

**CREATIVE LEADERSHIP AS THE ESSENTIAL DRIVER OF
ORGANISATIONAL COMPETITIVE ADVANTAGE FOR SUSTAINING
THE ECONOMY OF KNOWLEDGE**

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Dedication

To my parents Colin and Othelia

who taught me the infinitesimal value of the smaller and simple things in life

To my family

who I mostly admire for their creativity, love and passion for life

and to my nephew

Rudi Jacobs

who's creative creative mind and soul has inspired this research project and who
came to teach us the beauty of Life

DECLARATION OF INDEPENDENT WORK

DECLARATION WITH REGARD TO INDEPENDENT WORK

I, Colin Steyn, identity number [REDACTED] and student number 205402674, do hereby declare that this research project submitted to the Central University of Technology, Free State for the Degree DOCTOR TECHNOLOGIAE: BUSINESS ADMINISTRATION, is my own independent work; and complies with the Code of Academic Integrity, as well as other relevant policies, procedures, rules and regulations of the Central University of Technology, Free State; and has not been submitted before to any institution by myself or any other person in fulfilment (or partial fulfilment) of the requirements for the attainment of any qualification.

SIGNATURE OF STUDENT

April 2008

DATE

Among the multitude of animals, which scamper, fly, burrow and swim around us, man is the only one who is not locked into his environment. His imagination, his reason, his emotional subtlety and creativity, make it possible for him not to accept the environment but to change it.

Extract from Bronowski, J (1973) the Ascent of Man, Little Brown, p.19

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SUMMARY

In the twenty-first century knowledge landscape, companies are compelled to compete in a complex and challenging context, transformed by globalisation, technological development, new applications of knowledge and hyper-competition. This new economic landscape requires organisations to perform differently with their knowledge assets to survive and prosper. It has become crucial for organisations to reinvent themselves through new rubrics of leadership, which essentially requires radical change as post-modern perspectives on the knowledge economy emphasise the fluidity, and immediacy of information exchanges that are leveraged through creativity and innovation as the new future sustainable rent.

Postmodernist contestations of modernist economic and organisational rationalities have successfully activated discourse from diverse audiences and immense contributions to contemporary knowledge-intensive organisational diagnoses have been proffered. A current issue, which urgently enquires into new conceptions of organisational leadership, is regarded as the global knowledge economy. This economy seeks new sources of inspiration and revitalisation within the dynamic, mutable domains of future knowledge competency construction and enactment.

New forms of human capital are now required to manifest tacit and intellectual capacity through exponential creativity and innovation capabilities, rather than explicit production-driven modalities. Therefore, organisations must access this new talent that engages deeply with creative thinking, as they can no longer reproduce themselves within the old traditions of management and control. The need to conjure new aspects of leadership to harness and then transform novel solutions into action should create an environment enabled to validate creativity and innovation as the major building blocks for knowledge transfer and trading.

The purpose of this study is to render solutions for future knowledge-intensive organisations and explore new methodologies where leadership realises the paramount importance to nurture the knowledge worker as the most important source of knowledge creation. This study explores the complex challenges faced by contemporary leadership in grasping future value propositions for advancing

knowledge trading and offers suggestions to unlock creativity and innovation for the enhancement of knowledge productivity and the development of supportive managerial effectiveness. It is recommended that leadership requires a profound cultural shift from traditional methods of management that can be best described as control orientated, bureaucratic and autocratic.

These former hierarchical management structures originated in the modernist paradigm of industrial capitalism. In contrast, contemporary knowledge management is defined within the post-modern debate, where authority is diffused throughout the organisation and leadership engages in sufficient reflexivity to facilitate a more effective understanding of the contemporary knowledge worker. Within this post-modern context, fluidity of knowledge-leadership could actively promote the immediacy of creative exchanges as foundational to deliver the future into the present. The findings suggest a new role for leadership acting as coach and innovation facilitator, rather than controller. Furthermore the findings indicate that creative leadership should involve knowledge workers in defining the mission, vision and strategic intent and secure participation in the knowledge philosophy to mould their respective knowledge roles within a supportive culture. The findings indicated that collaboration between knowledge workers and leadership is crucial to establish formal communities of practice. These, as opposed to informal exchanges amongst knowledge workers, are pivotal to the process of continuous reinvention and proffer the shifts that are essential to drive future knowledge competencies. The findings furthermore revealed that communities of practice should be formally encouraged by leadership who diffuses the strategic intent to initiate forums where formal learning and the sharing of skills occur and creativity is continually advanced. The result is the creation of repositories of knowledge and innovation networks within knowledge concomitance required to enhance knowledge performance and ultimately drive sustainable competitive advantage.

The research findings produced novel suggestions to proffer new knowledge-trading opportunities. The recommendations address contemporary leadership to perpetually challenge communities of practice to seek new creative and innovative horizons. This would yield the competencies and capabilities required for improved knowledge performance, based on individual and collective creative contributions. It is imperative for creative leadership to imbibe a new corporate curriculum to embrace the necessary radical innovative approaches required in today's hyper-competitive

economy. The recommendations suggest that the harnessing of creative and innovative potentials of knowledge workers, through the development of the creativity dimensions, namely fluency and elaboration could yield dominant discourse as a central ingredient for collective learning. This, in turn, would propel exponential levels of knowledge productivity, which is the critical component required to drive economic sustainability. Knowledge-leading organisations need to unearth and exploit the economy of knowledge by tapping into subjective experience, creativity and intuitive reflexivity.

This study endeavours to offer a compelling vision of the future and recommends an intelligent organisation of the future that utilises a new corporate curriculum achieved by creative leadership to leverage enhanced managerial effectiveness. Finally, a definition for creative leadership is proposed which promotes innovative awareness, fluency and elaboration through formalised communities of practice to leverage enhanced knowledge productivity by means of knowledge worker empowerment and two-way communication. Creating a high-involvement organisation also involves new choices with respect to organisational design. An effective design would be the entrenchment of an organisational culture where the knowledge worker is accountable for and involved in the future success of the organisation. It is recommended that future leadership can achieve new innovative value propositions by structuring new mental models for increased knowledge productivity. The knowledge concomitance model suggests solutions to manipulate and economise knowledge to produce a transformational fusion of discontinuous innovation, nurturing a new syntagma for future knowledge management practitioners.

OPSOMMING

In die kennis ekonomie van die een-en-twintigste eeu, is kennis-intensiewe maatskappye verplig om mee te ding in 'n ingewikkelde konteks wat beïnvloed word deur globalisasie, tegnologiese ontwikkeling en nuwe metodologieë vir kennis toepassing binne die raamwerk van hipermededinging. Dié nuwe landskap vereis van organisasies om anders op te tree om te oorleef en floreer. Dit het van die uiterste belang geword vir organisasies om hulself opnuut te herskep deur die gebruik van nuwe leierskapstrukture in te stel wat in wese radikale verandering verg. Die post-moderne perspektief op die kennis-ekonomie lê klem op die vloeibaarheid en onmiddellike aard van die uitruil van inligting wat versterk word deur kreatiwiteit en vernuwing as die toekomstige volhoubare huurpag.

Post-modernistiese verwesenliking van modernistiese ekonomiese en organisatoriese rasionaal het suksesvol gelei tot gesprekke tussen diverse gehore en daar is aansienlike bydraes gelewer ten opsigte van kontemporêre organisatoriese diagnose. 'n Heersende aspek wat dwingend lei tot vrae oor nuwe konsepte van organisatoriese leierskap word beskou as die globale kennis-ekonomie wat ondersoek instel na nuwe bronne van inspirasie en hernuwing van lewensvatbaarheid binne die dinamiese, muteerbare gebied van organisatoriese konstruksie en implementering.

Nuwe soorte menslike kapitaal word nou vereis vir die manifestering van innoverende en intellektuele kapasiteit deur kreatiwiteit en vernuwing, eerder as eksplisiete produksiegedrewe modaliteite. Kennis-gedrewe organisasies moet dus toegang kry tot nuwe talent wat diep betrokke is by kreatiewe denke, omdat hulle hulself nie meer kan herskep binne die ou tradisies van bestuur en beheer nie. Organisasies moet nuwe aspekte van leierskap bewerkstellig sodat dit ingespan kan word om nuwe oplossings in kennis te omskep voordat dit geïmplementeer word. In dié proses word 'n omgewing geskep wat kreatiwiteit en innovasie kan bekragtig as die fundamentele elemente vir die oordrag en verhandeling van die nuwe ekonomiese dryfkrag.

Die ideale oplossing vir toekomstige kennis organisasies, is waar leierskap die belangrikheid van kennis konseptualiseer en dan die bron daarvan - die

kenniswerker - koester. Die verhandeling verken dié uitdagings wat kontemporêre leierskap die hoof moet bied wanneer toekomstige waarde-oplossings vir organisasies begryp word, terwyl dit hulpmiddels bied om kreatiwiteit en vernuwing wat kennisproduktiwiteit ontsluit en daadwerklike bestuursdoeltreffendheid ontwikkel. Die aanbevelings van hierdie studie dui daarop dat nuwe dimensies van besigheidslieerskap vereis word om indringende kulturele verskuiwings van tradisionele metodes van bestuur te weeg te bring.

Die vorige hierargiese bestuurstrukture het ontstaan in die modernistiese paradigma van industriële kapitalisme. In teenstelling word kontemporêre kennisbestuur omskryf binne die post-modernistiese debat, waar gesag versprei word deur die hele organisasie - en leiers betrokke is by voldoende wederkerendheid om wyer begrip vir die kenniswerker meer toeganklik te maak. Binne die post-moderne konteks is vloeibaarheid van kennis en die onmiddellike aard van kreatiwiteit wat uitgeruil word, fundamenteel. Die nuwe rol van leierskap behels 'n rol van afrigter en fasiliteerder, eerder as beheerder. Verder behoort leiers kenniswerkers te betrek by die omskrywing van die missie, visie en strategiese doelwitte van die organisasie. Die kenniswerker se deelname aan organisatoriese filosofie en rasionaal skep die geleentheid om hulle eie individuele kennisrol te vorm binne die organisatoriese konteks. Samewerking tussen kenniswerkers en leierskap is dus van die uiterste belang om formele praktyk gemeenskappe te skep. Dit, in teenstelling met informele uitruil van inligting tussen kenniswerkers, is die as waarom die proses van volgehoue vernuwing draai en dit lei tot verskuiwings wat noodsaaklik is om die nuwe kennis-ekonomie aan te vuur. Praktyk gemeenskappe word geskep deur leiers wat die visie het om forums te skep vir informele opdoen van kennis, waar kennis gedeel word en kreatiwiteit bevorder word. Die resultaat is die skep van kennispoele en vernuwende netwerke van kenniswerkers wat prestasie en mededingende intelligensie verbeter, terwyl dit uiteindelik 'n volhoubare mededingende voorsprong verbeter.

Die aanbevelings dui op die skepping van nuwe en intelligente idees as deurbraak na nuwe geleenthede in die kennis-ekonomie en kontemporêre leierskap behoort voortdurend hulle praktykgemeenskappe uit te daag om nuwe kreatiewe horisonne te soek. Dit kan lei tot 'n toename in die vermoëns en ervaring wat vereis word vir verhoogde prestasie van die individu én die kollektiewe kreatiewe bydraes van die organisasie as geheel. Dit is van die uiterste belang vir kreatiewe leiers om 'n nuwe korporatiewe leerplan te implementeer, om die nodige radikale vernuwende

benaderings wat vereis word in die hedendaagse hipermededingende ekonomie toe te pas. Die voorgestelde benadering is 'n vertrekpunt waar die kreatiewe en vernuwende potensiaal van kenniswerkers ingespan word deur die ontwikkeling van die spesifieke kreatiwiteitsdimensies, vlotheid en uitbreiding. Dit lei weer tot versnelde kennisproduktiwiteit wat die kritieke komponent is wat vereis word vir ekonomiese volhoubaarheid. Die navorsing dui dus daarop dat maatskappye op die voorpunt van ontwikkeling die ekonomie van kennis moet opdiep deur in te skakel op subjektiewe ervaring, kreatiwiteit en intuïsie.

Die verhandeling promoveer 'n dwingende visie van die toekoms waar intelligente organisasies 'n nuwe korporatiewe leerplan ten toon stel, een wat geskep is deur kreatiewe leierskap wat voortdurend soek na nuwe maniere om bestuursdoeltreffendheid te verbeter. 'n Definisie van kreatiewe leierskap word as volg voorgestel: effektiewe kommunikasie binne formele praktykgemeenskappe promoveer die dimensies van kreatiwiteit en bevorder sodoende innovasie deur bestuurs effektiwiteit - met die gevolg van nuwe en verhoogde vlakke van kennisproduktiwiteit. Die skep van 'n uiters betrokke organisasie behels nuwe keuses met betrekking tot organisatoriese ontwerp. 'n Doeltreffende ontwerp beteken die verskansing van 'n organisatoriese kultuur waar individuele kenniswerkers verantwoordelik voel vir en betrokke raak by die sukses van die organisasie. Leiers kan die benadering implementeer deur nuwe ekonomiese modelle te skep vir kennisproduktiwiteit en deur kreatiewe leierskap toe te pas, soos die gesamentlike kennismodel wat dui op 'n nuwe oplossing om kennis te manipuleer en ekonomies te benut. Dié navorsingsmodel (Figuur 6.1) stel 'n transformasiefusie van ononderbroke innovasie voor, wat kan lei tot 'n nuwe sintagma van kennisbestuurspraktyk in die ekonomie van kennis.

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CHAPTER 1

THE RESEARCH QUESTION

“Postmodernists...they simply remove the necessity of foundations and the necessity of choosing one position over another, allowing us the freedom to construct our own positions. But perhaps the burden of freedom is something not all of us are willing to bear.” (Changani, 2006, p.1)

1.1 INTRODUCTION

The contemporary knowledge-intensive organisation is facing increased turbulence and complexity, which is categorised in its extreme form as hyper-competition. This can be defined as globalisation, which results in shorter product life cycles, discontinuous technological advances and the complexity of knowledge trading. The growth in importance of intangible assets is changing the perceptions of current economics and challenging ingrained leadership and organisational wisdom (Bailey & Clarke, 2000:235; Barnet, 2000b: 16; Becerra-Fernandez, 1998:48; Edvinsson, 2002:72; Kasiv, Vartianinen & Hailikar, 2003:571; Lucier & Torsiliery, 2001:7). To meet these challenges, a radically different vision of leadership is required to impel organisations to deliver future innovative solutions into the present. Knowledge leadership conversations and exchanges could add future value to contemporary organisations by enhancing innovation through the creation and development of innovative products and creative knowledge processes. This new leadership role is essential to enable and encourage novel ideas, supporting diffusion and harvesting of future knowledge value propositions (Alvesson, 1993:998; English, 1998:426, Kao, 1996:13, Kezar, 2005:57; Tesluk, Farr & Klein, 1997:21; Weindberger, 1998).

Dalkir (2005:322), English (1998:426) and Weindberger (2001) introduce the concept of postmodern leadership to distinguish between traditional leadership and future knowledge management practices. According to this view, traditional knowledge management and leadership principles are contained within a limited spectrum, which diminishes leverage to deliver a sustainable competitive advantage. Traditional leadership commonly denies such imperative values as continuity and commonality of knowledge exchanges. This suppresses innovation, originality and diversity. Furthermore, current leadership practices control human capital, but postmodern knowledge leadership is not based on external control of definable resources but harnesses the knowledge potential of the human element as the most critical production factor (Chauval & Depres, 2002:210; Crawford, 2005:8-10; Graetz, 2000:

550-557; Isaksen, Murdock, Firestien & Treffinger, 1994:28; Keough & Tobin, 2001:8; Millar, 1996:140; West, 1996:27; Wilson, 1983:7).

Postmodern knowledge management operates on existing organisational behaviour patterns, searching for new conversation streams and relationships to incorporate novel structures to establish a broader context for knowledge sharing. This could potentially lead to the creation of transformational fusion needed for discontinuous innovation to redirect future knowledge management practice (Collins, 2001:5; Edvinsson, 2002:72-76; Feyerabend, Lakatos & Motterlini, 2001:1; Gephart, 1996:92; Hardy & West, 2000:19; Kezar, 2001:85; Kreiner, 1989; Manville & Ober, 2003:50; McKelvey, 2004:5).

The postmodernist perspective on the knowledge economy emphasises the fluidity and immediacy of information exchanges as basic assumptions for knowledge development. New technologies have revolutionised communication channels and have made possible multiple dynamic knowledge structures for future organisational advancement. It is suggested that in contemporary knowledge management, creativity and innovation, enabled by new technology, can enhance sustainable economic rationality (Abdullah, 2005; Choo, 1988:1; Dalkir, 2005:300; Hardy & Palmer, 1999:377; Malhotra, 2000:18, 2003:2; Singh, 2000; Staber, 2004:336; Tannenbaum & Alliger, 2000; Thompson, 2003:97).

According to Gephart (1996:90-96), current hierarchical management structures are directly linked to organisational practices of modernism, originating in the confines of industrial capitalism, which in turn were underscored by the preponderance of rationality, control and authority. Contemporary knowledge management praxis requires a profound cultural shift in the apprehension of reason towards a new paradigm of leadership, which is defined within the postmodern debate (Edvinsson, 2002:73). Current postmodern knowledge management and culture promote the multiplicity of subjective argumentation and revel in the loss of absolute authority as it engages in sufficient reflexivity to facilitate a more effective understanding of today's complex, knowledge-driven society (Baumann, 1988:217; Casey, 2002:17, 2004a: 36; 2004b: 302; Chakofsky, 2005:55; Cherniss & Goleman, 2001:8; Cooper & Burrell, 1988:93; Kriegel & Brandt, 1996:26; Maxwell, 1998:6; Weindberger, 2001:217).

This study explores the challenges faced by contemporary leadership to grasp future value propositions for the advancement of knowledge-trading organisations to

thereby unlock creativity and innovation potential. This is aimed at the collective creative competencies to generate alternative knowledge combinations as the envisioned strategic drivers. It aims to provide admission to the exploration and evaluation of fourth-generation meta-knowledge enablement (Dalkir, 2005:186; Duguid, 2005:109; Snowden, 2001:2). The ideal objective envisaged by this study is to suggest a leadership model that fosters the relationship between individual creativity and innovative awareness. It is proposed that the latter is developed through interventions, which endeavours to explore knowledge productivity and managerial effectiveness within organisations that support sustainable knowledge flow facilitation structures (Brown, 1989:94; Burningham & West, 1995:106; Christensen & Lundvall, 2004:13; Gustafson & Cooper, 1978:843; Housel & Bell, 2001:51; Zakaria, Amelinckx & Wilemon, 2004:6-16).

Evaluation of contemporary knowledge leadership reveals areas of opportunity for exploration within the new knowledge economy. Snowden (2000a: 14) notes that intellectual leadership and higher level of creativity and innovation are required for third-generation knowledge management and these important but neglected issues require to be explored and addressed. Drucker (2005:38) contends that the future competitive advantage for knowledge organisations is imbedded within the ability to apply and manipulate the creative dimensions of knowledge workers and to re-invent innovative competitive solutions (Brewster, Dowling, Grobler, Holland & Wörnich, 2000:210; Housel & Bell, 2001:52). Selen (2000:346) and Twiss (1995:16) refer to knowledge productivity and managerial effectiveness as areas of management that are inextricably linked to future organisational success and these concerns are highlighted as critical to third and fourth-generation knowledge management (Crawford, 2005:8; Edvinsson, 2002:72–76; Snowden, 2001:14). These approaches emphasise the importance of creativity advancement and the impact of culture and leadership to facilitate the accessibility of knowledge throughout information intensive organisations (Anderson & West, 1998:235; Andriopoulos & Lowe, 2000:734; Cummings & Oldham, 1997:22; Desouza, 2002; Ekvall, 1987:86; Ekvall & Arnoven, 1991:17; Easterby-Smith, Grossan & Nicolini, 2000:783; Fulmer & Vicere, 1995:4-10; Hassard, 1999:175).

The following discussion introduces the research problem, background and the rationale for this study. The constructs of creativity and innovation are explored to search for relationships between managerial effectiveness and knowledge productivity for organisational knowledge advancement. The aim is furthermore to

investigate the characteristics of contemporary leadership and to explore organisational culture and climate. The inter-relationship of these concepts within the knowledge management framework is surveyed.

