.1). Mint's challenge dimension is therefore well balanced and compare exceptionally well with that of innovative companies.

Challenge / involvement is defined as emotional involvement of the members of the organisation in its operations and goals. The climate for challenge is high when employees are experiencing joy and meaning in their job, and, therefore, they invest much energy therein. A low challenge climate indicates feelings of indifference and alienation among staff. Apathy and a lack of interest in both the job and the organisation are apparent in such a climate.

The work should be challenging and exciting to the employees. The researcher has observed this to be the case. The employees (most of them) are intrinsically motivated and enjoy solving complex problems. Where this is the case, job satisfaction increases and the intrinsic motivators are reaffirmed.

The following behaviour may be observed when the score of this dimension is too low, i.e. when it is close to the score of stagnating companies.

- Employees are apathetic about their work, resulting in absenteeism.
- Employees are generally not interested in professional development i.e. few/no intrinsic motivators are observable.
- Employees are frustrated or unconcerned about the future of the organisation. A disconnection exists between the employees' personal goals and objectives and those of the organisation. (Isaksen 2007: 4.3.2)

The researcher observed that sometimes challenges are too daunting. This, typically, is evident in very heavy workloads where multiple roles are assigned to one person and very short time -limits are given. Signs that challenges are too demanding include:

- Employees show signs of 'burn out'.
- Employees are not always able to meet project goals and deadlines.

- Employees spend “too many” long hours at work. This has been observed by the researcher (Isaksen 2007: 4.3.3)

4.4.2 Freedom

Mint scored lowest in this dimension of all the dimensions (web = 146 paper = 152). Innovative companies score high in this dimension 210 (See Figure 4.1). This indicates that a significant amount of decision-making is centralised and non-managerial employees do not always have the liberty to make decisions without first consulting a manager.

The freedom dimension is defined as independent behaviour displayed by people in an organisation. In a climate with much of this kind of freedom people make contact in order to give and receive information and discuss problems and alternatives; they plan assorted initiatives and they make decisions. The opposite climate would show people who are passive, rule-fixed and anxious to stay inside the established frameworks and boundaries.

Mint delivers project-based solutions. This means that employees are stakeholders in a project and are often told what to do. On the project management level, operational staff has little control over their work. Employees have to conform to the organisation’s coding standards and rules. This is critical in the IT environment since employees often have to work on code written by other developers.

Observed behaviour when the freedom dimension is low can include:

- Employees display little/no interest in suggesting novel ideas.
- Employees much time and energy obtaining permission and gaining support (internally and externally).
- Employees perform their work “by the book” and focus on what they are told to do. (Isaksen 2007: 4.3.4)

The researcher has observed the behaviours, listed above, to some extent and especially the one mentioned last. Employees often “stick” to what they have been told to do without questioning the instruction. This “don’t think - just do” attitude sometimes has a detrimental effect on productivity and the project as a whole. Employees need to be coached and encouraged to question unclear or ambiguous instructions.

Causes of this behaviour include:

- Authoritarian or overly bureaucratic leadership styles.
- Goals, processes, procedures, and improvements not explained in adequate detail.
- The need for individual initiative is not obvious. (Isaksen 2007: 4.4.3)

The researcher has observed a participative leadership style and management seems supportive of the operational staff. The researcher also observed that the vision, mission and strategy of the organisation, as well as a

need for individual initiative, are not always communicated clearly to the rest of the organisation.

4.4.3 Trust / Openness

Mint scored well in this dimension (web = 208 paper = 196). Innovative companies score 178 (See Figure 4.1). This indicates that the Mint climate instils trust and openness in the organisation. Employees feel they may discuss problems with management and together find solutions.

Trust / openness is defined as emotional safety in relationships. If high levels of trust are evident, members in the organisation dare to put forward ideas and opinions. Initiative can be taken without fear of ridicule in the case of failure. The communication is open and flows easily among all levels of the organisation. People have respect for each other and count on each other for support. If low levels of trust are recorded members are suspicious of each other and will be reluctant to embark on explorative initiatives for fear of failure.

The researcher observed trust and openness to a high degree in the organisation. Management and operational staff are, in many instances, friends and often socialise outside the working context.

4.4.4 Idea-time

Mint scored well in this dimension (web = 142 paper = 133). Innovative companies scored 148 (See Figure 4.1). There is room for improvement in this dimension, however. Employees responded to an open-ended question (see section 4.4) about what hinders their creativity. Lack of time and specifically idea-time was evident as a strong recurrent theme.

Idea-time dimension is defined as the amount of time people can use (and do use) for elaborating new ideas. In a high idea-time situation, possibilities exist to discuss and test impulses and fresh suggestions that are not planned or included in the task assignment. Opportunities exist to take the time to explore and develop new ideas. Flexible time-limits permit people to explore new avenues and alternatives. The reverse is also true. When hours and minutes are traced and tracked, time pressure makes thinking outside the instructions and planned routines impossible.

Observed behaviour when idea-time is not adequate includes:

- Employees are only concerned with their current projects and tasks and have unhealthy stress levels. .
- Employees see professional development and training as hindrances in completing daily tasks and projects.
- Management avoids following up on new ideas because it will reduce time for the completion of tasks and projects. (Isaksen 2007: 4.3.8)

The researcher observed unhealthy levels of stress to some extent and although employees assist each other with problems, the focus tends, to a large extent, to be on the project tasks assigned to each person. The researcher also observed that time for the development of new ideas is sometimes cut short for the sake of completing a project within time and budget constraints.

4.4.5 Playfulness / Humour

Mint scored high in this dimension (web = 225 paper = 230) with innovative companies scoring 230 (See Figure 4.1). This result confirms the healthy sense of humour present in the organisation as displayed by its members. The researcher observed that humour is central to the Mint way and employees are encouraged to have fun while doing their work. A healthy balance is maintained and employees can switch very easily to a more serious approach if the situation requires it.

Playfulness / humour refers to the level of spontaneity within the workplace. A relaxed atmosphere where good-natured jokes occur often is indicative of this dimension. Employees are seen to be enjoying themselves and having fun at work. . The atmosphere is easy-going, light-hearted and non restrictive.

4.4.6 Conflict

Mint scored low in this dimension (web = 52 paper 33) compared to innovative companies 78 (See Figure 4.1). It is important to note here that in the conflict dimension a lower score is better. The complete absence of conflict is not healthy but it should be very minimal.

Conflict is defined as the presence of personal and emotional tensions in the organisation. When levels of conflict are intense, groups and individuals dislike and may even hate each other. The climate is characterised by “interpersonal warfare”. Personal differences generate gossip and slander. In the opposite case, people behave in a more mature manner i.e. they show psychological insight and control of impulses. In this instance, people accept, and deal effectively, with diversity.

The low conflict score may indicate that employees would rather avoid conflict – to the detriment of the project – than to raise difficult questions, which could result in conflict situations. The researcher has, to some extent, observed avoidance of conflict. Employees sometimes just accept, without question, what they are told to do. This may relate to the low score in the freedom dimension since employees feel they cannot make decisions about their work and, therefore, have no reason to question an instruction given by management.

4.4.7 Idea support

Mint scored well in this dimension (web = 186 paper = 195) when compared to innovative companies 183 (See Figure 4.1). The researcher has observed that new ideas are often discussed in forums to establish their value. Ideas are often heavily debated and analysed. This would often result in generating some very good ideas but these ideas are not always implemented.

Idea-support refers to the way new ideas are treated. In a supportive climate, ideas and suggestions are received in an attentive and professional way by seniors, peers and subordinates. People listen to each other and encourage initiative. Opportunities are created to try out new ideas. When idea-support is low, the automatic “no” is prevalent. Every suggestion is immediately refused by a destructive counter-argument. Reacting to new ideas is characterized by finding fault and raising obstacles. The following behaviour is observed when this dimension is too high:

- Employees are only deferring or suspending judgment.
- Nothing is achieved for there are too many options.
- Too many employees are working in too many different directions.

(Isaksen 2007: 4.3.14)

4.4.8 Debate

Debate is the occurrence of encounters and disagreements between viewpoints, ideas and differing experiences and knowledge. In the debating organisation many voices are heard and people are keen on putting forward their ideas for consideration and review. People can often be seen discussing opposing opinions and sharing a diversity of perspectives.

Debate is another dimension on which Mint scored too high.

Mint scored high in this dimension (web = 200 paper = 197) when compared to innovative companies 158. This is manifest in behaviour such as:

- More talk than implementation.
- Individuals speak out, but with little regard for other points of view.
- Individual rather than organisational goals and visions become the focus of conversation and debate. (Isaksen et al., 2007:4.3.16)

The researcher has observed more talk than implementation in some instances. Individuals often speak, but with little regard for other points of view. Individualistic, rather than organisational goals and vision sometimes become the focus of conversation and debate.