1.2 CONTEXT OF THE RESEARCH

The knowledge economy features the knowledge-based organisation where total wealth translates into exploiting the commercial worth of knowledge (Edvinsson, 2002:75). It furthermore constitutes the production framework wherein knowledge workers generate knowledge as the primary economic production factor. Knowledge has replaced capital and energy as primary wealth creating assets (April, 2002:445-456; Awazu & Desouza, 2004:1016-1019; Clarke, 2001:189-196; Desouza & Awazu, 2004:1-14; Garvey & Williamson, 2002:15; Liebowitz, 1999b: 3-8). Knowledge management is the process of organising and directing knowledge intensive activities to the benefit of the organisation and contributes to the deliberate and systematic coordination of human capital and technology through creative and innovation application (Borghini, 2005:28; Viitala, 2004:530; Von Krogh, 2000:239). The coordination of these processes are achieved through applying knowledge and the collective sharing of valuable experiences refined into the corporate memory to essentially enable continuous organisational learning (Alred & Garvey, 2000:261; Apostolou & Mentzas, 2003:360; Bailey & Clarke, 2000:235; Dalkir, 2005:3; Handy C, 1995:28; Menon & Varadarajan, 1992:53; Michela & Burke, 2000:30; Nickerson & Silverman, 1998:325; Osborne, 2004:430; Oswick & Richard, 2004:108).

In contrast to the knowledge economy, the traditional economy is characterised by diminishing returns, which is a result of the scarcity of resources. The knowledge economy, however, is driven by new ideas and opportunities that continually refresh and perpetuate the process of discovery through the generation of diverse realms of ideation and is not based on the law of diminishing returns (Beck, 1992:48; Bohm, 1996:80; Edvinsson, 2002:72-76, Holsapple & Joshi, 2000:235).

The aim of knowledge management is to transform and leverage new knowledge for organisational advantage (Holsapple & Joshi, 2004:593; Von Krogh, Roos & Kleine, 1998:15). This transformation results from personal, organisational and social intelligent behaviour (Wiig, 1999:155-165; 2003:6-24). Furthermore, Housel and Bell (2001:62) and Dalkir (2005:38) add that knowledge management dispenses organisational expertise in highly multi-disciplinary fields and domains. The pillars of

knowledge management are the surveying, analysis and categorisation of new knowledge, the appraisal and evaluation of the value of knowledge distribution (Austin, 2002; Bouthiller & Shearer, 2002; Kanter, 1990:7; Milliken & Martins, 1996:410; Neef, 2003:27; Randeree, 2006:147; Robbins, 2003:7; Skyrme, 2000:90; 2001a: 19; Zack, 1999b: 130). The researcher implies that the challenge is to manage knowledge workers differently by creating a culture where creativity and innovation are embedded as critical production inputs for the delivery of innovative propositions for future knowledge harvesting and trading (Higgins & Morgan, 2000:117). Human capital and intellectual assets are the major drivers of the corporate wealth creation process in an economic environment powered by knowledge management (Ahmed, 1998:30; Alvesson, 1995:8; Iverson & McPhee, 2002:259; Zakaria *et al.*, 2004:16).

It is imperative for knowledge leaders to position themselves as knowledge producers within an entrepreneurial orientation, and to become familiar with the vast perspective of the new economy (Drucker, 2005:17; 2007:38). Globalisation and technology drive knowledge leaders towards autonomy and specialisation (Graetz, 2000:550). This new knowledge leader endeavours to develop a competitive advantage through knowledge networking, which produces a continuum of learning experiences through a knowledge sharing culture (Field, 2000:20; Holbrook & Wolfe, 2000:4; Martins & Martins, 2002:58-65; Taylor-Bianco & Schermerhorn, 2006:457-470; Von Hippel, 1994:30; Zakaria *et al.*, 2004:15–16).

Knowledge leadership leverages future value by codifying, capturing and transforming tacit and explicit knowledge into intangible assets for re-use and profitability (Nonaka, 1990a: 27-38; Nonaka & Takeuchi, 1995:4). This sought-after intellectual property manifests as both an integrated process and as the foremost organisational objective and provides the framework wherein knowledge is cultivated, protected and shared. It is within this knowledge segment that the product of collective experience is systematically funnelled into the information production process fuelled by innovative input to establish future knowledge competency (Anand, Manz & Glick, 1998:796; Coombs & Hull, 1998:237; Dalkir, 2005:365; Firestone, 2003:18; Flood, 1999:20; Kirton, 2003:32; Politis, 2003:55).

Knowledge leadership and culture facilitates the collective strategic intent that drives the organisation towards impending sustainability (Bass & Avolio, 1994:27; Clarke & Clegg, 2000:31; Crawford, 2005:6; Malhotra, 2003:12; Popper & Lipshitz, 2000:135). When leadership aligns with the strategic knowledge intent, it advances the dimensions of a postmodern learning culture, which leverages knowledge sharing throughout the organisation (Keough & Tobin, 2001:4; Stacey, 1992:23; Treffinger, 2003:21; Tsoukas & Vladimirou, 2001:982; Upton & Kim, 1998:4; Von Hippel & Tyre, 1995:18). Innovative discoveries by knowledge workers and the efficient trading of knowledge on demand, permits the continuous sustainability of new knowledge strategic schema (Bass & Drenth, 1987:18; Bettis & Prahalad, 1995:5; Crawford, 2005:6-16; Davenport & Prusack, 1998a: 30; 1998b: 4; Denning, 2000a; 2000b: 17; Flyvberg, Bruzelius & Rothengatter, 2003:112; Tierney & Farmer, 2002:1139).

Organisational cultural attributes, which promote creativity and innovation, are increasingly more urgent, particularly within fourth generation knowledge management practice and is imperative for maintaining a knowledge competitive advantage (Baines, 1997:202; Burningham & West, 1995:106; Mansell, 2002:317; Manville & Ober, 2003:48; Snowden, 2001:1-35). The researcher is of the notion that a new leadership approach can direct the organisation towards a new strategy that facilitates fourth-generation meta-knowledge creation. Future leadership could promote and intensify knowledge competitiveness through concomitance and team exchanges. This will demand dramatic changes in strategy, technology, organisational climate and culture (Martins & Martins, 2002:58-65; Zakaria *et al.*, 2004:15-16). These variables underpin this theoretical exploration.

Within the postmodern context, the researcher suggests that individual creativity and innovation plays an important role in this paradigm shift from traditional leadership to one that promotes the socialisation of knowledge through internal and external knowledge dialogues. Leadership can accomplish integration and synergy via knowledge concomitance to introduce knowledge networking within a systems approach (Boland, 1996:691; Drucker, 1994a: 11; 1994b; Stacey, 2000:167-195; Steyn, 2006:118).

1.3 THE PROBLEM STATEMENT

This study endeavours to explore the empirical rationale for the following epistemological challenges in knowledge management praxis: the first question that is investigated through empirical enquiry refers to an assessment of the relationships among individual creativity and innovative ability, productivity and managerial effectiveness. The second research question investigates whether individual creativity and innovative awareness can be developed and enhanced through learning interventions. The third research question pertains to organisational culture and climate and leadership for knowledge susceptibility and the enablement of innovative solutions through individual and group creativity involvement. The fourth research question explores the required characteristics of creative leadership for sustaining the economy of knowledge.

The above research questions are encapsulated within the title of this thesis: *“Creative leadership as the essential driver of organisational competitive advantage for sustaining the economy of knowledge”*.

The following are identified as the specific sub-problems that will be explored in this study:

- Does leadership encourage fluidity of knowledge in organisations through team exchanges?
- Are organisations harnessing individual creativity and innovation capability to drive competitive advantage and knowledge exchanges?
- Can creative leadership enhance individual and collective creativity within organisations? and
- What is the role of organisational culture and climate for the facilitation of information flows, knowledge management and the learning organisation?

According to Johannessen, Olaisen and Olsen (1999:116-128) managing and organising creativity and innovation in the knowledge economy requires a new leadership paradigm to establish best practice (Amabile, 1988:123-167; 1996:1154-1184; 1998:76–87; Borghini, 2005:30). To meet these challenges, organisations need to focus their attention towards knowledge-enabled leadership, as knowledge is the principal source of economic rent (Nonaka & Takeuchi, 1995:18; Reiter-Palmon & Illies, 2004:55-78; Rowe, 2004:19; Selen, 2000:346).

Amidon (1997:14; 2003:40) proposed a model for managing and organising innovation in the knowledge economy, which is foundational to this debate. This model emphasises the following characteristics regarding leadership, namely: focus, mastery, intensity and integrity as the essential precursors driving a sustainable competitive advantage. The researcher is of the notion that within the postmodern context, a new leadership praxis is required to impel future knowledge trading to achieve increased knowledge productivity.

The researcher proposes that if the misalignment existing between theory and practice could stimulate diverse discourse, leadership should endeavour to achieve the following new frontiers in the new knowledge - based landscape:

- Enhanced meaningful communication within organisations;
- Greater ease of access of information throughout the organisation;
- Heightened and continuous learning within organisations;
- Clearly communicated strategic intent;
- Harnessed creativity and innovation for the generation of future value propositions;
- Facilitated individual and team exchanges through communities of practice;
- Judicious vision; and
- Increased trust and integrity in the postmodern era of knowledge management.

Leaders should be actively involved in defining the mission and vision of the future organisation as well as developing and implementing the mission and vision creatively to achieve the desired knowledge advantage (Garvey & Williamson, 2002:112). Knowledge enabled leadership should support the transformation of knowledge workers to operate productively in knowledge matrix organisational structures to attain knowledge excellence and to contribute directly towards strategic knowledge advantage (Housel & Bell, 2001:131; Malhotra, 2003:13; McElroy, 2002:71).

The paradigm shift from traditional functional management has become a cross-functional strategic leadership priority (Garvey & Williamson, 2002:51). Traditional ways of leading have reached a level of parity in which knowledge-based organisations can no longer sustain future knowledge growth (Burkowitz & Williams, 1999:8; Garvey & Williamson, 2002:51; Godwin, Neck & Houghton, 1999:156). The researcher believes that knowledge-driven organisations need to distinguish themselves on the basis of leadership derived not only from technology, knowledge

productivity and customer knowledge but leadership that includes creativity and innovation competency awareness. The vision of future leadership should be to conceptualise and manage creativity and innovation to create both extraordinary opportunities and challenges to sustain competitive knowledge positioning (Borghini, 2005:30; Malhotra, 2003:13; Reiter-Palmon & Illies, 2004:55; Ward, Smith & Vaid, 1997).

The researcher integrates a postmodernist dialectic to introduce knowledge as the paramount production factor, which is fluid and accessible on all levels throughout information-driven organisations (Hassard, 1999:171-192; Keough & Tobin, 2001:10). The challenge is to explore the potential of individual creativity and innovation for the achievement of strategic collaboration within a culture conducive to knowledge-sharing in the search for future knowledge solutions. This exploration continues to describe the potential of interventions and methodologies applied for the enhancement of individual and group creativity and innovation awareness. Research questions one and two will be discussed.

1.3.1 The relationship between individual creativity, innovative awareness, knowledge productivity and managerial effectiveness

Leadership in the postmodern debate is not static but determined within the organisation itself and characterised by the forming attributes of the present situation (Sackney, Walker & Mitchell, 1999:33–57). The researcher postulates that effective leadership in the future will be designed by the respective prevailing circumstances and availing of the present challenges of the constructs of the time. Organisations of the future will be required to generate evidence of adaptive creativity to achieve future innovative manifestations through a leadership process, which draws from the collective creativity of its knowledge workers (Amabile, 1998:34; Bray, 1995:14; Grossman, 1984:2; Gustafson & Cooper, 1978:843; Hamel, 1998:20; Twiss, 1995:36; Van de Ven, Angle & Poole, 1989:16).

Individual creativity is understood as a function of previous conditions, skills and cognitive styles and personal and contextual elements in the context of the individual, segmented as the person, product, process and environment (Amabile, 1998:76-87; Cheng, 2005:605-622). Organisational creativity is achieved by a product of value-add through new knowledge processes, performed by the collective creative potentials in a complex social system (Dillielo & Houghton, 2004:324; Woodman,

Sawyer & Griffin, 1993:293–321). According to the position taken in this research, individuals and organisations are inter-linked (Grant, 1996:375). Creativity does not merely represent the capability of developing original intelligent work but the defining feature in this context of organisational creativity is new ideation for the enablement of future competitive positioning (Politis, 2003:56). Individuals and groups who share common interests, goals and needs, to collaboratively interpret knowledge of the unique organisational situation, can be defined as a community of practice (Breu & Hemminsway, 2002:147; Lundvall, 2000:6; 2003:173; 2005:10; Saint-Onge & Wallace, 2003:67; Weick, 1979:13; Wenger, 2000:225).

The emerging knowledge era presents challenges to organisations to establish value creation networks, which are essentially based on individual creative strengths, and these strengths are drawn together to search for collective integrated solutions (Cross, Yan & Louis, 2000:841; Garvin, 1993a: 78). Communities of practice as a strategic resource provide a conceptual framework, which directs the organisational knowledge value through increasing strategic capabilities and communal learning to leverage knowledge assets (Senge, 1990:53). In a strategic context, communities of practice provide for knowledge collaboration and learning allowing organisations to collectively solve problems that are encountered in the workplace (Fontana, 2001:711; Foray & Lundvall, 1996:2; Grady, 1992:157; Saint-Onge & Wallace, 2003:69; Snyder, 1999:471; Tidd, Bessant & Pavitt, 2001:28-30; Wenger & Snyder, 2000:139).

To meet the accelerated pace of change in the knowledge era, organisations are forced to introduce and leverage these communities to increase capabilities with greater speed and agility. Furthermore, knowledge-based organisations are challenged to provide support and infrastructure to maximise the produced knowledge value of these communities. Originating from the individual knowledge worker, knowledge creation and exchange is engaged within the community of practice and eventually drives the organisation to develop teams to become the key component for future knowledge management (Brown & Duguid, 1989:90; Hamel & Prahalad, 1989:63; Saint-Onge & Wallace, 2003:61).

It is suggested that individual creativity can be harnessed by organisations trading in the new knowledge economy and utilised as a foundational point of departure for creating a new competitive advantage (Malhotra, 2003:13). Very few organisations have been able to realise and harness this potential source for obtaining a

sustainable competitive advantage Garvey and Williamson (2002:42). The researcher is of the notion that current processes and measures of productivity are still derived from traditional tangible functions (Handzic & Chaimungkalanont, 2004:57-64). The resultant mismatch between the past and the new economic rationale could function as a barrier to the development of a sharing and learning organisation (Amabile, Conti, Coon, Lazenby & Herron, 1996:1154–1184; Busse & Mansfield, 1980:91; Gomez-Mejia, Balkin & Cardy, 2001:58; Hammer, 1990:73-81; Twiss, 1995:81).

The second research question, pertaining to the development of creative and innovative competency, is underpinned by the following theoretical perspectives. Amidon (1997:14) developed the strategic innovation model, which illustrates the input, transformation and creative output pathway (Siau, 1996:201-216; 1999:283-293; 2000:248-258; Siau & Messersmith, 2003:65). Borghini (2005:27) expands by introducing creativity and innovation as a competency based ingredient. Martins and Martins (2002:59) developed a cultural model for the development of knowledge productive innovation, which facilitates organisational learning. The cultural performance should include a learning climate, which develops communities of practice to benefit the organisations investment to develop knowledge capacity for the establishment of a new corporate curriculum. Hall and Mairesse (2005:24) introduce knowledge productivity and managerial effectiveness as areas in the knowledge organisation, which are dependent upon knowledge, enabled leadership. The main criticism of these theoretical models is that although training and development and innovation is included as imperative for innovation investment, the importance of creative capability is excluded as well as the importance of communities of practice. Johannessen *et al.* (1999:117) suggest a new theoretical model underpinning the characteristics of knowledge leadership for innovation enablement. Steyn (2006:118) proposes a theoretical concomitance model, which recollects and integrates the essential elements relating to the prior discussion. Davila, Epstein and Shelton (2004:271) introduce an innovation valence model and Cheng (2005:605-622) proposes multiple levels of cognitive thinking as foundational for creativity development.

Competitive pressures have increased and are forcing organisations to harness the individual creativity dimensions to become innovation-based leaders (Crawford, 2005:6-16; Viitala, 2004:531–542). The primary driver is creative conditioning which occurs when leadership responds to the future without prescribing solutions and

allowing creative and innovative ideas to be generated by stretching employees' cognitive potential (Amabile, 1998:76-87; Andriopoulos & Lowe, 2000:736; Cheng, 2005:605-622). Innovation is inherently uncertain and successful technologies require organisations to take risks that create dialectic tension between operational and human capital in search of new opportunities, which ultimately reduce risk through the search for new and diverse knowledge solutions (Goleman, Boyatzis & Mckee, 2002:1; Drucker, 1995:54; Senge, 1992:138; Tidd *et al.*, 2001:309).

The following theoretical constructs informed the researcher's empirical framework and provides an epistemic access based on popular press, and encourages narrative to suggest new links between learning environments and knowledge workers abilities to contribute towards changing the current knowledge environment into a richer landscape of innovative learning.

Scott and Bruce's (1994:582) strategic path model for individual creativity and innovation and its determinants in the workplace are suggested as a contributing pillar of epistemology for this theoretical exploration. Scott and Bruce (1994:582) investigated individual innovative behaviour as the outcome of four interacting systems, which refers to the individual, leader, work group and the climate for innovation. The determinants of organisational culture that influence creativity and innovation and the determinants of strategic leadership are explored. Borghini's (2005:27) distributed cognition model explores the complexity of the creative processes and advises on innovation regarding knowledge organisations. It presents knowledge apparatus that enables analysis for developing systemic perspectives on organisational creativity. It furthermore draws particular attention to the nature of collective creative processes and highlights the sense making process within its cultural and cognitive features (Crawford, 2005:10; Malhotra, 2003: 4; Snowden, 2005:5).

Hall and Mairesse (2005:5) introduce knowledge productivity and managerial effectiveness as areas in the knowledge organisation, which are dependent upon innovation-based leadership. The main criticism of this theoretical model is that although training and development is included as the major driver for the creation of innovation capital for increased productivity, the dimensions of creativity as well as team exchanges are excluded. Johannessen *et al.* (1999:117-124) suggest a new theoretical model underpinning the characteristics of knowledge leadership for innovation enablement. The management of the environment or the context of

knowledge creation, rather than controlling the worker is primary for effective knowledge leadership. The researcher aims to add to this theoretical construct by studying the environmental and socialisation factors impacting on individual creativity and innovation within the knowledge economy (Crawford, 2005:15; Handzic & Chaimungkalanont, 2004:57-64).

Skyrme (2000:14) suggests a knowledge-based organisational model for the creation of a particular condition for the effective knowledge management and the dissemination and storage of valuable organisational knowledge. The organisational enablers suggested are culture, organisational structure and leadership. The levers for effective knowledge sharing are connecting, teaming and the establishment of new knowledge worker policies (Abou-Zeid & Cheng, 2004:265; Mahoney, 2000:241). Skyrme (2000:82) furthermore suggests that skills and individual learning are the foundational capabilities required within the knowledge organisation. The researcher reviews and critiques this particular model on the basis that it excludes the harnessing of individual and collective creativity and innovation-driven support processes. Furthermore the researcher offers critique concerning the exclusion of creative leadership as the foremost driver for organisational strategic alignment (Hansen, Nohria & Tierney, 1999:115; Hitt, Bierman, Shimuzi & Kochhar, 2001:15; Kaplan & Norton, 2004:65; Körtz & Snowden, 2003:471; May, Korczynski & Frenkel, 2002:785; Mohanty & Deshmuck, 1999:313; Powel & Bradfort, 2000:13; Slater & Narver, 1995:65; Von Krogh, 2000:51).

The model of Amidon (2003:42) is founded on a systematic framework that is used to analyse the capability of organisations to create and implement new ideas. This model is important for the measuring and implementation of creativity since it analyses the factors that result in creative outcomes. This model focuses on internal management responsibilities and external organisational interfaces. It furthermore renders insight to establish the current innovative capabilities of the organisation as contrasted against the strategic goals of the organisation.