4.4.9 Risk-taking

Mint scores lower in this dimension (web = 167 paper = 166) when compared with innovative companies 195. This could be a result of the freedom dimension score being low.

Risk-taking is defined as tolerance of uncertainty and ambiguity in the workplace. In cases where risk-taking has high levels, bold and new initiatives can be taken even when the outcomes are unknown. People will often “go out on a limb” and will put forward an idea. In a risk-avoiding environment a cautious, hesitant mentality prevails.

The lower score in this dimension is be evident when employees are offering few new ideas. Employees may find their work boring since they have little control over their jobs. Employees may feel frustrated because of perceived long and tedious processes that have to be followed to put ideas into action .

The researcher has observed that risk-taking is sometimes encouraged in everyday tasks. This is usually the case when information about the problem is inadequate. Employees are encouraged to take risks based on the available information, provided senior employees are consulted.

4.4.10 Qualitative results

Section B of the SOQ consists of 3 open-ended questions.

The questions are not analysed statistically, but interpreted and evaluated by the researcher. The questions are designed to provoke participants to describe, in detail, the organisational climate in which they operate on a day-to-day basis.

Question 1: “What aspect of your work environment is most helpful in supporting your creativity?” This question probes the participant’s perception of the aspects of the climate that, in his/her opinion, are most important for fostering creativity.

Question 2: “What aspect of your work environment most hinders your creativity?” This question probes the participant’s perception of the aspects of the climate that, in his/her opinion, are hindering individual creativity.

Question 3: “What is the most important action you would take to improve the climate for creativity in your work environment?” The participant is asked directly to provide actions that can be taken by him/her to contribute toward improving the organisational climate for creativity.

This section was completed by all 21 participants who also completed the questions in section A. Below is an analysis of the responses to the questions.

Question 1: “What aspect of your work environment is most helpful in supporting your creativity?” The following opinions were observed:

- The playful/supportive, relaxed environment and culture
- Availability of resources and assistance from co-workers
- Energy and willingness exhibited by employees to help each other
- Transparency and openness of management
- Positive thinking of employees
- Size and arrangement of the physical office space
- Knowledge about the direction in which the project is going
- The lax dress code and the playful and colourful environment
- Freedom to access information, explore and incorporate new ideas into projects
- Input provided by employees in the shape of new ideas and concepts
- Sense of ownership of and responsibility for projects and solutions
- Encouragement for and feedback on proposed ideas
- Friendly people and their listening skills when discussing new ideas
- Openness to discuss more options
- Technology

A recurring theme is humour, playfulness and friendliness of employees in the organisation. This is clearly an important aspect of the organisational climate for promoting creativity in Mint Net. An interesting theme that emerged is

employees' need to have directional information concerning the project. This relates to the "sense of ownership" of projects exhibited by project members.

Question 2: "What aspect of your work environment most hinders your creativity?" The following opinions were observed in relation to this question:

- Lack of time and unrealistic time limits for projects as well as lack of time for exploring new ideas.
- The physical environment: colours, noise, interruptions, arrangement and layout of office furniture. Cubicles reduce creativity
- Repetitive tasks
- Lack of privacy when engaging in high intensity intellectual work
- Lack of space
- Multi-tasking, not focussing on one task at a time
- The absence of a designated rest area where employees can take a break and have informal conversations

A lack of space is a recurring theme. There are a number of participants who indicated that space is a problem. Another problem is the lack of time, specifically related to project time limits and for exploring new ideas. Effective time management seems to be a theme that needs to be addressed in order to improve the climate for creativity.

Question 3: “What is the most important action you would take to improve the climate for creativity in your work environment?” The following opinions were put forward on this question:

- Additional space with more natural light
- Brainstorming sessions to explore and develop ideas
- Introduction of a relaxation area.
- Layout of the physical environment and colours
- Casual, after hours interesting workshops
- Less noise, less interruptions
- Improving top down communication regarding colleagues and matters affecting the organisation as a whole.
- Developing people skills in employees. Training and more resources
- Maintaining the positive culture and continued support of the playful, friendly and dynamic atmosphere
- Fostering a sense of significance among all employees.
- Allowing time for games and informal team building
- Improving time management on projects and in the organisation as a whole.