The concomitance model introduced by Steyn (2006:118) promotes the notion that the entire organisation feeds dialogue through a forum facilitated by creative leadership. When knowledge workers share a common cognitive narrative, the articulation of creative architectural syntaxes are communicated more productively and time between transfer and application is optimally reduced for competitive advantage.

The rationale of the research problem hinges on these models collectively. The researcher will develop these models further during this research exploration. The models were integrated and discussed to illustrate the researcher's epistemic access from the theoretical past and it furthermore serves to affect future recommendations. The researcher will also endeavour to investigate how these models impact on the attainment of knowledge advantage. The knowledge economy introduces the important construct of knowledge productivity, which proposes discussion for the application of intangible assets and its imperative for innovative knowledge creation (Neef, 2005:113; Selen, 2000:348; Von Krogh, 2000:77).

In a knowledge society, an organisation's strategic value is vested in the strategic manipulation of its tangible and intangible assets to create future wealth (Dalkir, 2005:301). Innovative leadership that unlocks the potential of knowledge workers is viewed as the primary driving force in the new economy (Bennet & Bennet, 2003:113; Powell & Snellman, 2004:215).

The social nature of knowledge management is depicted by knowledge exchanges among the knowledge leader, the team members and the organisational knowledge repository (Awazu & Desouza, 2004:1016-1019). The aim of knowledge exchanges is to create value from intangible assets through the collaboration process (Stokes & Logan, 2004:225-238). Knowledge transfer and the vehicles used in the process establishes a unique set of inter-group dynamics (Saint-Onge & Wallace, 2003:90; Von Krogh, 2000:229). The centrality of the knowledge leader as interface and nodal point for conversion and collaboration indicates that a unique social system, as collective characteristic of the knowledge management process, exists. The internal and external communication practices (Saint-Onge & Wallace, 2003:123-128, Stokes & Logan, 2004:222; Tidd *et al.*, 2001:228) serve as integrating mechanisms that keep the collaboration process dynamic and interconnected within the realities of the formulated organisational strategic intent. Social processes lead to new innovations and the collective acceptance of shared knowledge is paramount for the generation of future value (Housel & Bell, 2001:113; Saint-Onge & Wallace, 2003:120).

1.3.2 Knowledge productivity and managerial effectiveness

A misconception exists that leadership and management are inextricably linked to organisation bureaucracy and hierarchy. This implies that management cannot be effective outside the bureaucratic structures. Traditional management operates with authority and control within the confines of the *status quo* (Fulmer & Vicere, 1995:1). However, it is now evident that a new paradigm of leadership is needed within knowledge management praxis that transcends all past perceptions and practices (Adair, 2005:78; Dalkir, 2005:300; Drucker, 2005:38; Selen, 2000:350; Van Winkelen, 2006:24-27).

For this discussion, managerial effectiveness refers to the extent to which a manager acquires the functional input through relationships and achieves expected knowledge outcomes in the knowledge economy. This is referred to as knowledge productivity (Brewster *et al.*, 2000:89; Garvey & Williamson, 2002:19). The concept of managerial effectiveness is the central theme in traditional management. However, it is the relationship with creative leadership, which is the imperative for driving the new knowledge economy and underscores this research. It is the renewal of knowledge competencies and the adaptation of knowledge repositioning (Hughes, Ginnett & Curphy, 1999:194; Veldsman, 2002:3).

According to Hughes *et al.* (1999:122), managerial effectiveness is furthermore understood as managers learning to distinguish between task and function, apparent effectiveness and personal effectiveness as the criteria. Leadership encompasses the navigation of the elements of management and relates to the direction and the ratio of output to input (Brewster *et al.*, 2000:89). Knowledge output refers to knowledge productivity, which in the knowledge economy is regarded as an important element of management, but needs new metrics of creative problem solving and innovative relevance (Barron & Harrington, 1981:442; Reiter-Palmon & Illies, 2004:60; Saint-Onge & Wallace, 2003:211; Sternberg & Lubart, 1999:3).

In traditional management, authority was vested in the re-arrangement of workflow and the modification of production, which rewarded similarly Brewster *et al.* (2000). Managerial objectives were formerly linked to team objectives and dampened individual talent to emerge (Zakaria *et al.*, 2004:15-19). The researcher suggests that managerial effectiveness could translate into innovation utilising the five dimensions of creativity, as proposed by Garvey and Williamson (2002:107). The

mere existence of creativity as a future managerial effectiveness factor, questions the future leadership imperative (Tapscott & Ticoll, 2003:16; Williams, 2001:63-68). The researcher argues that time is an important production factor in the generation of innovations and that a forum for creativity should be established where more realistic objectives are facilitated to enable future innovations. It is therefore suggested that creative leadership is paramount for the translation of new methods and procedures to convert managerial effectiveness into intellectual property as a new intangible resource for knowledge advantage. This could lead to the optimisation of knowledge resource utilisation and the production of creative alternatives to replace the traditional mindset (Dalkir, 2005:104; Depres & Chauvel, 1999:110-120; Deschamps, 2005:35; Torrance, (1987:207).

Empirical evidence suggests that an organisation's knowledge productivity is directly linked to the ability to innovate through strategically driven competitive properties, which facilitate the ability to produce creative ideation (O'Connor & Ayers, 2005:23-31). Managerial effectiveness metrics relate to either inhibiting or promoting the learning needed to create a positive attitude towards product innovations and this is essential for the achievement of future knowledge competitiveness (Borghini, 2005:28; Brewster *et al.*, 2000:90; Holsapple, 2003:22; Holsapple & Joshi, 2000:240; 2004:593).

Managerial effectiveness, knowledge productivity and organisational innovation are a uni-dimensional phenomenon according to O'Connor and Ayers (2005:24) and expresses the organisation's collective productivity that includes the implementation of incremental and radical innovations. These activities can be captured and monitored through different knowledge networks within the organisational setting and various authors (Brewster *et al.*, 2000:95; Evans & Wurster, 1997:70; Garvey & Williamson, 2002:29) agree that knowledge productivity is related to the organisations ability to exploit creative ideation and implement continuous innovation processes.

The third research question pertaining to this study explores the current organisational culture and climate and surveys the readiness for creative and innovative knowledge leadership. The theoretical rationale pertaining to this question will be discussed next.

1.3.3 Culture and climate

Organisational culture has become increasingly important as a platform for gaining a strategic competitive advantage in the knowledge economy (Martins & Martins, 2002:58-65). Change in organisational strategy, technology, working systems and leadership usually promotes and intensifies organisational competitiveness. Creativity and innovation have a major role to play in the cultural change process (Zakaria *et al.*, 2004:16-17). The topic of organisational culture presents two contradictory images. In this regard, Martins and Martins (2002:62) identify two aspects, which create the dialectic tension that upholds the organisational infrastructure, and secondly, culture as a central part of the change process (Martins & Martins, 2002:58; O'Reilly, Chatman & Caldwell, 1991:487; Senge, 1992:453). According to Martins and Martins (2002:58), the culture within post-industrial organisations is knowledge-based and success depends on creativity, innovation, discovery and inventiveness. West and Farr (2002:7) are of the opinion that the importance of the role of creativity and innovation in organisational culture is foundational, and therefore new ideas and their manifestations as novel practices and products, is the core of change (Ahmed, 1998:32; Arthur & Parker, 2002:12; Deal & Kennedy, 1982:52; De Cock, 1993:11; Denison, 2001:17; Martins, 2000:19; West, 2002:355; Wilson, Ramamurthy & Nyström, 1992:311).

Leadership in learning organisations endeavours to create an institutional framework in which creativity and innovation are accepted as basic cultural norms (Sternberg, 2000:60). According to Abdullah (2005) and Politis (2003:55-66), integrity and trust in leadership influences the change process and develops tenacity towards knowledge productive enquiry (Politis, 2001a:354; 2001b:449-458).

The fourth and last research question to be investigated enquires as to the relevant characteristics required for future leadership in the knowledge economy.

1.3.4 Leadership

According to Brewster *et al.* (2000:25) and Hughes *et al.* (1999:2), management is based on organisational complexity, establishing order and consistency by drawing up formal plans and monitoring results. Leadership, in contrast, is about transforming change, establishing direction by developing a vision of the future and aligning human capital through communication and inspiration when leading in the

postmodern era. Brewster *et al.* (2000:30) and Nickols (2000:3) postulate that managers use the authority inherent to their designated formal positions to obtain compliance from organisational members. Leadership relates to the ability to influence the organisation towards the achievement of goals, to provide a challenge to create future visions, which inspire the organisation to achieve global competitiveness (Viitala, 2004:528). Leadership has become a debatable topic concerning knowledge management as personality traits and leadership styles are questionable. From a postmodernist perspective, effective leadership is shaped by individual and group constructions and deconstructions within the contemporary organisational realities (Fulmer & Vicere, 1995:4-10; Houghton & Neck, 2002:672; Kezar, 2003:137; Sackney *et al.*, 1999:36).

Crawford (2005:6-16) investigated the effects of transformational leadership and organisational position on knowledge management and proposed that transformational leadership is preferable for knowledge management. Limited research concerning the relationship between creativity, innovation and transformational leadership exists (Borghini, 2005:29) and this has motivated the researcher's choice of topic. The relationship indicated that traditional leadership is not adequate for effective knowledge management as its emphasis is on power hoarding rather than power sharing. The relationship between leadership and innovation is difficult to articulate given the variety of functional leadership behaviours (Barron & Harrington, 1981:442; Bichard, 2000:41-46; Houghton & Neck, 2002:675; Oldham & Cummings, 1996:610; Von Krogh, Ichijo & Nonaka, 2000:38).

The absence of a coherent leadership model relating to the knowledge economy has led the researcher to critically evaluate available sources and to incorporate this aspect into the exploratory quest. A new leadership model is required to strategically navigate the knowledge intensive organisation into the fourth era of knowledge management where the benefits of a knowledge-driven organisation can be harvested to sustain a competitive advantage. Fourth generation knowledge management concerns the intangible knowledge asset as primary production factor for competitive advantage (Geijsel, Sleegers & Van den Berg, 1999:309-328; Housel & Bell, 2001:42; Snowden, 2005:4). The researcher suggests that creativity and innovation have become more prominent catalysts for achieving a competitive advantage than in the past economic era. Transformational leadership is well aligned to creative leadership and could be the critical success factor enabling organisations to attain competitive advantage. This new leadership role assists in

creating a supportive organisational culture and climate conducive for unlocking individual and team creativity and innovation (Crawford, 2005:6-16; Kürtz & Snowden, 2003:462; Stokes & Logan, 2004:164; Wald & Castleberry, 2000:18-34).

The greatest challenges facing leaders are the creation of new strategic opportunities through global awareness and managing highly decentralised organisations in a networked economy (Salavou, Baltas & Lioukas, 2004:1105). Knowledge diversity is inherent to these organisations and should be embraced as it enhances the collective need for innovation and future sustainability (Deschamps, 2005:31-38; Hughes *et al.*, 1999:2; Sydänmaanlakka, 2002:138; Wiig, 2003:20).

1.3.5 Collaboration

Collaboration is an essential ingredient for knowledge leadership (Stokes & Logan, 2004:261; Sydänmaanlakka, 2002:82). Leadership in the postmodern era will be characterised by high frequency of collaboration in organisations. According to Stokes and Logan (2004:36), it is only through collaboration of all functional organisational elements that future sustainable success can be obtained – assisted by through continuous innovation. The collaboration and co-ordination of teams is essential for successful harnessing of creativity through individual and inter-team exchanges (Twiss, 1995:245-246). Within knowledge organisations, different coordination situations are identified for the development of projects, implementation through linkages with internal and external partners and informal contacts. All of these add to the accumulation of knowledge, which is deposited in the organisational memory (Stokes & Logan, 2004:121-126; Sydänmaanlakka, 2002:140; Takeuchi & Nonaka, 2004:243).

These networks of relations that develop within strategic knowledge interactions improve the flow of information within the knowledge accumulation and creation function. Transformational leadership and the availability of knowledge resources are essential for the process of idea generation to take place (Geijsel *et al.*, 1999:310). In more dynamic organisations the ability to accumulate knowledge, hinges on leadership facilitation to provide centralised direction, rather than by diffusing responsibility to the teams most directly concerned (Bryan, Matson & Weiss, 2007:1-10; Drucker, 2005:10-14; Tidd *et al.*, 2001:28-30).

The challenge for organisational structures is to find a balance between creative leadership and management as it requires a knowledge project-phased approach based on technological enablement (Hughes *et al.*, 1999:3). This Collaboration necessitates the unification of different professional profiles for the creation of different communities of practice. Leadership drives the organisation's networking practices that are also strongly contextualised with vision, continuous learning and immediate access of information for efficient team exchanges (Drucker, 1995:54; 1998:26; 2005:81). These exchanges are based on the individual and collective exchanges among knowledge workers to expand their shared cognitive environments. Collaborations are constructed within knowledge networks, promoted by creative leadership within diverse opportunities, which are based on shared knowledge vision (Politis, 2001a:354-364; Politis, 2001b:449-458; Taylor-Bianco & Schermerhorn, 2006:457-470).

Knowledge networking practices are established either as bureaucratic networks that primarily seek to codify implicit knowledge and are geared to retain and hold this identification, or as networks that synthesise the initiatives based on past experience to establish infinite possibilities (Ettlie, 2000:34; Liebowitz, 1999b:24). Technical databases exemplify the former and these databases synthesise accumulated experience in the areas of product design, software and technical tests. The latter refers to a less codified form, which relates to project management practices. These are both tools that attempt to combine objective data with knowledge derived from organisational feedback and experience (Denning, 2000b:2) and this defines the importance of networking for collaborative space within the knowledge-centered organisation (Dixon, 2000:5; Stokes & Logan, 2004:24).

1.4 RESEARCH OBJECTIVES

There is a large body of scholarship created around leadership as the driver for creativity and innovation to achieve competitiveness within contemporary knowledge organisations. (Dalkir, 2005:300; Garvey & Williamson, 2002:19; Nonaka, 1990a:35; 1990b; 1991:103; Stankowsky, 2005:36). The researcher examines these constructs and their relationships to each other in order to contribute to the reinvention of future leadership initiatives. According to Twiss (1995:84), the first component necessary to establish innovation awareness is a high level of motivation and the influence of leadership drive future sustainability. The second component is the availability of resources, which includes human capital, knowledge enablement and funding. The

third factor is the provision of human capital within conceptual frameworks to leverage the articulation of metaphor, wisdom and conceptual orientation for the translation of tacit knowledge into explicit knowledge and ultimately establish new futures within the knowledge creating company.

Knowledge management promotes collaborative networking, which consist of diverse practices, which connect business units through interpreting future opportunities (Stankowsky, 2005:36). This process is instigated primarily by leadership roles, which are mainly concerned with the quality of internal and external dialogue (Borghini, 2005:26). The researcher suggests that although leadership is directed towards future opportunities, collaboration is essential for strategic implementation to take place concomitantly. The concomitance model (Steyn, 2006:118; 2007:120; 2008:120) is a dynamic tool that describes and evaluates the organisation's future sustainable success through inter-functional alignment with strategic intent by enhancing the team and individual creativity for knowledge enablement.

The research objectives are discussed in 1.3 and are embedded in the above discussion and is explained as follows:

Research objective one

To determine the relationship among individual creativity, innovation awareness, knowledge productivity and managerial effectiveness.

Research objective two

To investigate whether individual creativity and innovation awareness can be developed and enhanced through training interventions.

Research objective three

To determine the relationship between organisational culture, climate and leadership for efficient knowledge management enablement.

Research objective four

To investigate the required characteristics required of creative leadership in the knowledge economy.

The research objectives include two hypotheses that have been formulated. These pertain to objectives one and two. The questions referring to objectives three and four will also be expanded upon.

This study endeavours to support or reject the two stated hypotheses, which are discussed below:

1.5 RESEARCH HYPOTHESES AND OBJECTIVES

Two hypotheses have been formulated in relation to objectives one and two.

1.5.1 Hypothesis One

There is a significant statistical relationship between the levels of individual creativity achieved and the knowledge workers managerial effectiveness, innovation awareness and knowledge productivity (see Annexures A4 to A8).

1.5.1.1 Rationale For Hypothesis One

The capacity for knowledge workers to access information within knowledge-enabled organisations has become a crucial element in the new economy. Several authors (Ambrosini & Browman, 2001:820; Brown & Duguid, 1991:40; Read, 1996:224; Saint-Onge, 2005:63; Schönström, 2005:20; Von Krogh, 2000:5) have examined the relationship between knowledge workers and knowledge organisations, focusing mainly on personal characteristics and their interaction with the internal and external environment. These authors furthermore considered methods in which personal motivation impacts on group interaction and the conversion of personal and tacit knowledge. Their findings primarily indicate methods for the transfer of explicit forms that may be applied in problem solving within individual and organisational interface (Amabile, 1988:123–67; Drucker, 1995: 54-62).

Garvey and Williamson (2002:158) explored the role of managerial effectiveness within the realm of organisational innovation and suggest that in augmenting managerial readiness, a supportive climate of risk taking and lateral thinking should be achieved. Innovative managers should use deliberate decision-making to enhance efficient use of resources and creative knowledge practice adherence to standardise operating procedures and thereby achieve total quality management within the

competitive knowledge environment. The authors conclude that knowledge managers need to reward innovation and creative thought production to ensure that knowledge workers contribute actively to the knowledge creation environment. Woodman *et al.* (1993:293) found that effective knowledge management praxis could influence knowledge productivity to the same extent that a climate of knowledge socialisation becomes embedded to exert innovative contextual influence on knowledge workers. To increase the effectiveness of human capital within an environment of discontinuous change creativity, and innovation could be the sustainable mechanism to optimise knowledge productivity and increase the effectiveness of knowledge workers (Garvey & Williamson, 2002:51; Saint-Onge, 1999).

Drucker (2005:11) postulates that innovation and creativity are essential constructs required to leverage knowledge productivity within the knowledge-driven organisation to attain prolonged strategic competitive advantage (Amabile *et al.*, 1996:1154; Housel & Bell, 2001:85). The researcher explores the relative magnitude of innovation and creativity and its relation with knowledge productivity and seeks to establish an epistemic access to integrate these diverse domains and invite narrative to disseminate methods of efficient knowledge creation and enhanced innovation within contemporary organisations.

1.5.2 Hypothesis Two

Creativity and innovation as the dependent variable show a significant statistical relationship when training and creativity interventions (independent variable) are administered (see Annexures A4 to A8).

1.5.2.1 Rationale for Hypothesis Two

Various authors have interrogated the theoretical content of creativity and innovation within knowledge organisations. Several authors (Amabile, 1998:80; Barron & Harrington, 1981:451; Glor, 1997:41; 1998:300; Harrington, 1981:121; 1990:143; Morrison, 1992:72; Mumford & Connelly, 1999:27, Tesluk *et al.*, 1997:21), have focused on the creative process, combining the product, the person and the particular situation, and their findings indicate that group characteristics and output capabilities are the key elements for competitive advantage. They suggest the following conditions for enhanced organisational creativity: leadership and

cohesiveness, group composition, organisational group structures and diverse human capital memberships and cross-functional backgrounds. However, the researchers do not clarify whether creativity can be enhanced through intervention (Bass & Avolio, 1994:34; Glanz, 2000:1-15; Harrison, 2003:21).

Payne (1990:101-122) identifies knowledge resource availability, innovative leadership, the existence of formal groups and culture as crucial factors for creative knowledge performance. Various authors, Woodman *et al.* (1993:302), propose that certain techniques can be identified for the enhancement of organisational creativity, which includes the differentiation of knowledge generation through the evaluation and analysis of knowledge solutions. They further postulate that risk-taking, free exchange of ideas, legitimisation of conflict and the reliance of intrinsic as opposed to extrinsic rewards offered empirical support for these particular conclusions.

Amabile (1988:142) demonstrates that hierarchical structures affect the implementation of innovation within organisations and stifle the enhancement of creativity and innovation, and emphasise that domain relevant skills are imperative to achieve knowledge productivity. The implications of the research revealed that a creative intersection takes place between individual creativity and organisational innovation. This intersection is promoted by environmental factors, which remove the inhibitors to creativity and make personal knowledge available to all human capital (Amabile *et al.*, 1996:1154).

Nonaka (1991:97) supports Amabile *et al.* (1996:1172) by exploring this process, which occurs inherently regarding creative thought processes and explains how it affects activities within the knowledge creating company. The results of these insights generate evidence that personal commitment, self-knowledge, and a shared sense of organisational intent and the importance of expression through individual and collective ideation are imperative. In the creative context, managerial effectiveness is achieved when management takes a more holistic approach to knowledge productivity by introducing images and symbols, which would provide a balance between agility, autonomy and constraint (Garvey & Williamson, 2002:121).

The researcher aims to ascertain whether creativity training could lead to exponential creative output. These particular interventions include paradoxal principles for the development of creative thinking skills, active divergence, deferral of judgement and active convergence skills.

For objectives three and four stated in 1.4 the following two research questions will be expanded upon:

Research question three

What is the relationship between organisational culture, climate, and leadership for efficient knowledge management enablement?

Research question four

What are the required characteristics for creative leadership in the new knowledge economy?

1.6 THE VALUE OF THE RESEARCH

Knowledge management practices in the future knowledge economy should utilise innovation, creativity, and its strategic application to stimulate knowledge competency as a tactical imperative (Garvey & Williamson, 2002:50). A new profile for future leadership is required, as current organisations have realised that knowledge workers are essential to transcend the divide between the traditional and the new knowledge rationality amidst the complexity to develop intangible knowledge capital (Davenport & Voelpel, 2001:212-21).

The successful companies of the future decades will be those that provide and human capital with the innovation facilities to compete proactively in the knowledge economy (Dalkir, 2005:273; Drucker, 1993:25; 1994a:28; 1995:54-62; 2007:151; Saint-Onge & Wallace, 2003:60-63; Stokes & Logan, 2004:223). The challenge is the achievement of exponential knowledge productivity, which resides in the cognitive capabilities of knowledge workers. There is a growing awareness that knowledge productivity is linked to creativity and innovation for the establishment of a strategic sustainable competitive advantage (Amabile *et al.*, 1996:1154; Garvey & Williamson, 2002:101). The assumption further describes knowledge competency to be directly linked to the organisations' ability to learn through the acquisition of new knowledge (Senge, 1992:72).

The significance of this research implies discussions regarding future leadership and its impact on organisational creativity within the field of knowledge management praxis. According to Borghini (2005:19-29), more extensive studies are needed from

contributors of social psychology and anthropology to study the context of business organisations within knowledge management (Raven & Stephenson, 2001:17; Sternberg, 2000:81; Sydänmaanlakka, 2002:76).

A crucial outcome of the research is to expose the challenges facing leadership in the knowledge-based economy. It furthermore endeavours to build the future value proposition for organisations utilising creativity and innovation through group collaboration, to produce knowledge combinations as strategic drivers. It furthermore aims to introduce a framework for the leveraging of creativity and innovation as primary drivers to transform third- generation knowledge leadership enablement. The outcomes of this empirical enquiry are based on the results of control and intervention groups, which will participate in pre- and post testing.

The *Torrance Test of Creative Thinking* (Torrance, 1984) is the assessment instrument selected for this particular phase of the research. This comprehensive instrument assesses the five dimensions of creativity (Torrance, 1984:153). Tests for managerial effectiveness and productivity, innovation awareness will be administered simultaneously. The *Baseline Managerial Assessment Technique in Knowledge Management* (Kriek, 1990) research has been used successfully in various South African industries and in particular in the mining and mineral industry (Kriek, 1990). Control groups and different levels of treatment groups will be tested. A proposed model of organisational culture, leadership and innovation will be developed to describe criteria for the facilitation of future knowledge management. This study will investigate the significance of organisational concomitance as the pivotal point for integrative knowledge enablement and intends to evaluate its relationship to the collaboration process and finally, recommend a future knowledge syntagma to assist and support creative leadership. As the future competitive advantage could be vested within knowledge leadership, it is the activation of creative strategic vectors, which defines success in the knowledge economy (Frid, 2000:31; Garrick, 1998:5; Garvin, 1993a:78; Gergen, 1989:1-20; Liebowitz, 1999a:37).

The findings will endeavour to promote a proposed model for the enhancement of information and organisational integration in the search for future value propositions. Furthermore, this model will be developed for the use of enhancing organisational competitive advantage through the facilitation of creative leadership and the strategic processes of continuous creativity and innovation enablement throughout the postmodern organisation.

This study further aims to suggest new knowledge architectural syntaxes for strategic repositioning of the future organisation (Brewster *et al.*, 2000:211; Casey, 2002:8; 2004a:24; Sparks & Schenk, 2001:849). According to Crawford (2005:6), limited research has been conducted on leadership, culture, and the enablement of strategic imperatives within the field of knowledge management. The intention is to provide new perspectives on human capital engagement within postmodern knowledge management, by exploring specific variables and paradigms. This explorative journey is constructed and developed within a knowledge management perspective and explores a diverse application of South African industries, providing research narratives through empirical enquiry. The qualitative and quantitative components will offer data in support of this discussion to describe the uniqueness and significance of this exploration.

The research is considered both deductive and inductive, whereby a model will be developed from observations of the empirical realities and assumptions that are explored and described to formulate future scientific recommendations. General inferences are deduced from particular instances moving from individual observations to statements of general patterns of theory, for empirical recollection, ranging from the specific to general (Hussey & Hussey, 1997:13). The logic can be assigned to the relationship that exists among the constructs investigated to arrive at a conclusion regarding creative leadership and its impact on organisational processes facilitating a climate conducive to the achievement of a knowledge advantage. Inductive research moves from the specific to the general offering clarity from the micro to the macro, and emphasises the uniqueness of this study (Alvesson, 1993:43; Beck, Giddens & Lasch, 1994:18; Casey, 2004b:302; Clegg, Hardy & Nord, 1996; Leedy & Ormrod, 2001:68).

The core argument in this study is to engage in new syntagma of understanding organisational leadership and management praxis within the framework of knowledge management. The justification for the epistemological positions underlying the literature illustrates the distinctions between theory and postmodern knowledge management practice. The underlying agenda is to comment on the rational grounding for competitive advantage through the interrogation of individual and collective creativity capability, innovation constraints and the effects of leadership.

Knowledge management is precisely about leadership and management's ability to leverage the creation of new knowledge, imagination and novel practices as it

responds to uncertainties in future markets (Housel & Bell, 2001:51). The essential issue in managerial and organisational theorising could be management and leadership's failure to release the often hidden energy of creativity and the subsequent innovation in the pursuit of competitive sustainable advantage. The argument attempts to bring creativity and innovation to the fore as the researcher observes that it could be currently constrained by managerial choices. Managers are generally productivity-driven and management praxis may subsequently create hindrances to creativity within the given organisational culture. Teece (1998a:55,1998b:289) proposes that a new paradigm of leadership could transform the *status quo* (Zakaria *et al.*, 2004:6-16).

The above arguments underscore the researcher's concerns with the emergence of transformational and creative leadership as a result of interventions. The researcher will advance suggestions regarding the significance of intervening constructs to emphasise the cardinal importance of the impact of creative leadership, employing a phased research approach. The following section briefly discusses the phases of the research and explains the various methods and reasons for selection of items during each phase.

This study is designed to establish and evaluate the research participants' individual creativity dimensions and creative the particular strengths, productivity and managerial effectiveness, scores to assess the specific interventions for creativity and innovation administered during the research period will incorporated into the work process of the treatment groups by means of pre and post testing.

The research will be executed to establish a cognitive framework that could serve as the basis for constructing and developing a new theoretical model for future knowledge management practice.

1.7 RESEARCH METHODOLOGY

The research methodology is directed by the research challenge and impacts on the entirety of the investigation. According to Hussey and Hussey (1997:74), the research methodology refers to the overall approach to the research process, from the theoretical constructs to the collecting and analysis of the data. The researcher uses a triangulative approach, which applies experimental, survey, semi-structured

and non-directive interviews. This research design is guided and structured to align with the purpose, logic, processes and eventual outcomes of the research.

The research design was informed by an approach referred to as research triangulation. This approach is based on a combination of three scientific research methods to collect both qualitative and quantitative data from various target groups within knowledge management (Hussey & Hussey, 1997:75). Due to the complexity of different realities (Leedy & Ormrod, 2001:27), it is often problematic to study a phenomenon in its totality. Multiple methods such as triangulation enable a more holistic perspective to this specific field of study. Hussey and Hussey (1997:75) suggest that triangulation as a research method has a number of strengths and encourages productive research by enhancing quantitative methods supported by qualitative interventions.

This study is of an exploratory nature and focuses on gaining insights into the subject area of individual creativity through pre- and post-test analysis. The research assesses existing theory to establish building blocks as it aims towards the development of new theory through model construction (see Chapter Three). The collection of empirical data takes place in five phases. During Phase One quantitative data will be gathered by means of the administering of two measurement instruments, namely the *Torrance Test of Creative Thinking* (Torrance, 1984) and the *Baseline Management Behaviour Questionnaire* (Kriek, 1990). The data obtained from Phase One will be used to provide statistical evidence to answer research question one “*Is there a relationship between individual creativity and innovative ability, productivity and managerial effectiveness?*” and research question two “*Can individual creativity and innovative ability be developed and enhanced through learning interventions?*” Two sets of hypotheses are defined that relate to the research questions. The first set of hypotheses test for significant correlation coefficients amongst the specified variables. The second set of hypotheses test for significant differences between pre- and post-tests scores. Significant increases in mean scores will provide a basis for describing whether creativity and innovative ability is influenced through learning interventions.

Phase Two involves the collection of quantitative data by means of the *Collaborative Leadership Quotient Instrument* developed by Stokes and Logan (2004). The objective of Phase Two is to obtain information regarding the characteristics and dynamics of leadership’s ability to endorse a collaborative work environment. The

data obtained from Phase One and Two will be used as input for the construction of regression models in order to identify those items that best explain variation in dimensions such as productivity and managerial effectiveness.

Phase Three involves the collection of quantitative data by means of the *Innovation Climate Survey* developed by Davila, Epstein and Shelton (2004:290). The objective of this phase of the research project is to determine the current innovation climate of the organisation. The analyses will be done by means of examining one-way frequency tables produced.

Phase Four refers to the collection of qualitative data in the form of semi-structured interview schedules applied to both treatment groups.

Phase Five represents non-directive interviews with knowledge management experts and participants to collect additional exploratory data that could serve to enrich the results.

1.8 OVERVIEW AND LAYOUT OF THE STUDY

In this chapter, focus is placed upon the problem and sub-problems and included the assumptions surrounding the current epistemological conditions of knowledge management. The context of the research was explained and the objectives were clearly stated. A brief background was provided to position the intention and to present a perspective of the propositions and significance of the research. The researcher developed two hypotheses, which were directly linked to theoretical narratives pertaining to innovation and creativity as essential customers within the knowledge management dispensation.

Chapter Two presents the literature review, which examines the constructs that form the basis of the research. The theoretical constructs explored future leadership initiatives within the new economic reality. The literature endeavours to clarify the rationale for the hypotheses that were built on accredited literature produced by global knowledge strategists within the knowledge management domain. The knowledge obtained from the literature review is applied to the problem statement through the compilation of propositions for future suggestions. Scholarly discourse establishes a point of departure which serves as a basic tenant of this study and included Scott and Bruce's (1994:583) innovation path model to invite narrative

regarding individual innovation and creative ideation within contemporary organisations and endeavours to explore future leadership imperatives. The selected theoretical models are foundational to the study.

Chapter Three presents a triangulative research design and explains the research methods employed, including sampling procedures, data collection techniques and the data analysis. The design of the data gathering instruments and focus group discussions is elaborated upon, introducing finally an outline of the research model.

The multi-modal research includes experimental survey and non-directive strategies, including a pre- and post-test phase. This will be used to secure baseline data for the formulations of conclusions in the final stage of the research. Quantitative empirical data will be gathered by administering the *Torrance Test of Creative Thinking* (Torrance, 1984), the *Baseline Managerial Behaviour Questionnaire* (Kriek, 1990), the *Collaborative Leadership Quotient Instrument* (Stokes & Logan, 2004), and the *Innovation Culture and Climate Diagnostic Survey* (Davila et al., 2004). Qualitative data will consist of semi-structured and non-directive interviews.

In Chapter Four, a presentation and analysis of the results will be provided. In Chapter Five, the findings will be critically discussed and integrated with the diverse theoretical perspectives. In Chapter Six, the new knowledge concomitance model will be introduced to promote a new corporate curriculum for sustaining the economy of knowledge. In Chapter Seven, the recommendations and reflections on future leadership solutions will be proposed and suggestions made for further empirical enquiry. Figure 1.1 illustrates the layout of the research report.

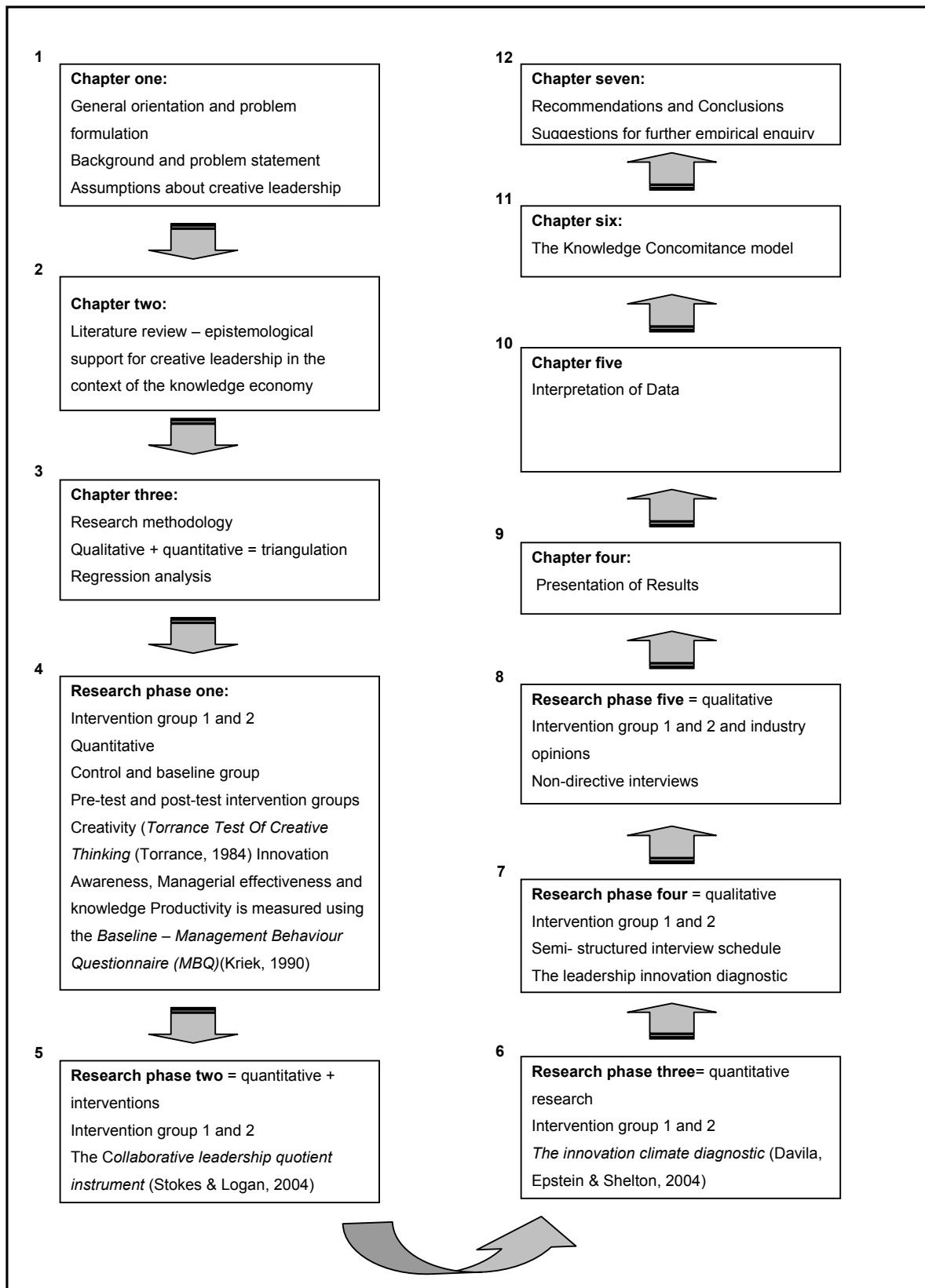


Figure 1.1: Research Report Layout according to the steps of the research

1.9 CONCLUSION

The general orientation and problem formulation was discussed in this chapter and a postmodern narrative introduced to search for leadership solutions in the new knowledge economy. The rationales for hypotheses were discussed and the research design and objectives were introduced. The challenges that are uniquely relevant to knowledge management in the South African business context was discussed. The identification of organisational factors that could support knowledge management in assessing current organisational cultural contexts and the evaluation of the ascendancy of variables were elaborated upon.

The significance of this research resides in the fact that knowledge management has become the paramount element in sustaining the economy of knowledge (Garvey & Williamson, 2002:101). The traditional orientation of contemporary management focuses on traditional management principles that were based on organisational control and structural hierarchy. This leadership style, once widely accepted, has clearly become outdated in the new knowledge economy where creativity and innovation is vital to the reinvention of knowledge competitiveness. Limited research has been done in the field of leadership within the new knowledge paradigm. An overview and layout of the study was provided and the literature review is presented in the next chapter.

CHAPTER 2 LITERATURE REVIEW

“The successful organisations of the new economy will be the innovative ones. Vision-based leadership will find creative ways to leverage the collective brainpower of their organisations, empowering people and creating a climate of co-operation and ‘innovation-ship.’ (Drucker, 2005:54)

2.1 INTRODUCTION

Knowledge management is an ancient practice. It evolves from time immemorial in which the priesthood and traditional leaders were the living repositories of distilled experience for the survival and continuity of their communities. Traditionally humans have consistently found ways to share knowledge to build on earlier experience, thereby eliminating costly redundancy with the unnecessary repetition of the same inappropriate action. New technology has extended the time delivery, depth, breadth and reach of knowledge capture, sharing and disseminating through creativity and continuous innovation. Modern technologies enable the systematic leveraging of knowledge. Within the contemporary learning organisation, the knowledge worker creates continuity from past experience via knowledge, which is stored in the organisation’s memory banks. The contents of these are accessible to leadership, who, from this repository, can educe expertise for future competitive advantage.

The knowledge economy is underpinned by the recognition of knowledge as the major source of sustainable competitive advantage, the increasing importance of innovation in knowledge creation and the use of the intranet and the Internet to generate, apply and share knowledge. The knowledge worker is the member of the organisation who manipulates information to enhance knowledge productivity. The focus is on accumulation, processing and analysis of data and information. This task includes creative transformation of the knowledge commodity, its innovative distribution and creative commercialisation (Gopal & Prasad, 2000:509; Isaksen, 1987:4; Lewin & Volberda, 2004:15; McDermott R, 1999:103; Powell & Snellman, 2004:199; Snowden, 2001:4; Takeuchi & Nonaka, 2004: 48).

The organisation that thrives in the new economic paradigm depends on the capability of leadership to proactively leverage the learning capacity of its knowledge and human capital. These organisations typically have the highest degree of

knowledge expertise to add value by creating, distributing and applying new knowledge-solutions (Dalkir, 2005:91; Stankowsky, 2005:18). The leadership of these organisations are the interpreters and the negotiators of meaning as their tacit and implicit knowledge sharpens the cutting edge of the organisation's knowledge trading advantage.

Contemporary knowledge management requires new mental models to capture the reasoning surrounding leadership, as defined by the postmodern debate. Today's organisational hierarchical structures are directly linked to traditions founded in modernism, which were underscored by rationality, control and authority (Gephart, 1996:90-96). Current postmodern knowledge management and culture is spawned by multiple viewpoints and discards the voice of authority, while it engages continuously within self-reflexive praxis. Postmodern discourse is furthermore applied to facilitate an awareness of the discontinuity within the contemporary workplace (Chauval & Depres, 2002:212; Kezar, 2001:90; Kriegel & Brandt, 1996:263; Maxwell, 1998:6, Narayan & Cassidy, 2001:59; Nola, & Sankey, 2001; Notturmo, 2000; Nyström, 1979:55; Parker, 1992:12).