A consistent theme in the answers to this question is the need for more space and an overall improved physical environment. The need for a designated relaxation area is also identified. A need for more time and improved time management has been identified.

4.5 Summary

The results as obtained by administering the SOQ are presented in this chapter. An overview is presented comparing Mint's results with that of innovative and stagnating organisations. Mint compares very well with innovative organisations.

The debate dimension measured high and this might indicate that participants feel they have to consult with senior colleagues before deciding on an appropriate course of action. The freedom dimension measured low. This indicates that participants feel they need to consult with managers before making decisions.

The participants seem to be of the opinion that there could be more time to explore ideas and improved time management on projects. The participants seem to agree that limited office space, the arrangement of office furniture and colours used in the offices hamper creativity. Interestingly, colours used in the environment are also cited as a factor that promotes creativity.

The participants agree that the environment is positive and supportive of creativity and idea generation. The atmosphere is described as playful, energetic and supportive of novel ideas.

It is reasonable to conclude that, although there is room for improvement in the organisational climate, for example in the debate and freedom

dimensions, the climate at present is conducive to and supportive of creativity and innovation.

Chapter Five: Conclusion and Recommendations

5.1 Introduction

This chapter provides concluding arguments and recommendations concerning the study, the firm in which the study was executed as well as future research in the field of creativity. The encompassing goal of this study is to research climatic factors in the intra-organisational environment (the micro environment) responsible for determining an organisational climate either conducive to or inhibiting to creativity and innovation.

The study objectives were therefore formulated as follows:

The primary objective of this study is to define, organise and clarify terms such as creativity, innovation, organisational climate and to investigate the relationships between these terms as these exist in contemporary literature. In order to accomplish this objective the following objectives are defined to provide a demarcation for the study

To identify and measure the climatic factors required in a specific technology organisation in South Africa that will contribute toward the establishment of a climate, which will facilitate and foster creativity and innovation in that organisation.

To provide empirical results obtained from the data collection and analysis of responses, measuring the climatic factors necessary for an organisational climate conducive to creativity and innovation.

To provide conclusions and recommendations in order to improve the organisational climate based on the theoretical and empirical evidence gathered in this study.

5.2 Conclusions

Concepts such as creativity and innovation, as well as factors impacting on these, are researched and discussed in Chapter 2.

The study revealed that creativity is a complex concept and that various definitions for this concept exist in the literature. Creativity, for the purposes of this study, is defined as follows:

Creativity is the intellectual effort required for the production of a novel artefact, usable or valuable within a specific context.

Researching creativity and innovation is a particularly difficult undertaking. This is arguably due to the complexity of the subject. The literature review in Chapter two indicated that authors, from different viewpoints, have various and distinct, definitions. . Some authors focus on the characteristics of the creative product while others define it in terms of observed behaviour and in

terms of human abilities and personality traits. Some authors define creativity in terms of a context, i.e. novelty and utility, while others believe creativity is a process one can follow to achieve the generation of novel ideas. . Some other authors believe that creativity is a combination of the above-mentioned elements. Couger (2005:4) suggest the 4 p's of creativity (see chapter 2, section 2.2 for more information):

- Person
- Product
- Press (Environment)
- Process

This view defines factors that impact on the quality or the level, i.e. the observable evidence, of creativity found within a specific context as well as ingredients needed for creativity to become evident. The 4 p's define what is required in order for something to be creative, but they do not clearly define what creativity is.

As an overly simplistic statement one can say that creativity is an intellectual process, distinct from thinking, but related to it, that exists only in the human mind. The effect and result of this process is observable in the 4 p's of creativity i.e. the person, the press, the product and the process. It can be argued that creativity, i.e. the human creative ability, influences thoughts to produce new (i.e. original) and useful concepts and ideas. Creativity, or

evidence of creative ability, then is apparent in the product, person and the process when actions are taken based on these thoughts and ideas.

The literature also contains a vast number of definitions for innovation (see Chapter Two, section 2.2 for more information). Various authors use these terms interchangeably. Innovation seems to be concerned with solving a specific problem within a specific context. An innovation can for example be categorized as follows:

- A medical innovation (a new/original answer to a problem in a medical context)
- A technological innovation (a new/original answer to a problem in a technological context)
- Innovative process design (a new/original answer to a problem in a process design context)
- An innovative methodology (a new/original answer to a problem in a methodological context)

Innovation can thus be defined as:

Innovation is a novel and usable solution, resulting from creative effort, for a problem within a specific context.