The postmodernists Lyotard (1984:21) and Foucault (2000:13) refer to the knowledge transition from the traditional controlled economy as the impermanence of the modern *libidinal* economy. In this new immediate libidinal economy, knowledge has become commoditised as a result of the computerisation of society. Individuals deconstruct and reconstruct meaning according to shifting individual and organisational contexts (Bauman, 1988:217-237; 2000:81). Meaning is rendered fluid through the presentation of technology, as information in countless forms is now available to multiple audiences (Garvey & Williamson, 2002:14). Knowledge dissemination establishes limitless fora through which individuals and groups extract and add diverse meaning as information is abstracted and negotiated. The competitive advantage is ultimately to provide meaning and new value through collaborative exchanges that develop timeous knowledge combinations. This refers to knowledge becoming immediate or libidinal – the desire for speed and immediacy. The control and ownership of knowledge is a critical tenant of this research. Knowledge exclusivity prohibits the sharing of this cardinal resource, and through its regulation, it builds barriers in contemporary organisations, increasing the viscosity of knowledge application (Edvinsson, 2002:73; Faubion, 2000:20; Glover, Ronning & Reynolds, 1989:18; Kriegel & Brandt, 1996:265; Kezar, 2005:50; Lyotard, 1984:21; Maxwell, 1998:6; McCrimmon, 1995:37).

In contrast, postmodern praxis promotes interactions between the organisation and knowledge workers to give rise to new knowledge assets through enhanced collaboration (Cooper & Burrell, 1988:91; Cooper, 2000:245-276; Gergen, 1992:17, 1989:2; Stokes & Logan, 2004:199-207). This research explores the relationship between creativity and innovation in the networked economy and the impact of strategic leadership within knowledge intensive organisations. From a postmodern perspective, new leadership practices are needed to facilitate a post-industrial society where the emphasis has shifted from manufacturing as use-value to knowledge as sign value where symbology is utilised to communicate explicitly to vast audiences instantaneously (Lyotard, 1984:220).

The social characteristics of knowledge leadership are explored to evaluate the methodologies utilised by leadership for the enablement of knowledge creation and implementation. The relationship of organisational leadership and knowledge management is brought into perspective, specifically with regard to creativity and innovation driving effective knowledge extraction and utilisation. Finally, this chapter concludes with a concomitance model (Steyn, 2006:118) and recollects essential aspects of knowledge management to support the contextual delivery of this study.

The following discussion provides epistemic access to the fundamental theories and invites narrative within the constructs of exploration process. The leadership path model by Scott and Bruce (1994:584), which elucidates individual innovation in the workplace, leadership and individual problem solving styles, suggests that these variables could directly influence creativity and innovation. Perceptions of the perceived climate for innovation are proffered. The epistemological argument of this study pertains to the deployment of leadership as essential driver for organisational creativity and innovation to sustaining the economy of knowledge.

The organisational culture model proposed by Martins and Martins (2002:63) elaborates further on the initial work of Scott and Bruce (1994:586) and incorporates the findings of Borghini (2005:26). It outlines the influence of organisational culture on creativity and innovation by emphasising leadership, purposefulness and managerial effectiveness as essential support mechanisms. Borghini (2005:25) adds additional elements by introducing creativity and innovation as a competency based ingredient for continuous ideation and knowledge flows to produce sustainable competitive advantage.

Johannessen *et al.* (1999:117) suggest a new theoretical model, which evaluates the characteristics of knowledge leadership for innovation enablement. Hall and Mairesse (2005:5) introduce knowledge productivity and managerial effectiveness as important areas in the knowledge organisation, which are dependent on innovation-based leadership. The main criticism of this theoretical model is that although training and development is included as the major driver for the creation of innovation capital to produce increased productivity, the dimensions of creativity as well as knowledge exchanges are excluded. Skyrme (2001a:19; 2001b) suggests a knowledge-based organisational model for the creation of a particular condition, which would facilitate both effective knowledge management and the dissemination of valuable organisational knowledge.

The model of Amidon (1997:10) refers to a systematic framework that is used to analyse the capability of organisations to create and implement new ideas derived from accumulated knowledge. This model is important for the measuring and implementation of creativity since it analyses the factors that result in creative outcomes. The model focuses on internal management responsibilities and external organisational interfaces. The five internal factors, whereby the innovation capability of the organisation can be established, are collaborative processes, performance measures, distributed learning networks, education and development and intelligent market positioning. The external factors refer to knowledge products and services, collaborative market penetration, leadership competencies and communication technologies utilised by the organisation. These factors are foundational to the study to determine whether organisational dynamics indeed inhibit creative behaviour and whether the organisation is prepared for the leap into the age of postmodern leadership.

The researcher endeavours to analyse and integrate Amidon's (1997:10) model to gain insight into leadership that is required to explore the current innovative climate and capabilities required of the future organisation. The researcher interrogates theoretical reviews and searches for epistemological support to build a new model to establish a foundation for future research and to add to the existing understanding of leadership to exploit the economy of knowledge.

A postmodernist perspective of the organisation and leadership will be presented in the following discussion.

2.2 THE POSTMODERNIST IMPERATIVE FOR LEADERSHIP

This discussion commences with a definition and a critique on the postmodernist position as applied specifically to the context of knowledge management. Robinson (2005:151-170) is of the opinion that postmodernism is a rejection of the purism and certainty of the past. Lyotard (1984:8) suggests that postmodernism moves away from the assumption that human beings and their cultural settings are similar and that people should be perceived as radically different. Postmodernism forms an alliance of intellectual perspectives that collectively destabilise the assumption of the modern enterprise and suggests a changing perspective for knowledge management in particular. Lyotard (1984:34) refers to the communication transparency of knowledge as similar to liberalism expressed as creative democracy. His main critique is based on the assumption that control and the exclusivity of knowledge and its relationship to ownership and power dynamics need a critical re-examination to gain new insight into the mobility of knowledge in the contemporary world. He adds that translating payment knowledge into investment knowledge can optimise organisational memory and subsequently organisational performance. Payment knowledge refers to external knowledge which the organisation does not possess and ignores the acquirement thereof, while investment knowledge refers to the social networked acquisitions which are obtained through strategic alliances and knowledge sharing (Edvinsson, 2002:80; Kriegel & Brandt, 1996: 260; Manville & Ober, 2003:48; Nichol, 1996:35; Nicolini, Gherardi & Yanow, 2003:20; Starkey, 1996; Stankowsky, 2005:115).

Lyotard (1984:14-15) furthermore refers to the exteriorisation of knowledge as imperative for knowledge exchanges. He rejects the traditional principle that the acquisition of knowledge is dissociable and concurs that knowledge will be produced to be negotiated or knowledge will be sold, traded and consumed to be valorised into new productions as the main assets and subsequent challenge of information exchange (English, 1998:426; Gephart, 1996:90; Kezar, 2003:137; Manz & Sims, 2001:58).

Leadership theories that distances itself from the specifics of circumstance presume that organisations are static and that there is only one type of leadership applicable to every situation in a particular time (Keogh & Tobin, 2001:1). An analysis of the biology of the organisation indicates that a method could be established regarding

the development of strategic leadership, which navigates the specific dynamics of an organisation as it evolves over time (Kezar, 2003:140; May, 2007:18).

Current modernist culture believes in the exclusivity of the objective truth as defined by reason as well as the primacy of authority. Current postmodern culture celebrates the multiplicity of subjective truths as defined by experience and exceeds in the loss of absolute authority. The key drivers of postmodernism regarding leadership (Keough & Tobin, 2001:2) suggests a reactive approach towards current authority, power, relativism, accelerated time and introspection. As a general culture-based phenomenon, it challenges conventions, combines styles, tolerates ambiguity, emphasises diversity, accepts innovation and change and focuses on the constructedness of reality (Baumann, 2000:18; French & Bell, 1995:14; Rowley, 2003:433). Critics of postmodernism inaccurately separate the modern from the postmodern to create binary oppositions, which perpetuates scholarly discourse by experts in the field of leadership to contribute to the debate.

Postmodernism focuses on the celebration of non-conformity and thrives on the much-popularised existential phenomenology, which furthered the evolution (West, 2001:460-464; 2002:355-424). A basic contention of postmodern theories is that there has been a historical break that marks the movement from the modern to the postmodern era. The postmodern era is characterised by the global knowledge economy, advanced information technology and diverse and rapidly changing popular global trends. Postmodern theorists argue that a new kind of understanding is required for a postmodern world (Foucault, 1975:30). Existentialism promotes the typical assumptions ascribed to conventional patterns of self-definition. The ability to exercise the right of individual choice and the opportunity for self-satisfaction are essential elements of the postmodern culture. When individuals feel part of a team, they are more inclined to surrender their limited self-interest in favour of the teams' performance (Keough & Tobin, 2001:4; Kriegel & Brandt, 1996:270). The individual is not expected to commit, perform or contribute unless the collective vision is derived from the personal vision. There must be a correlation between the assignment and the personal interest before the individual decides to perform (Keough & Tobin, 2001:5; Maxwell, 1998:6). In the postmodern epoch, ontology is given to organisational structures. Authority is granted by the organisation to mandate leadership in formulating strategic knowledge intent, which should ultimately translate into organisational acceptance and knowledge cohesiveness (Gephart, 1996:92; Mayer, Salovey & Caruso, 2000:10).

Baudrillard (1983a:16) and Millar (1996:139) state that in a postmodern society, the boundaries between substance and image becomes blurred and the image is trusted more than the substance. The hyper-real image thus formed has become totally dissociated from its real referent and it is difficult to distinguish between the relationship of these surface images and what they represent. Leadership as an intangible construct is synonymous (Hassard, 1999:192; Hassan, 1987; Miller, 1993:1; Sparks & Shenk, 2001:849).

Knowledge workers choose to align personal interest with the health and well-being of the organisation. The postmodern organisation does not control the reality of its members but rather the individuals that freely participate in the symbolic reality postulated by the organisation (Keough & Tobin, 2001:5). The symbolic reality created by the postmodern proxy supplies the organisation with a self-image drawn via group assent. The organisation becomes a projection of its individual constituent assumptions of personal empowerment and acquires an own personality which becomes key to organisational success (Kezar & Eckel, 2002a:295; Weindberger, 2001).

Postmodern theorists question the extent to which organisations are patterned with meaningful entities, believing instead that organisations can best be approached as rapidly changing micro-narratives and surface images (Millar, 1996:138). Postmodern leaders facilitate the team in deriving a sense of mission to guide work processes. Keough and Tobin (2001:5) focus on the expertise of the postmodern leader and are of the opinion that contemporary leadership is more sophisticated in its manipulatory practices than its modernist predecessor. Visionary leadership inspires change, which emanates from voluntary choice and not subtle coercion. In the modern era, hierarchical management structures support authoritarian leadership. In the postmodern era, horizontal management structures dictate collaboration and teamwork as drivers of knowledge sharing. Postmodern approaches study the artefactual images created by the organisation and examine the fragmentation of organisation membership. The shifting nature of organisational goals, decisions and relationships are examined, within the postmodern organisation, which pays careful attention to culture, behaviour and artefacts. (Fulmer & Vicere, 1995:4-10; Gephart, 1996:90; Hassard, 1999:176–192; Hassard & Parker, 1993:26; Kezar & Eckel, 2002b:435; Mumford & Gustafson, 1988:27 Takeuchi & Nonaka, 2004:131-133; Weindberger, 2001).

Millar (1996:140) argues that a clear distinction exists between modern and postmodern organisations. In postmodern organisations, tasks are defined flexibly and individuals use multiple skills in their tasks. A constant change in the market drives the internal change process of the organisation and goals are re-aligned as individuals are retrained to adapt to change. A postmodern organisation changes to enable it to deal with discontinuous change (Kezar, 2005:50; Neck & Houghton, 2006:270).

Institutions define their culture (Keough & Tobin, 2001:5) by strategic and operational policies. In the postmodern organisation, these same policies reflect the minute and general cultural attributes of postmodernism and prescribe effective alternative leadership practices. The postmodern organisation supplies the platform for self-definition. Leadership is not imposed on individuals, it is determined within the context of the organisation. This leadership practice is characterised by the forming attributes of the present moment. Leadership of the future is designed by present circumstances and projected forward (Kezar, 2005:50).

Keough and Tobin (2001:8) emphasise that most organisations need adaptive and innovative creativity in the leadership development process. A leadership style drawing from the force of collective vision, located in hyper-reality celebrating mutual consent and collaborative processes is required for the new economical dispensation. Sackney *et al.* (1999:33–57) argue that the knowledge organisation is shaped by individual and group construction and deconstruction through the organisational reality.

The researcher builds on these postmodernist premises in particular to demonstrate the notion that creative leadership could replace the old paradigms of power and organisational distrust. It could furthermore imbed a culture that may strengthen the pre-eminence of knowledge sense making communities to leverage individual and organisational creativity, thereby improving strategic conversations.

According to the postmodern approach, the application of knowledge in the form of informational commodities is indispensable to productive power and will become the major stake in worldwide competition for knowledge power. In the past, the struggle was for control of access for the exploitation of raw materials and cheap labour. A new field has now been created for industry and commerce, namely the mercantilisation of knowledge through the production and distribution of learning

(Baumann, 1988:217-237; Giddens, 1989:11, Kezar & Eckel, 2002a:295).

The researcher integrates the postmodernist views and promotes a new leadership style that could introduce a new vision of, creativity and innovation to create a culture for communication flows, thereby assisting knowledge exchanges beyond the borders and constraints of the past organisational paradigm.

Baudrillard's (1983a:61; 1983b:17) intellectual trajectory suggests the need for a knowledge theory of symbolic exchange to explain the shift from production capitalism to consumption capitalism. This shift suggests that the traditional production factors, which had use-value is now transformed into symbolic sign-value. This is further emphasised by epistemological implications of virtuality versus reality and the dialectic, which facilitates the accumulation of knowledge from linear syntagma indicating the end of the classic era of production. He furthermore introduces the importance of creativity and innovation as the new drivers for the future economy, which necessitates its survival and eliminates total entropy through new leadership initiatives.

Within the knowledge economy, the leadership of sagacity is directed towards the solvency of an economic enterprise where labour translates into human capital and takes on a specific form of autonomous self-management (Foucault, 2000:23; Lyotard, 1984:7). According to Derrida (1982:8); Deleuze (1995:24) and Foucault (2000:21), future leadership aspires to become virtuous and self-masterful as knowledge workers in the new economy, are incited to become '*homo-economicus*'. In this new economy, the fluidity of knowledge is transformed into just-in-time solutions universally available for strategic opportunities. These theorists argue that the new leadership standard has become '*homo-qualirianus*' where the leadership competency requires innovation of performance accompanied by an infrastructure of compliance and standardisation.

The researcher suggests that the postmodernists have introduced a future roadmap to replace the modern traditionalist organisational structures with postmodernist sign value and knowledge fluidity. Leadership competency and regulated transparency provide the base structure for knowledge workers to convert the traditional production commodity to an economically viable intangible offering. This process resonates with the new organisational culture of autonomy and accountability described by Housel and Bell (2001:311-329) as the new '*techno-epistemic priesthood*', which emerges in

pulses and bytes and produces new work forces that engage and communicate in more flexible, creative and competitive ways of thinking. Foucault (2000:21) and Hamel (2000:31) describes a structural isomorphism between the increasing penetration of knowledge and technology, as it becomes the grand narrative of modernity. The increased shift to innovation-based leadership is the very epistemic ethos underpinning the armoury of the *cogito*, which constitutes the new paradigm shift for the collective economic future (Baumann, 2000: 111; Gold, Hamblett & Rix, 1998:36).

2.3 THE EVOLUTION TO THE THIRD-GENERATION KNOWLEDGE-BASED ECONOMY

Edvinsson (2002:72-76) and Katzenbach and Smith (1993:17) introduce third-generation knowledge management and proclaim the organic evolution into fourth-generation. The researcher attempts to align this study with this imminent paradigm of thought. Global trade is characterised by the transfer of capital and labour in an economic system, which is described as the weightless economy, the network society or the knowledge economy (Garvey & Williamson, 2002:10; King, Anderson & West, 1992:331; Koskinen, 2003:67; Kreitner & Kinicki, 1998; Kirton, 2003; Lave & Wenger, 1991:6; Landrey, Lamari & Amara, 2000:25). Knowledge is defined as organised information, applicable to future problem solving and decision-making. Organisational knowledge is the collective sum of human and intellectual property assets, as well as the knowledge captured by the organisation's technological systems. The knowledge base of an organisation is not only formal and capable of description in terms of skills and qualifications of the organisational members as there is also a salient informal segment, which is tacit and mostly taken for granted (Garvey & Williamson, 2002:19; Kessels, 1996; Kellner, 1987:145; 1989:46; Khalil, 1996:35). These functions transform knowledge, adding value, by moving up the knowledge hierarchy from a lower to a higher state of application. Human capital contributions depend on the organisation's leadership to foster and reward innovative behaviour for continuous new knowledge generation within the networked economy (Crawford, 2005:6-16; Edvinsson, 2002:72; Kakebadse, Kakebadse & Kouzmin, 2003:75; Kanter, 1997:18; Lawler, 1992; Leadbetter, 2000; Lee & Lee, 2000:281; Liebowitz, 1999b:13; Lowell, Bryan & Weiss, 2007:5; Mandell, 2001; Manz & Neck, 2004:7; Marquardt, 1994:27; Robbins, 1996; Saint-Onge, 2005:63; Schönström, 2005:17-29; Wald & Castleberry, 2000:18-34).

The knowledge economy is distinguished from the industrial economy as the postindustrial society by its emphasis not on manufacturing but towards service industries (Drummond, 2003:58). This trend manifested steadily since the post war economic optimism when the knowledge economy gained momentum and production orientated organisations were confronted with recessions. The knowledge economy is not regarded as an alternative for creating dominance of service industries within manufacturing but relates to the technological infrastructure of knowledge and the increasing shift in knowledge as primary initiator (Drummond, 2003:58; Garvey & Williamson, 2002:14-16; Leonard & Swapp, 2004b:90; Lev, 2001:32; Leydersdorff, Van den Besselaar & Allen, 1994:33; Neef, 2005:112).

The traditional factors of production have been replaced by knowledge. The primary knowledge economy activities hinge on intangible future value propositions. It moves away from an economy of scarcity to an economy of abundance (Drummond, 2003:58; Lengnick-Hall & Lengnick-Hall, 2003:21; Leonard & Swapp, 1999:46; Little, & Ray, 2005:71; Stiglitz, 1999:10). Knowledge solutions are the product of the creative tension between the knowledge worker and new opportunity paradigms (Takeuchi & Nonaka, 2004:339). Knowledge as a production factor possesses characteristics such as increasing volume and technological sophistication to assume economic value as opposed to historical user-value (Drummond, 2003:58; Lyotard, 1984:56). Best practice management benefits the knowledge-driven organisation by lowering the operating costs of products and services, which leads to higher qualities of product, customer value and market share through knowledge acquisition (Leonard, 1999:2; Liebowitz, 1999a:40; McDermott, 1999:114). There is a concomitant shift in the function of human capital, which creates a new relation between knowledge and the knowledge worker. The knowledge economy is further characterised by a movement away from a weighty economy to a weightless economy which implies that the storage of the final products within the knowledge economy are becoming more invisible (Davenport, Eccles & Prusack, 1992:53; Drummond, 2003:59; Garvey & Williamson, 2002:16, Neuman, 1997; Tobin, 1998:11).

Drucker (1994a:11) and Edvinsson (2002:72) describe the knowledge economy as intangible, and regarded as the new reality with inherent technical and intellectual characteristics, which challenges and changes the rules of existing economics. Understanding this new reality requires radical new insight (Crawford, 2005:14; Davenport, 2002:2; Powel & Snellman, 2004:220).

The discipline of knowledge management is considered to be in the third generation of its development cycle (Snowden, 2001:12). The first generation focussed on containers of knowledge and information technologies as reactions to knowledge overload (April, 2002:445-456; Liebowitz & Megbolugbe, 2003:189; Rowley, 2003:433-440). The information explosion created large repositories of reproduced information - the primary product of which was raw or semi-processed data. The conundrum of knowledge management was how to utilise and transform this data into an inventory with inherent value and tangible asset value. This phase was marked by standardisation and benchmarking in the search of information for knowledge usage (Aibel & Snowden, 2000:68; Dalkir, 2005:141; Davis, Subrahmanian & Westerberg, 2005:101; Dyer & Nobeoka, 2000: 345-367; Foucault, 2000:8).