The definition suggests that creativity is a pre-condition for innovation and that the innovation is a result thereof. Couger (2005:15) supports this view by stating that creativity is a much broader concept than innovation. This implies that innovation is a subset of creativity. The “problem” in the context of the definition is not exclusively a negative construct. The problem can also refer to an opportunity, waiting to be exploited or discovered by a creative mind.

This study is concerned specifically with the press (micro organisational environment) that has an influence on creativity. The press equates to the “context” mentioned in the definition of creativity for the purposes of this study. This study focuses on the organisational context or climate and, more specifically, investigates a climate for its influence on creativity.

Organisational climate is defined as “the observed and recurring patterns of behaviour, attitudes and feelings that characterise life in the organisation”, Ekvall cited in Isaksen et al (1999:666). See chapter 2, section 2.4 for more information. Organisational climate has several dimensions. According to Isaksen et al (2006:2.1.3) the dimensions are:

- Challenge/involvement
- Freedom
- Trust
- Idea-time
- Conflict
- Playfulness/humour

- Debate
- Idea-support
- Risk-taking

These dimensions are observable and measurable in the organisational context. The organisational context is an intervening variable that influences the psychological processes of the organisation, Isaksen et al (2006: 2.1.3) See Chapter Two, section 2.4.

Organisational climate, together with these processes, forms a feedback system and are therefore interdependent, i.e. the outcome of one affects the other.

Using a measuring instrument such as the SOQ these dimensions can be measured in order to determine whether the organisation's climate is in fact conducive to creativity and innovation. The measuring instrument includes both open-ended and closed questions to obtain both qualitative and quantitative responses.

Mint is clearly an innovative information technology organisation. Evidence of its innovative ability is provided in Chapter three, section 3.7. The organisational climate is vibrant and energetic. The solutions delivered often solve business problems in new and effective ways. The SOQ indicated that the climate compares well with climates of organisations that are considered

innovative. One can, therefore, argue that the climate is conducive to creativity and innovation.

5.3 Recommendations

The following recommendations are suggested for Mint Net and future researchers. The recommendations follow from results obtained from the study.

Mint has a climate that fosters and promotes creativity and innovation. Management should continue to maintain the positive atmosphere and strive to improve along all the dimensions of organisational climate. The following recommendations are suggested:

- Improve and encourage de-centralised decision-making and encourage team leaders to take responsibility and ownership for their projects.
- Allow and formalise more time to explore new ideas.
- Improve project time estimates and time management on projects.
- Introduce a relaxation area where employees can spend time away from their desks to socialise
- Reduce noise and disturbances in the office environment
- Formalise workshops for investigating new technologies and other areas of interest.
- Maintain and promote the positive organisational climate observed in this study.

Organisational context, i.e. the press, is one dimension that particularly affects creativity. Future research should be done to investigate the relationship between the other p's of creativity:

- The person
- The process
- The product

Research is also required to prove the return on investments in creativity training. A financial return on the investment will be required to prove to managers and business owners that creativity training is indeed worth the effort.

5.4 Summary

The organisational climate has a great influence on creativity and innovation in the business context. The climate determines whether or not it is “fun” to be at work. A creative organisational climate should be a goal for any organisation that aims for excellence in everything they do.

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Appendix A

Research Policy: CPSB

Statement of Research Policy

The information from this questionnaire will be used to assist you and your organisation with efforts to understand the climate for creativity and change as well as for research purposes. To protect your rights, privacy and dignity, this information is collected under the Code of Ethics established by the American Psychological Association regarding the use of humans for research as well as the guidelines, policies and procedures of cooperating or sponsoring agencies relating to research. Completing this form is voluntary. Your results will be explained to you unless specifically exempted from this provision (e.g., research analysis only). Your personal results are anonymous and will not be released to anyone in your organisation without your expressed written consent. Results from the questionnaire may be used to create norms and explore specific research questions without using of your name or personally identifying information. Any questions or concerns regarding this research policy or CPSB activities should be directed to:

The Creative Problem Solving Group, Inc.

6 Grand View Trail

PO Box 648

Orchard Park NY 14127

Phone: (716) 667-1324