The second generation of knowledge management theory emphasised human capital and the socialisation of tacit knowledge into explicit organisational application. At this level, traditional leadership methodologies have caused suspicion amongst knowledge workers (Crawford, 2005:8). They viewed management efforts as a manipulation of individual intellectual property to minimise the importance of individual effort (Denning, 2000b:17; McElroy, 2003a; Sveiby, 2001a).

Third-generation knowledge dissemination gives rise to creativity and innovation as core components in the knowledge production process (Garvey & Williamson, 2002:40). The first and second generations were focused on increasing the relative weight of intellectual capital (Scheepers, 2004:46). Third-generation knowledge management and knowledge networks in knowledge-based organisations are driven by learning and continuous innovation (Love, Fong & Irani, 2005:85; Nickols, 2000; Powell & Snellman, 2004: 199-216; Snowden, 2001:4; Von Krogh, 2000:120; Von Krogh *et al.*, 2000:18).

The researcher believes that as a result, traditional management practices failed to establish an organisational knowledge platform to institute functional formal communities of interest. However, informal communities of practice occurred within organisations to facilitate inter-connective knowledge sharing and collaboration (Selen, 2000:348). Knowledge moved throughout the organisation, resulting in greater efficiency. Knowledge creation resulted in greater innovation, but individual and team creativity is not harnessed productively (Drucker, 1994a:12; Koenig, 2002; Schönström, 2005:18; Snowden, 2001:6).

The third knowledge era is furthermore defined by shared context and knowledge immediacy. Participation in the shared context allows members to assimilate and organise shared knowledge, enabling intended end-users immediate access to applications. In order to create future knowledge taxonomies and facilitate meta-data, content needs to be abstracted from the collective knowledge contexts (Snowden, 2001:5; Snowden, 2005:2-11; Swan, Newel, Scarbrough & Hislop, 2000:262-275). Creativity and innovation are lynchpins of knowledge contexts which increases cross-fertilisation, better enabling organisations to secure a sustainable future competitive advantage through strategic intent. Essential components of the transformational process, assisted by new cognitive schemas, are embodied by the endorsed culture and facilitated by creative leadership (Dalkir, 2005:308; Davenport & Probst, 2002:17; Tidd *et al.*, 2001 336-338; Senge, 1990: 267).

According to Depres and Chauvel (1999:110) and Inkpen (1996:123), information and knowledge have replaced capital and energy as primary wealth creating assets. Technological developments have transformed wealth creation from physically based assets to knowledge-based assets (Garvey & Williamson, 2002:15). Knowledge assets comprise implicit and explicit structural knowledge and expertise and are the assets of the knowledge worker rented by the organisation (Sloan, 2003:60). A future value premium is achieved when knowledge contributes towards the production process in creating new goods and services. The value of knowledge is only activated when its application can support the organisation in its internal and external knowledge operations for a future strategic competitive advantage (D'Aveni, 1998:183; Liebowitz, 1999a:40; Nonaka, 1996:176; Sveiby, 2001a; 2001b:344).

Organisational innovation is described as a uni-dimensional phenomenon (Boutellier, Gassman & van Zedwitz, 1999:30). It expresses the organisations proclivity towards the initiation and implementation of different types of innovation to note technology, administrative, product and processes. According to various theorists, (Abou-Zeid & Cheng, 2004:261; Ahmed, 1998:34; Sloan, 2003:60; Lumpkin & Dess, 1996:135; Stalk, Evans & Shulman, 1992:57-69), the concept of innovation is the most important factor within the new economy and is captured through different aspects such as technology, knowledge creation and knowledge application within the contemporary organisational setting. Barney (2002:99-120) suggests that an organisation experiences competitive advantage when its actions in the economic playing field perpetuates economic value and links competitive advantage to performance and knowledge productivity arguing that an organisation contains

exponential wealth when steered by efficient knowledge bartering (Davenport & Voelpel, 2001:212; Von Krogh, 2000:5; Waldrop, 1992:18; Watkins & Golembiewski, 1995:87).

The knowledge-based economy has produced a new relationship with human capital (Tsuyuki, 2003). The knowledge worker can hold several employment relationships. The first relationship is that of a full-time employee with critical core competencies and intellectual property, which refers to the entrepreneur, who is internal to the organisation. The second relationship is that of an outsourced operator who contracts with core groups to perform a variety of specialised tasks, as the entrepreneur. The third relationship represents the knowledge worker as part of a business unit, hired for the specific knowledge expertise. The knowledge worker becomes a regulator within the organisation (Brewster *et al.*, 2000:94; Popper, 1992:81; Selen, 2000:346).

The challenge facing knowledge organisations in third-generation knowledge management is to embed a nurturing climate for a knowledge culture to develop, assisting the organisation in adapting to the ever-changing economic challenges (Edvinsson, 2002:72-76; Selen, 2000:346). Increased competitiveness and globalisation makes knowledge the premium commodity, possessing characteristics different to those of the previous economic eras (Bennet & Bennet, 2003:112; Dalkir, 2005:273; Galliers, 2003:5-13; Takeuchi & Nonaka, 2004:191). The researcher builds on the above constructs and endeavours to provide a relevant model to describe how new future imperatives impact on creative leadership (Nonaka, 1990:27; Pienaar, 1994:80; Powell & Snellman, 2004:192-220; Van Wyk, 1998).

In the third era, the terms knowledge and information are used interchangeably. Takeuchi and Nonaka (2004:47) distinguish between the two, suggesting that knowledge consists of contributions to new meanings for business solutions, whereas information provides new interpretations for events and objects, shedding light on unexpectedly creative connections. This premise is supported by Borghini (2005:16) and translates into a medium for eliciting and constructing knowledge, affecting the essential business structure for future opportunities (Malhotra, 2000:3). Knowledge is of vital, strategic importance to the organisation, relying on internal and external stakeholders to interpret and manifest its knowledge potential (Danover, 2005:153; Liebowitz, 1999b:2; Platt, 1998:636; Schönström, 2005:17-29; Von Krogh *et al.*, 2000:62).

The postmodernist approach to knowledge socialisation, according to Lyotard (1984:19) and Foucault (2000:25), creates a gateway for individual information interpretation and accentuates the next era of knowledge management. The researcher proposes that a knowledge concomitance model is required for future knowledge management to align individual contributions with strategic intent. In contrast to the traditional managerial approach, creative leadership could now endeavour to transform organisations into effective knowledge hubs. Responsibility for the conversion of tacit into just-in-time knowledge is then diffused throughout the organisation (Takeuchi & Nonaka, 2004:140). Tacit knowledge is personal and context-specific, while explicit knowledge is easier to communicate (Handzic & Chaimungkalanont, 2004:57-64). Strategic innovation-based leadership drives knowledge processing and aligns the organisation for knowledge harvesting (Baird & Henderson, 2001:72; Dunbar, 1997:461; Werner, 2005:186; Wiig, 2003:20).

Knowledge management is uniquely equipped to assist organisations in making the transition from states of intra- to inter-knowledge processing as it seeks to enhance knowledge benefits for future trading (Dalkir, 2005:15; Skyrme, 2000:190). Traditionally, knowledge capturing emphasised the specific commodity, in contrast, third-generation knowledge focuses on the collaborative creation of knowledge through communities of practice. Knowledge acquisition from these communities can be further defined as the transformation of valuable expertise from a knowledge source to a knowledge repository. This process involves reducing a vast volume of content from diverse domains into a repository and is the evolution of the organisational learning process (Dalkir, 2005:57; Engeström, 2000:301-310; Jackson, Hitt & Denisi, 2003:13-16; Liebowitz, 1999a:37; Prusack, 2001:1002; Wiig, 2003:11).

The accumulated theoretical support presented above, indicates the importance of individual and team creativity for the future organisational success in the present transition from third-generation to fourth-generation knowledge management. The researcher suggests that the continuous flows of information are directly derived through individual and team creative potentials. Thus, creative leadership could become the essential key to unlock the fourth-generation knowledge gateway. Although a variety of theoretical models have been disseminated, the researcher believes that no comprehensive model exists to sufficiently describe this process.

2.4 CREATIVITY AND INNOVATION FOR KNOWLEDGE ENABLEMENT

For the modern organisation competing in the knowledge economy, novel idea generation is required, but foremost is innovative action, which translates organisational memory into competitive products and services (Drummond, 2003:62; Garvey & Williamson, 2002:128; Gelatt, 1991:17; Hennessey & Amabile, 1987:11; Jackson *et al.*, 2003:38; Piedmont, 2005; Schönström, 2005:17-29; Treffinger, 2003:18).

Creativity is an illusive construct and theorists do not entirely agree on a specific definition. Basic elements of a definition on creativity need to include a creative person with novel ideas, uncommon yet acceptable responses and the ability to produce work that is novel and appropriate. DiLiello and Houghton (2004:321) characterise creativity as original and appropriate for the specific situation and it must be useful. It is important to distinguish between creativity as a product or creativity as a means to solving problems. Both types are important to most organisations, problem solving is a more common type of creativity in the organisational setting (Amabile *et al.*, 1996:1154; Anderson & West, 1998:241; Coombs & Hull, 1998:238; Csikszentmihalyi, 1999:313; DiLiello & Houghton, 2004:319-337).

DiLiello and Houghton (2004:321) suggest that creative problem solving plays a key role in maintaining the organizations knowledge competitive advantage by assisting organisational members to effectively address unique and unstructured problems. Creative problem solving techniques can be used on both the individual and group level. Creative problem solving requires extensive efforts from organisational members and it is therefore a prerequisite that there should be organisational support to optimise creativity competency. The organisation needs to actively ensure a climate conducive to creativity and innovation (Jackson *et al.*, 2003:344; Lund & Gjerding, 1996; Lundvall, 1988:4; 1990:2; McGee & Prusack, 1993:22; McKee, 1992:232; McKelvey, 2001:181; Martins & Martins, 2002:58-62; Treffinger & Selbey, 2003:11, Zakaria *et al.*, 2004:6-16).

According to Andriopoulos and Lowe (2000:734-740), the production of novel and appropriate ideas are the gateway to new opportunities in the knowledge economy and contemporary organisations should apply perpetual challenging to enhance creative and innovative activities. Within this framework, knowledge workers would be perpetually challenged to seek new creative horizons. Through this, contemporary

organisations would enhance their intellectual capital through their human capital, which would yield the competencies and capabilities for improved performance and competence. This would develop their competitive advantage. Amabile (1998:76-88) proposes an interpretative framework for creativity in organisations, based on the relevance of individual creativity contribution. The cognitive and creative skills of individuals collectively, linked to motivational levels, creates the interface for individual vision and the exchange translates into shared vision. The organisational environment facilitates creative opportunities (DiLiello & Houghton, 2004:319) while creative leadership provides direction, motivation and a supportive climate. The absence of constraints increases organisational creativity and innovative resource availability (Payne, 1990:101-122), which in turn, establishes a forum for creative ideation and innovative knowledge implementation (Housel & Bell, 2001:142; McElroy, 2003b:15; Lunvall, 1990; 2003:173; 2005; Twiss, 1995:15; Trot, 2002).

According to Handzic and Chaimungkalanont (2004:57-64) and Woodman *et al.* (1993:293-321) organisational creativity is defined as the creation and addition of valuable contributions to organisations regarding ideation and novel processes, by individuals working together in complex social systems. Individual creativity in turn can be defined as a function of previous conditions, skills, cognitive style and personal elements and contextual influences (Amabile, 1998:76-88). The common trait within in these perspectives lies in the assumption that novelty and utility-appropriateness are the distinctive characteristics that impact on the person, product, the creative process and the contextual environment (Amabile, 1998:76; Farmer, Tierney & Kung- McIntyre, 2003:618; Lundvall & Johnson, 1994:24; Martins, 1989; May, 1985:24, Miller, 1983; Milliken & Martins, 1996:402; Morrison, 1992:84; Nyström, 1979; 1990:161; Sternberg, 2000:17; Torrance, 1984).

According to Cheng (2005:606), multiple levels of cognitive thinking contribute towards the five dimensions of creativity and allow for the redistribution of creative knowledge applications. Davila *et al.* (2004:88) introduce the five steps to balancing creative and commercial markets as proposed by the ambidextrous organisation of the future. Their value network model that establishes innovation platforms links well with balancing creativity and organisational value creation (Notturmo, 2000; Michailko, 1998:52).

Individual creativity within the organisation cannot be analysed purely for measuring quantitative creativity levels, but involves leadership and the cultural environmental

setting wherein it functions (Skyrme, 2000:254). It specifically relates to the strategic intent provided by the intra-subjective, inter-subjective and collective creative contributions of the entire organisation (Davila *et al.*, 2004:18; DiLiello & Houghton, 2004:320; Stankowsky, 2005:74). This multi-level approach provides a forum for integration and concomitance (Steyn, 2006:118) and establishes a foundation to re-collect how the creative process impacts on individuals and teams contributing collectively to organisational strategic outcomes.

The researcher agrees that individual and organisational creativity are inextricably linked (Davila *et al.*, 2004:19) and succinctly highlights the importance of simultaneous development. Andriopoulos and Lowe (2000:739) state that creative ideas and knowledge are prime business assets for new generation knowledge management. The individual is pivotal as it is the individual knowledge worker who owns the knowledge, intellectual ability, thinking style preference, personality and task motivation. Managing work complexity with innovative supervision, the resources and the work environment enhances creativity. The opportunity must be created where individuals can exploit uncertainty. The uncertainty should not be controlled to enable the creation of reproductive order. Combining creative employees and challenging work enhances the task motivation factor (Aleinikov, 2002:35; Barron & Harrington, 1981:439; Borghini, 2005:19; Handzic & Chaimungkalanont, 2004:57-64, Nolan & Croson, 1995; Sternberg, 2000:81; Swan, Newell & Robbertson, 2000:20).

When comparing perpetual challenging with established organisational creativity theory 4 reveals that the emergent category of adventuring comes closer to the five stages of Amabile's (1998:76-87) componential framework of creativity. Specifically, the components relating to adventuring, scenario development and experimenting are closely linked to Amabile's theoretical interpretation of preparation, response generation and validation stages of the creative process (Andriopoulos & Lowe, 2000:739). The key to success in any knowledge driven organisation is the development of an intellectual organisation, which will create core competencies and distinctive products and services that will generate superior results. Creative organisations need to be skilled at creating, acquiring and transferring knowledge and also at modifying behaviour to reflect new knowledge and insight (Andriopoulos & Lowe, 2000:740; Henderson & Clark, 1990:23; Pace, 2002; Paolillo & Brown, 1978:13; Payne, 1990:101; Pavitt, 1991:41; Stacey, 1995:477).

The link between organisational knowledge and the creative process is embedded in the organisational architectural memory. This repository of knowledge is shared and crystallises into new mental models, which continuously change culture and values (Borghini, 2005:19-33; Davila *et al.*, 2004:152; Parker, 1992:10). Strategic conversations through informal and formal teams enable the sense-making process, which directly impacts on the creative performance of the organisation (Paulus & Yang, 2005:51; West, 2001:464). The sensemaking process according to Snowden (2001:11) creates the link between organisational knowledge, culture and the creativity process as it facilitates an interface for knowledge exchanges to take place. Organisations have multiple cultural values that comprise the knowledge architecture, which is intertwined into a web of diverse meanings and translates into future innovations. These meanings represent how the organisation interprets itself through its own behaviour and strategies and how it defines its knowledge identity within its ability to harvest creativity (Housel & Bell, 2001:47; Snowden, 2000a:2; 2000b; Stacey, 1992:23; Stankowsky, 2005:203).

DiLiello and Houghton (2004:323) argue that locus of control impacts on the knowledge workers creative process. Individuals with an internal locus of control believe that the outcome is the result of their own actions. Individuals with an external locus of control believe they have no control over the outcome of their efforts. In the light of the above, it can be reasoned that personality traits such as persistence, curiosity, interest in complexity, preference for autonomy and high energy levels, self-confidence, and an impression of the self as creative ideation could impact on creative capability level of individuals (Gundry & LaMantia, 2001:24).

DiLiello and Houghton (2004:325) suggest that capability levels are related to both self-esteem and confidence. The creative self-image and the creative self-efficacy factors contribute to the individual's perception of being creative and enhance the individual's belief that the eventual outcome will be creative. Individuals lacking in this belief will have no incentive to produce creative outcomes. This belief can have a major influence on the subsequent behavioural outcomes. Receptivity beliefs, capability beliefs and emotions are likely to impact on the individual's motivation to implement creative action. According to Okhuysen and Eisenhardt (2000:370) and Twiss (1995:81) personality traits impacting on the individual's creativity are primarily autonomy, independence, internal locus of causality, internal locus of control, intrinsic motivation and self-confidence. Furthermore self determination, self discipline, self efficacy, self image and self regulation are factors which should be managed to

optimize creative thought generation and knowledge productivity (DiLiello & Houghton, 2004:325; Hines & Bishop, 2006:7).

The concomitance model (Steyn, 2006:118) endeavors to integrate creative leadership as the driver of culture to increase the system of internal knowledge creation through shared mental models. These represent the multi-dimensional patterns by which new knowledge is memorised (Cheng, 2005:605-618). Organisational creativity can further accentuate a process of knowledge variety generation (Stankowsky, 2005:205; Von Krogh *et al.*, 2000:26) and stimulate cross-fertilisation of diverse information. This in turn can lead to the creation a self-sustained process for the codification, sharing and socialisation of knowledge (DeFillipi, 2001:5; Delcourt, 1993:105; Dunbar, 1997:462; Levesque, 2001:35; Takeuchi & Nonaka, 2004:65).

Creativity within the knowledge organisation results from an interplay of various factors, including: creative leadership, innovative reputation and the attraction of creative people (DiLiello & Houghton, 2004:321; Twiss, 1995:16). Knowledge workers' creativity relies on individual personality traits, expressed through potential and ambition. These include: creative solution finding, the ability to exercise power and judgement and recognising sources of novelty. According to Twiss (1995:97), the knowledge manager's capacity to think originally is linked to imagination. The ability to imagine is identical to the ability to detach from reality and envisage new situations.

Supervision and leadership directly impact on creativity performance and could be a negative influence if responsibilities and expectations are unrealistic and controlled. Leadership associated with autonomous complexity has a positive effect and leads to the generation of exponentially creative ideas and innovations (Brewster *et al.*, 2000:30; Davila *et al.*, 2004:114). Supportive leadership contributes significantly towards creativity relations and encourages all dimensions of creativity through high-density problem-solving (Woodman *et al.*, 1993:304). The researcher believes that intra-team trust through communities of practice should be driven and encouraged by creative leadership. It is through different leadership perspectives and cross-cultural training that individual and group creativity can be harnessed.

This research builds this theoretical foundation on the innovation path model of Scott and Bruce (1994:583) to illustrate individual innovation in the workplace and to

provide theoretical evidence for the research. Scott and Bruce (1994:580-607) postulate that leadership provides the psychological climate and culture for innovation by providing support and resources to enable innovative behaviour. The major shortcoming is that continuous enhancement of individual creativity and creative leadership for knowledge exchanges are excluded. Innovation and a conducive organisational climate are proposed to establish a point of departure for this critical epistemological argument (Deal & Kennedy, 1982:21, Hemre, 2005:35; Huyssen, 1990:355; Iverson & McPhee, 2002:260; Jameson, 1984:60).

Innovation is an important source for creating a competitive advantage and emphasises the need for technological trajectories to establish influential economic value. Innovation leadership promotes the continuous search for more effective routines and processes to accomplish future challenges. Successful innovation is multi-strategic based (Tidd *et al.*, 2001:222-224), enabling the ignition of internal and external networks for the creation of competitive knowledge combinations. Christenson (1997:105) postulates that only when innovation is entirely supported within a creative cultural context, can creative ideation emerge and be effectively deployed. Establishing creative leadership as the new imperative for modern organisations is crucial to this postmodernist research approach and a critical part of innovative knowledge management. The challenge in the present economic era is to create conditions wherein human capital can be developed, rewarded and recognised as the most valued knowledge architecture for an efficient learning organisation (Dasgupta & Serageldin, 2000:2; Edvinsson, 2002:72-76; Snowden, 1999:6; Staber, 2004:334).

Hall and Mairesse (2005:19) introduce knowledge productivity and managerial effectiveness as areas in the knowledge organisation, which are dependent upon innovation-based leadership. The main criticism of this theoretical model is that the dimensions of creativity are excluded as well as deliberate team exchanges for the development of communities of practice (Davenport, De Long & Beers, 1998:43; Wittgenstein, 2001:11; Wilson, 2003:110). According to Steyn (2006:118) knowledge management should facilitate the five dimensions of creativity, namely: fluency, originality, highlighting the essence, elaboration and resistance to premature closure. These dimensions are the apparatus for manifesting the innovative product. Creativity is a set of skills and aptitudes initiating the process of innovation through the generation of new ideas. Creativity is the process that results in innovation and the essential product of the creative process.

Knowledge applied creatively for third era generation could often result in new value proposition creation. Knowledge management needs to focus on a creative infrastructure to impact on productivity. According to Hall and Mairesse (2005:19) productivity is driven by the innovation output and this knowledge infrastructure includes: human capital, databases, publications, and purchases of intellectual capital for collaborative exchange. These exchanges between communities of practice become the innovative strategic conversations, which drive knowledge competency and application. The researcher believes that the main criticism of this theoretical model is the exclusion of applied creativity as the essential driver in third-generation knowledge management. According to Sydänmaanlakka (2002:8) and Twiss (1995:33), the creative knowledge worker essentially controls the information flow and assists in the collaboration process to achieve third-generation competitive advantage. Neck and Houghton (2006:275) suggests that there is considerable evidence, which promotes the notion that creative human capital is the critical source of a sustainable competitive advantage in the new economic landscape (Brewster *et al.*, 2000:34; Shaw, Brown & Bromiley, 1998:112; Sternberg, 2000:201).

In the knowledge economy where the transfer of knowledge is the foundation for the formation of new mental models, the researcher elaborates on the postmodernist argument that a comprehensive forum is critical to enhance organisational creativity and to imbed new knowledge intelligence paradigms. New dimensions of dialogue and diverse discourse only emerge once knowledge becomes fluid, non-exclusive and synergised concomitantly throughout the organisation (Steyn, 2006:117). Organisational creativity may result in a tangible or intangible service, product, process or procedure contributing to an organisation's knowledge vault, which ultimately translates into competitive future wealth creation (Senge, Kleiner, Roberts, Ross, Roth & Smith, 1999:15; Sternberg, Kaufman & Pretz, 2004:146).

Through elaboration and creative diagnostic insight, the knowledge worker identifies the solution to the problem. Continuous idea transformations feed into knowledge products and adds competitive value to the organisation. Ideas generated through the suspension of judgement are intuitive and consider different angles and analogies to avert ideas from premature rejection (Andriopoulos & Lowe, 2000:734; Sydänmaanlakka, 2002:194; Thompson, 1993:33; Williamson, 2001:541).

In third-generation knowledge management, innovation is associated with high-level knowledge combinations to produce novel services or products. The value of

innovation lies in stakeholder perception and is the result of collective contributions within the collective business environment (Borghini, 2005:19-33; Nissen 2006:226; Williams, 2001:63).

Knowledge sharing is depicted as a network with multiple nodes of connection, which creates a dynamic system. The metaphor of unity with its accompanying values of universality and certainty has been replaced with metaphors of plurality and relationality in a complex world. Images of boundary crossing and cross fertilisation are superseding images of disciplinary depth and compartmentalisation. Isolated modes of work are being supplanted by affiliations, coalitions and alliances. Older values of control, mastery and expertise are being reformulated as dialogue, interaction and negotiation. The need for a new approach to complex problems is evident across all the fields of human interaction with natural systems and in the fields of technical development. Social, technical and economic development continuously interacts with the elements of value and culture to produce enhanced problem-solving (Klein, 2004:3).

Innovation is the process whereby information is gathered and redefined by knowledge communities to create new solutions. Knowledge creation drives innovation as a continuous process. Brewster *et al.* (2002:94) and Drucker (2005:9-17) emphasise the need for a flexible organisational structure to harness creativity and suggests the removal of rigid cultural inhibitors to innovation (Csikszentmihalyi, 1999:313; DiLiello & Houghton, 2004:326; Johannessen *et al.*, 1999:116-118).

This is echoed by the views of Wald and Castleberry (2000:18-34) suggesting a four-stage innovation model whereby the organisational climate provides a foundation for knowledge productivity. Stage one identifies the new goals and develops the necessary technology and selects focus areas. Stage two prepares the workforce through education and training and stage three generates a variety of ideas, setting the stage for implementation. Stage four evaluates the feasibility study according to the production process, inclusive of the four production factors: the availability of capital, labour resources, raw materials and creative leadership.

Davenport and Prusack (2006:78-97) suggest that social innovations take place in groups where knowledge workers are involved with the cross-fertilisation of ideas. Collaborative exchange drives productivity within knowledge communities, where a greater openness to information sharing is the norm (Wald & Castleberry, 2000:18-

34). The knowledge worker's propensity for innovation in third-generation knowledge management is driven by idea observation and the re-distribution of creative strategic combinations (Edvinsson, 2002:72-76; Thompson, 2003:96; Williamson, 1998:5).

Dual domain-bounded creativity involves all aspects of the organisation to create compounded multiple creative learning (Cheng, 2005:605-622). Within the creativity thinking and action construct, Reiter-Palmon & Illies (2004:57) define organisational creativity as the capability of knowledge workers to manufacture novel original knowledge to achieve future prosperity intelligence through interactional exchanges. The researcher supports this proposed theoretical perspective and endeavours to conceptualise these various approaches to enhance organisational creativity, including individual, dual and multiple creativity, and the creative thinking transfer activity which is essential for future growth (Cheng, 2005:605-618; Schönström, 2005:17-29; Yukl, 2002:20).

As knowledge and innovation become more central to competitive success, knowledge managers realise the importance of creative leadership for bounded cohabitation (Mathisen & Einarsen, 2004:119). The researcher concurs with DiLiello & Houghton (2004:329) that innovation-based leadership is the essential ingredient needed to drive the modern organisation into the future by focussing on challenging the *status quo*, emphasising an attitude of risk taking, utilising all learning opportunities, using and sharing knowledge and information, focussing on continuous learning, conducting fair and informative evaluations, rewarding creative performance, practising participative management, and by endorsing organisational self reflectivity.

The seven phases of creativity are identification and formulation, investigation, exploration, revelation, confirmation, reformulation and realization (Abou-Zeid & Cheng; 2004:261). Creativity leads to meaningful learning and insightful experiences (Tidd *et al.*, 2001:6). The focus of creativity as a process integrates the elements of knowledge as they are discovered, connected and transformed. The ability to form associations and analogical connections drive the creative process (DeBono, 1990:18; Sydänmaanlakka, 2002:148). Levesque's model (2001:34) proposes three steps for the organisation to install creative leadership to thereby enhance knowledge productivity, namely: defining leadership's ability to create a culture and climate to facilitate best processes and specifying the knowledge expertise of human capital with reference to the product, business field and industry particulars. The third step

aligns the organisation's internal and external processes with its strategic intent.

According to Twiss (1995:103) innovative and adaptative reasoning are the cognitive styles of creativity found in organisations and are continuously explored during decision-making. Adaptors are knowledge workers who prefer to execute tasks more efficiently while innovators in turn prefer to implement tasks differently. Accordingly certain organisations are furthermore better positioned and equipped to create novel ideas. The argument here is that there is no simple methodology to establish a creative organisation, as the complexity of the relationship between creative people; organisational receptivity and problem-solving attitudes are evanescent. The organisation should create a platform where creativity and innovation are valued by focusing the communication process on the essential potential of ideas needed to complete critical tasks (DeBono, 1993:60; Dileillo & Houghton, 2004:330; Sydänmaanlakka, 2002:178). Mathisen and Einarsen (2004:120) state that innovation can be a motivator of creativity. Future organisations face the challenge of being both creative and innovative driving the process of designing their own novel ideas and products. The concepts of creativity and innovation and the behaviour that characterise them are strongly inter-related (Tsuyuki, 2003:18; Zack, 1999a:45).

Twiss (1995:44) suggests a creativity audit on the quality and quantity of creativity required to support the knowledge production process. The congruence between knowledge workers and their tasks results in more productive idea generation as there should essentially be more support in the development stage of ideation. The creative audit can be extended to incorporate the research of Taylor-Bianco and Schermerhorn (2006:457-470) who identified five levels of creativity in management, namely the spontaneous expression and response to problematic situations, for example brainstorming and strategic intervention, where there are restrictions and free thinking is controlled. The third level determines inventive creativity, which also relates to incremental and radical innovation, where project managers display ingenuity with techniques. Level four describes innovative creativity through idea generation, where synergies between creativity and motivation are developed. The final level is concerned with the integration and implementation of the innovative proposition. Using this model, creative activity can be evaluated and finally incorporated into the organisation's strategic intent (Torrance, 1988:15; Yun, Cox & Sims, 2006:374).

The researcher is of the opinion that a different perspective for the organisational

creativity audit is needed that focuses specifically on team exchanges. This audit should include the following factors: team vision relating to organisational relevance of team objectives; task orientation and open group processes for the establishment of communities of practice. The support for innovation through external and internal processes for the implementation and the consequent enablement of new knowledge opportunities are also included (Amabile & Kramer, 2007; Treffinger, 1982:40).

Innovation and creativity are most effectively realised when facilities and creative resources are synchronised within the organisation for exploring the entire range of creative thinking methodologies. DiLiello and Houghton (2004:326) emphasise that creative potential and creative behaviour can be harnessed to ensure sufficient creativity-based strategies, which can support the organisations problem solving process. The organisation's knowledge assets are leveraged by human capital to achieve strategic mastery and knowledge innovation - thereby solving competitive problems (April, 2002:445). The organisation's effective commercialisation of innovation is its strategic competitive advantage (Cohen & Levinthal, 1990:150; Dixon, 2000:50; Dodgson, 2000:8; Folan, 1999:45; Snowden, 2001:19; Treffinger, Isaksen & Firestein, 1983:11).

Mathisen and Einarsen (2004:119) describe the social environment of creative and innovative organisations as a commitment to ambitious goals, freedom and autonomy regarding the choice of tasks and how they should be performed, encouragement of ideas and sufficient time for creating ideas, as well as appropriate feedback, recognition and reward for creative work. The absence of a non-threatening environment where participation is encouraged, a shared concern with excellence and high where quality of performance and expectation prevails, approval and support of attempts to introduce new ideas is present to consequently allow for high levels of creativity and innovation awareness (Mathisen & Einarsen, 2004:120, May, 2007:8; Schuster, 1986:65; Tushman & Anderson, 2004:20).

DiLiello and Houghton (2004:327) suggest that super-leadership enables high performance and subsequently builds stronger creative initiative, and real-time contributions. Super-leadership promotes creativity rather than conformity. The encouragement of self-leadership introduces a new leadership style that promotes organisational climates, which are conducive to creativity and innovation (Crawford, 2005:6-16; Drazin, Glynn & Kazanjian, 1999:286).

Politis (2003:55) views networking as an important attribute of the dispersed leadership style, where the cultivation and exercise of wider social influence is the most important ingredient. The self-leadership theory postulated by Politis (2003:61) introduced the dispersed leadership style. It is elevated to supersede the visionary hero perception by integrating super-leadership. Super leadership focuses on stimulating followers to become leaders by cultivating and stimulating creative and distinctive talents. Leaders are facilitators in the process of finding the right combination of talent and coaching the talent to maximum effectiveness by encouraging self-observation, self goal setting, self reinforcement, self expectation, self rehearsal and self criticism (DiLiello and Houghton, 2004:320; Politis, 2003:65).

After analysing the literature, the researcher will endeavour to illustrate through empirical study, the role of creativity and innovation and estimate how creative leadership could contribute to third-generation knowledge management. Collaboration is the final element suggested as contributing to enhanced organisational creativity and innovation and is demonstrated in the concomitance model of Steyn (2006:118). Perspectives of leadership will be introduced and discussed to demonstrate the epistemic context of the study.

2.5 LEADERSHIP FOR A COMPETITIVE ADVANTAGE

The current economy is becoming more and more complex through the accelerated development and application of information technology and leaders are required to respond faster to critical challenges (Drucker, 1994a:11-28). Globalisation is forcing organisations to operate at the speed of thought, becoming more competitive and operating at international standards. Knowledge enabled leadership, described as the collective characteristic of creative leadership, has become imperative as the researcher is of the opinion that traditional leadership has become redundant in the postmodern knowledge management era (Crawford, 2005:6-16). This demands a fundamentally different approach to navigating in the knowledge economy to adapt to a new world wherein a new profile for leadership is required (Kezar, 2001:85; Mullins, 1993:50; Peña, 2002:471; Scholl, König, Meyer & Heisig, 2004:25; Stacey, 2001:16; Taylor-Bianco & Schermerhorn, 2006:458; Tidd *et al.*, 2001:41; Tierney & Farmer, 2002:1139).

Leadership is an integral part of any organisation and defines direction and purpose by shaping the vision (Reiter-Palmon & Illies, 2004:60). The emphasis on the

development of leadership in the knowledge economy is to meet the challenges of the future by emphasising a vision, which is based on knowledge resources and transformed by the competitive ability to produce innovative futures (Geijsel *et al.*, 1999:309-328). Graetz (2000:551-562) together with Taylor-Bianco and Schermerhorn (2006:457-470) state that transformational leadership drives organisational learning and should therefore receive specific attention if organisations are to be successful in the knowledge economy. Holsapple and Joshi (2000:239-241) recognise four focus areas within the learning domain of knowledge management which need attention and they are leadership in the management of knowledge, coordinating the management of knowledge, controlling the management of knowledge and measuring the management of knowledge. Senge (1990:360) argues that leadership in organisations is both collective and highly individualistic. Leadership is an important agent of learning. Creating organisational knowledge is a people based process, and therefore essential for organisations to be effective. Knowledge managers should adopt a more people centric approach in the networked economy for collective knowledge harnessing (Frydman, Wilson & Wyer, 2000:20; Houghton & Yoho, 2005:12; Jackson, 2000:8; Lakshman, 2005:429; Nonaka & Takeuchi, 1995:61; Pannel 2005:24; Wiig, 1993:20).

The leadership strategies used in the new knowledge economy paradigm functions in real time, which in turn accelerates the response to new challenges. The way in which these leaders respond to hyper-competition is inextricably tied to the values, vision and attitudes of leadership (Howells, 2005:13; Hughes *et al.*, 1999:18; Isaksen & Kaufmann, 1990:19; Selen, 2000:349). It is rather the quality of leadership that determines whether the talents, potential and commitment of knowledge workers will be expressed as innovation competency and creative ideation in the future organisation. Competitive advantage is defined as the implementation of a value creating strategy, which offers a unique value contribution with distinctive capabilities, derived from numerous sources to be manipulated for an organisational competitive advantage (Cohen & Levinthal, 1990:129; Couger, 1996:24; Gorard & Rees, 2002:29). Creative leadership could be promoted as the driving force behind a competitive advantage in the new economic era, as future economic value is not obtained through tradable, tangible assets, but by the intellectual intangible rent (Stankowsky, 2005:195). When creative leadership is considered a distinctive capability, competitors cannot immediately replicate it. Tacit knowledge, is linked to the organisation's collective knowledge architecture and becomes visible through

leadership (Dalkir, 2005:273; Edvinsson, 2002:72; Van Rensburg, 2007:2; Viitala, 2004:526).

Organisations need to develop and promote leaders who realise that organisational renewal and competitive readiness is dependant on the knowledge workers readiness to grasp future challenges, continuous change, life long learning and ever increasing competition (Amabile, 1998:80). The development-orientated leader is characterised by servanthship, which regards knowledge workers as pivotal by promoting knowledge development, which subsequently inspires trust and collaboration (Brinkley, 2006:1; Popper, 1992:22; Rowley, 2003:433; Sadler-Smith, Spicer & Chaston, 2001:143; Zeitz, Johannesson & Ritchi, 1997:414).

Hughes *et al.* (1999:45) define leadership as creating a sense of purpose and direction by generating the organisational support and inspiring people to achieve the collective vision and strategic intent. A clear distinction is drawn in this study between management and leadership. Management refers to planning, budgeting and monitoring the actual outcomes of knowledge exchanges based on the functional elements of management. Leadership encapsulates the new imperative as it transforms organisations to re-ignite the essential knowledge driver for sustainable success. Managerial effectiveness refers to the input processes and output that constitute productivity, which in turn is evaluated through the traditional management infrastructure (Brewster *et al.*, 2000:31; Cowan & Foray, 2000:221; Harrison, 2003:81; Hemre 2005:50; Jarvis, 2001:17; Rubenson & Runco, 1992:131).

Leadership defines the direction and shapes the vision of the future organisation to meet the challenges of the new knowledge society. The researcher deems it essential to highlight the importance of future leadership who should recognise knowledge workers as critical in preparing the organisation for future challenges. These leaders, described as developmental knowledge leaders (Dalkir, 2005:13), are characterised by their ability to inspire trust and develop servanthship to facilitate effective team exchanges, by providing the architecture to support knowledge generation. Servanthship is defined as the coaching and facilitating of strategic knowledge capital, communicating it clearly to the entire organisation and keeping highly disaggregated organisation synchronised (Johannessen *et al.*, 1999:128). Collaborative leadership is a product of servanthship, integrating the knowledge organisation and driving the process of creativity and innovation (Brevis, 2005:18; Crawford, 2005:8; Wolfgang, Konig, Meyer & Heisig, 2004:19).

Knowledge leadership is described as innovative, as it is central to organisational strategy and grasps the full potential of all knowledge resources. It develops the full potential for learning to support existing core-competencies and to develop new strategies (Garvey & Williamson, 2002:164; Jackson *et al.*, 2003:335; Sydänmaanlakka, 2002:100). The role of the knowledge leader is to navigate and advocate organisational learning. Knowledge leadership includes: designing and implementing the organisation's infrastructure, networks and academic relationships. It furthermore promotes the knowledge agenda by defining roles, new opportunities and facilitates training of knowledge workers and establishes knowledge teams (Housel & Bell, 2001:48).

According to the path model for individual innovation as suggested by Scott and Bruce (1994:583), the determining factor for innovative behaviour depends on leadership-member exchanges and leader role expectations. Leadership is essential for the formation of a psychological culture, which distributes a positive relationship between leader-member exchanges. The researcher criticises the limitations in the model presented by Martins and Martins (2002:58-65). Firstly, communities of practice are excluded which accelerates autonomy and decision latitude and could result in extended innovative relationships. Secondly, this theoretical model excludes the importance of knowledge combinations and continuous creativity flows.

Viitala (2004:528) introduces knowledge-creating leadership and proposes that knowledge management should be contrasted against knowledge leadership as it refers to constant knowledge development and innovation. The individual is regarded as central in supporting the group to learn and the learning process is essential for attaining the organisational objectives by continuously learning to innovative. The researcher is of the notion that the function of knowledge leadership is to enhance capabilities for knowledge creation by instilling a responsibility towards knowledge acquisition and trading. Knowledge leadership translates into creative leadership as it provides the infrastructure with incentives for knowledge re-use. Creative leadership encompasses all leadership processes and products, thereby supporting creativity and innovation as a means to benchmark quality outcomes and to expand quantum opportunities (Amidon, 2003:7; Housel & Bell, 2001:47; Johannessen *et al.*, 1999:116-128; Siau & Messersmith, 2003: 65; Stankowsky, 2005:126).

It is the responsibility of the leader to promote an organisational culture that facilitates tacit and explicit knowledge sharing and the promotion of continuous organisational

learning (Martins & Martins, 2002:58). Kezar (2005:50) suggests that the new leadership criterion involves a cultural change agency and relationship building for business processes within the organisation. Leadership is the advocator of cross-organisational communities of practice and recognises knowledge champions and knowledge sponsors. It also invests in and supports knowledge management initiatives (Ortenblad, 2002:87-100; Stankowsky, 2005:193; Wenger & Snyder, 2000:139).

Transformational leadership refers to the management style that generates development and change throughout the organisation (Deschamps, 2005:31-38). Transformational leadership is based on five factors, which refer to idealised attributes and behaviour, inspirational motivation, individualised consideration, and intellectual stimulation. The most important characteristic encompassing the management style is charisma. The ability to create shared vision, the application of rhetorical and impression management skills are deemed critical for the effective application of transformational leadership. Transformational management is however still regarded as a highly ideological philosophy (Tapscott, 2001:8; Viitala, 2004: 530).

A change orientated management style (Dyer & Nobeoka, 2000:345) has been introduced as a third dimension to the traditional two-dimensional view of traditional management models, which are based on task and person orientations. The change orientation depicts a leader who is able to create vision, accept new ideas, is quick in making decisions, encourages co-operation, is sensitive and facilitates the implementation of innovation strategies. The traditional task orientation is replaced by change where the person and the change orientations are primary foci. This leadership orientation indicates that the person orientation is preferred in the instances of maintaining group cohesiveness, creating a positive climate, and it is also conducive for producing new ideas and continuously questioning own beliefs (Teece & Pisano, 1994:537; Viitala, 2004:530).

Self-management and leadership behaviour impact directly on knowledge management (Deschamps, 2005:31). The self-leadership style is positively correlated with transformational and transactional leadership in the process of knowledge acquisition. Self-leadership positively correlates with the important factors that is participation, mutual trust and respect for ideas and feelings, which frequently enable optimal knowledge acquisition (Politis, 2003:55-66). Self-management orientation is

regarded as the management orientation that inherently owns a knowledge management strategy that is able to deliver a competitive advantage. These leaders do not manage knowledge but apply the knowledge to effectively attain the ownership. They encourage communication, negotiation, promote knowledge sharing, and promote interactive processes for knowledge acquisition. Self-leadership encourage team members to gather information and knowledge needed to evaluate their own performance. Navigators complying with these characteristics are known as knowledge-enabled leaders. Knowledge-enabled leadership understands the relationship between knowledge acquisition and the business process functions. They support and facilitate the acquisition and sharing of knowledge leading the enterprise effort to exploit knowledge and sponsor ideas for further use in strategies for knowledge acquisition. Knowledge enabled leaders are responsible for discharging their knowledge in an empowered organisational environment (Vitala, 2004:534).

Dispersed leaders focus on small teams with complimentary skills who are committed to a common purpose, performance goals and approach for which they hold themselves mutually accountable. This focus is based on four assumptions and is illustrated by the fact that leaders in these teams build commitment and confidence, remove obstacles, create opportunities, and form an integral part of the team. Credible leaders develop capacity in others by supporting and facilitating ability to lead themselves (Politis, 2001a: 354, 2001b: 449).

Amabile (1996:1154) determined the leadership factors, which enhanced the work environment for the enablement of creativity. Stimulant factors and obstacle factors were identified. The stimulant factors are based on encouragement of creativity, freedom, sufficient resources and challenging work. The obstacle factors include workload and organisational impediments. The positive relationship between the self-management leadership style and the dimensions of the creative work environment impacts positively on the work outcomes, creativity and productivity, which are prerequisites for effective knowledge management. Creative potential refers to the individual's creative skills and abilities. Knowledge productivity is measured as the result of creative effort. Creative potential may never be optimised to facilitate creative behaviour if the work environment does not focus on optimising the creative potential of employees. Organisations that do not focus on creative and innovative leadership potential are constricted to achieve competitive advantage (Andriopoulos

& Lowe, 2000:734; DiLiello & Houghton, 2004:320; Von Krogh, Roos & Slocum, 1994:58; Weick, 2001:7).

A knowledge community provides a leadership forum for new idea generation through exchanges with partners, customers and competitors. It is within these formal knowledge communities that the researcher believes individual creativity is best harnessed for an organisational competitive advantage. The focus of this explorative debate is directed towards leadership and the training of knowledge workers and teams seize to manipulate future opportunities (Woodman & Schoenfeldt: 1989:77-92; DiLiello and Houghton, 2004:323). These leadership opportunities are instrumental in designing an organisation's knowledge architecture by introducing networks to facilitate technology as an enabler for effective knowledge management (Amidon: 2003:11; Siau and Messersmith, 2003:65; Tsui, 2003:18; Von Hippel, 1988:70).

The innovative leader is the primary liaison between external providers of information and internal knowledge and provides critical input for the creation of efficient just-in-time knowledge combinations for strategic decision-making (Skyrme, 2000:19; Skyrme, 2001a:49, 2001b:19). The process of innovative leadership translates future knowledge propositions into action with the focus on deliverable results. Innovative leadership sells the knowledge management vision and drives the organisation in the desired direction (Viitala, 2004:528-544). The primary success factor of innovative leadership in third-generation knowledge management is through strategic conversations and sense making of the organisation's knowledge intent (Wiig, 2003:6-24).

Intellectual leadership enables the evaluation and benchmarking of intellectual capital, converting it into structural capital as it endeavours to reduce operating costs and development time (Davila *et al.*, 2004:12; Housel & Bell, 2001:50). This leadership dynamic evaluates operational processes and decides when to adopt new technologies and appreciates the opportunities for the creation of knowledge directories and repositories through innovative dialogue (Cheng, 2005:622). According to Nonaka and Takeuchi (1995:75) the process, diffusion and acceptance of new ideas is complex and involves all levels of management. Leadership takes responsibility for providing the vision to extend a coherent knowledge framework for concomitant confluences of knowledge exchanges (Steyn, 2006:118).

The primary responsibility of knowledge leadership is to maintain an organisational culture that supports knowledge workers' experiential learning of tacit knowledge (Stankowsky, 2005:141). Bollinger and Smith (2001:8) suggest that this culture respects knowledge and reinforces information sharing. According to Lang (2001:43-57) human relationships are crucial for knowledge creation, sharing, and utilisation. Knowledge workers share their expertise to create new repositories of knowledge as they depend on knowledge leadership to maximise their contributions to the learning organisation (Garvey & Williamson, 2002:181). Knowledge leaders invent new products and services, create strategies, manipulate knowledge and information and possess high degrees of expertise, education and experience. The primary purpose is the creation, distribution and application of new knowledge (Alavi, Kayworth & Leidner, 2005:191; Clarke & Clegg, 2000:25; Davenport & Prusack, 2006:24; West, 2001:460).

Crawford (2005:15) finds that few researchers address the link between information technology and leadership and the relationship between transformational leadership and knowledge management (Malhotra, 2000:7; Munro, 2001:56; Crawford, 2005:15). According to Crawford (2005:6-16) information technology demands new organisational leadership dynamics and speculates that transformational leadership is needed in an evolving technological society. Transformational leadership leverages knowledge applications to meet market demands faster in the increasingly interdependent economy. Transformational leaders are significantly more innovative than transactional leaders (Wenger, 2003:76-99).

Senge (1990:65) argues that the leaderships role in learning organisations are those of designer, teacher, and steward by building a shared vision, challenging prevailing mental models, and continually expanding knowledge harvesting. Holsapple and Joshi (2000:235-261) identify the managerial influences related to the knowledge management leadership function as co-ordinating, controlling and responsible for the measurement of knowledge (Senge, 1990:355; Tidd *et al.*, 2001:292). Leadership in the knowledge economy innovates to produce intangible assets and future corporate wealth, using new leadership functions (Garvey & Williamson, 2002:180). Flexibility and autonomy are the new essential drivers in an economy based on knowledge production. Flatter structures and teamwork deliver higher productivity levels (Tidd *et al.*, 2001:151). Business units increase the flow of knowledge productivity through collective exchange, and organisational goals are attained in creating new future knowledge opportunities through collaborative leadership (Ambrosini & Browman,

2001:811; Bennet & Bennet, 2003:122; Powell & Snellman, 2004:205; Wehrich, 1990:2).

Hall and Mairesse (2005:5-21) investigated the effects of leadership and knowledge productivity on innovation. They suggest a direct relationship between an organisation's profitability and productivity and its ability to process and facilitate innovation. According to these authors, knowledge productivity is a result of market demand, patents and knowledge capital created through the organisation's innovation investments. Leadership could enhance knowledge productivity and this impacts profoundly on the return on investment in the new knowledge economy. According to the researcher, the main criticism of this theoretical model is that creative leadership and the establishment of functional communities of practice are excluded. Leadership in the new Economy contrasts significantly with management

The definition of managerial effectiveness refers to the extent to which a manager achieves the input and output requirements as the central issue in management (Hughes *et al.*, 1999:122-124). Output refers to productivity, which in the knowledge economy is still an important element of management, but needs to be measured differently (Stankowsky, 2005:66). Managerial effectiveness may be considered as consisting of apparent effectiveness and personal effectiveness which are evaluated using a ratio of output to input. Conventional management audits focus mainly on the internal managerial efficiency of an organisation through its planning, organising and control processes (Drucker, 1995:54). It also uses traditional methods to measure its external effectiveness. These are performance-based and rely on return on investment and comply only with the short-term objectives rather than strategic knowledge initiatives (Carr, 2003:197; Crawford 2005:15; Housel & Bell, 2001:39; West & Farr, 1990:3).

Traditionally, authority was vested in the rearrangement of workflow and the modification of production. As many organisations are still productivity-driven, the researcher argues that time should be allowed for new managerial responsibilities which are relevant to the knowledge economy, to develop the establishment of forums for creativity and introduce an awareness where more realistic alternative objectives pertinent to new metrics can be initiated and capitalised on (Clarke & Clegg, 2000:14).

The traditional orientation of management focussed on planning, activating,

organising and controlling resources to achieve organisational objectives. Leadership was reactive and facilitated the execution of short-term tactical plans. Information managers emphasised a uniform approach and focussed on stability and predictability (Alavi & Leidner, 2005:197; Thompson, 2003:96). Uncertainty was unwarranted and control was accepted as the mode of action. Management's performance depended on the span of control in a structured hierarchy (Davila *et. al.*, 2004:236; Wald & Castleberry, 2000:18-34). The focus was on processes and task performance and no attention was paid to the knowledge worker in the relationship. This style of leadership, although once widely accepted, is clearly outdated in the new knowledge economy. The researcher is of the opinion that a new model for creative and innovative leadership needs to be developed to facilitate this new era of knowledge management. Organisational culture should facilitate a forum for new modes of business applications.

For leadership to be effective in the Knowledge Economy, eight key attributes have been identified (Viitala, 2004:528). The ability to direct knowledge systems and the understanding of the variability of knowledge work is critical in the new economic landscape (Marquardt, 1994:32; Selen, 2000:353). Leaders should understand how people learn, develop and improve and lead life long learning and improvement (Bennis, 1994:5) and leaders should know how to generate and sustain trust (Nonaka & Tacheuchi, 1995:156). It is important that leaders understand the interdependence and interaction between systems, variation, learning and human behaviour (Senge, 1990:359). Creating a shared vision, meaning, direction and focus to knowledge workers and the organisation and the ability to integrate various methodologies for knowledge construction is essential (Bennis, 1994:6; Nonaka & Takeuchi, 1995:156; Senge, 1990:346). The new leader should be knowledgeable and have confidence with technology and its role in enabling the organisation to perform and learn (Marquardt, 1994:32; Thompson & Lordan, 1999:92).

2.6 ORGANISATIONAL CLIMATE AND CULTURE

The successful implementation of knowledge management requires a complete transformation of existing corporate culture as this is fundamental for the formation of new information flows and the implementation of the new learning organisation (Bloom, 2000:5). This transition necessitates two-way communication, which is a notion promoted by Sveiby and Simmons (2002), who propose collaboration and socialisation as key components for the installation of a networked culture where

creativity and innovation are vigorously promoted (Askanasy, Wilderom & Peterson, 2000:18; Deal & Kennedy, 1982:25).

According to Martins and Martins (2002:58), symbols, stories and artefacts play an important role in the establishment of organisational culture. Strong cultures are characterised by definite boundaries, patterns and processes, which influence the attitude and behaviour of employees. Culture provides direction by creating guidelines and expectations for individual and team performances. It defines the key value system of the organisation. Through the socialisation process, all members are inculcated into the corporate culture (Senge, 1990:22). Culture is dynamic, reflecting the organisation's growth and interaction with the larger community. In the learning organisation, culture and climate are important building blocks for a competitive advantage (Ekvall, 1983:1, 1987:56; Malhotra, 2000:5; Snowden, 2001:7; Tichy & Chatan, 1989:15; Wald & Castleberry, 2000:18-34).

Baumann (2000:19) and Hamel (2000:311-329) proffer a postmodernist perspective, arguing that knowledge is dynamic and depends on the interrelationship between culture and leadership in the networked economy. These authors suggest that the given culture prescribes the level of fluidity of knowledge and describes its capacity for absorption. Snowden (2001:21) concurs that the taxonomies underlying the cultural dynamics of an organisation are influential in producing new knowledge transmissions. To develop a new knowledge culture, appropriate taxonomies need to be embedded in current information driven organisations (Brooks, 1994:213; Saint-Onge & Wallace, 2003:147; Tidd *et al.*, 2001:336).

Authors, (Johnson, 1996:9-11; Shaughnessy, 1988:5-10; O'Reilly, 1989:20) agree that organisational culture is the most important contributing factor for the establishment of a knowledge forum. The degree to which creative and innovative behaviour is allowed among knowledge workers in an organisation, impacts directly on its leadership and the culture. Petrowski (2000:304-312) argues that quality and innovation in organisations are inextricably intertwined with organisational culture (Ekvall, 1997:195; Iverson & McPhee, 2002:259-266; Jorgensen, 2004:91-103; Leonard & Swap, 2004a:7; 2004b:88-97).

Literature produces support for the type of organisational culture that will effectively promote creativity and innovation (Judge, Fryxell & Dooley 1997:72-85). There also seems to be paradoxical opinions whether organisational culture promotes creativity

and innovation, or, whether it is an obstacle to creative and innovative behaviour (Glor, 1997:45, Tushman & O'Reilly, 1997:48). The researcher endeavors to explore the relationship between organisational culture and leadership that will support creativity and innovation and provide for the establishment of a forum. A wide range of researchers (Ahmed, 1998:30-34; Filipczak, 1997:32-40; Judge *et al.* 1997:72; Nyström, 1990:147; O'Reilly, 1989:9-25; Tesluk *et a l.*, 1997:21-41; Pinchot & Pinchot, 1996:9-10) have contributed towards identifying values, norms and assumptions implicated in promoting and implementing creativity and innovation. Few empirical studies, especially quantitative research, appear to support this approach, but several values, norms and beliefs have been identified by researchers like Judge *et al.* (1997:72), Nyström (1990:143), O'Reilly (1989:11), in their empirical research. These norms are mainly based on the organisation's long- term intent, leadership's ability to communicate clearly on an organisation-wide level and offers insights on the relationship between leadership and human capital (Bichard, 2000:41; Tiwana, 2000a: 81; 2000b: 15).

Martins and Martins (2002:58) contribute in avocation to the crucial value of culture and indicate that leadership can influence the construct of organisational culture pertaining to the advancement of creativity and innovation. The dimensions of creativity could be synthesised within strategic vision, customer focus, interpersonal relationships and the leadership of the organisation. The cultural values and norms that influence creativity and innovation as shown by Martins and Martins (2002:59) are organisational knowledge, strategic future perspectives, purposefulness, trust relationships, behaviour which encourages new innovations, the working environment, customer orientation and tolerance for mistakes, open communications and finally the support required by management. The researcher suggests that openness and integrity support creativity and innovation, but that flexibility, time and autonomy are equally important. The critical importance of creative leadership is further debated (Coleman, 2000:20) which is crucial to an organisation's success in the increasingly complex and ever-changing environment (Birkinshaw, Nobel & Ridderstgrale, 2002:274).

Considering the discourse regarding individual innovation proffered by Scott and Bruce (1994:583), culture and climate are described as a cognitive interpretation of an organisational situation, which could also be labeled as a psychological climate. Knowledge workers within organisations respond primarily to cognitive representations of their environments and represent signals to formulate

expectancies and instrumentalities (Borghini, 2005:22; Houghton & Neck, 2002:672). This discussion suggests that a psychological climate for innovation is needed to drive the support for innovation and to supply resources to enhance individual attributes such as intuitive and systematic problem solving behaviour. According to the researcher the main criticism in this debate proliferates the importance of team exchanges and just-in-time knowledge combinations to enhance competitive advantage, however knowledge as an intangible asset is not considered to be important in this economic context.

Dalkir (2005:212) refers to the absorptive knowledge capacity of organisations as an indication of organisational culture. In this context, collaboration is viewed as a manifestation of cultural robustness with high absorptive knowledge capacity (Garvey & Williamson, 2002:128). Absorptive capacity refers to an organisation's collective capacity and preparedness to integrate existing knowledge workers into innovative dialogue, which invigorates and promotes openness to new ideas, eagerness to learn and innovation awareness (Blanchard, 2005:16; Cohen & Levinthal, 1990:128-152).

A collaborative culture introduces and actively promotes cultural exchanges, reframing stakeholders' perceptions and deliberately propagates a culture of innovation whereby knowledge workers can function optimally and contribute to future knowledge propositions (Bessant, Caffyn & Gilbert, 1996:59; Pavitt, 1991:42; Stacey, 2000:55; Sloane, 2003:6; Teece, 1998b:289; Tidd *et al.*, 2001:14). Zucchermaglio and Talamo (2003:259) argue that an organisation's culture is deeply rooted in its belief systems and is a product of recurring patterns (April, 2002:445; Bailey & Clarke, 2000:235).

The researcher suggests that successful implementation of third-generation knowledge management requires a complete cultural transformation to promote a culture of knowledge sharing and collaborative learning (Senge, 1990:51). Corporate culture is the key component for leveraging critical knowledge flow through collaboration. Sveiby and Simmons (2002:420-433) suggest that a collaborative climate influences the effectiveness of knowledge work and is furthermore a good indicator of competitive advantage.

Gruber and Duxbury (2001:45) suggest that the links between organisational culture and knowledge sharing are imbedded within variables of trust, openness and top management support. The ideal knowledge sharing culture is one in which

communication and co-ordination between business units is strategically established. This culture promotes knowledge sharing through the integration of knowledge tools and taxonomies where the benefits of knowledge access and exchanges would ideally be immediate (Davenport & Glaser, 2002:107-110; Garvey, 1999:42; Gruber & Duxbury, 2001:48; Stokes & Logan, 2004:45; Sveiby & Simmons, 2002:420-433). The researcher suggests that creative leadership is the mainstay in these processes. The ideas and knowledge that are required to add value to existing products and services reside in the minds of individuals. To ensure that optimal operational effectiveness of the human capital is aligned with the vision and mission of the organisation, new creative leadership is required where individual creativity is valued and developed (Tiwana, 2002:31).

A number of researchers have examined organisational culture. For instance Brewster *et al.* (2000:89) describes the culture of high-performance organisations as flexible and adaptable, promoting continuous learning, self-development, information sharing and teamwork. Also Zeitz *et al.* (1997:111) presented evidence of five important dimensions of organisational culture that are required in the knowledge economy: job challenge, cohesion, communication, innovation and trust. These dimensions are similar to those proposed by the researcher to drive creative leadership for organisational learning.

Scott and Bruce (1994:587) suggest that climate can be differentiated by the global climate of an organisation or conspicuous within certain sub-climates. This perspective is based on the proposition that knowledge workers make sense of a set of psychologically related events in the work environment, which are either proximal to the immediate organisation or global. Scott and Bruce (1994:591) agree that the particular psychological climate needs to be driven by leadership as part of its strategic intent. A climate for creativity (Amabile *et al.*, 1996:1154; Inkpen & Dinur, 1998:454) and innovation (Scott & Bruce, 1994:580) is especially relevant to knowledge management and organisational learning as it aligns the entire organisation through concomitance (Steyn, 2006:118; Tobin & Snyman, 2003:30).

Davila *et al.* (2004:248) argues that the ideal organisational culture for knowledge management develops an internal market place for innovation and balances creativity and value creation by acknowledging the creativity efforts of the human capital. A non-judgemental organisational culture stimulates creativity and the generation of creative ideas to stimulate innovation implementations. When creative

leadership supports individuals and provides positive evaluations, employees exhibit higher creativity levels. Organisational culture affects the personal and contextual conditions in the work place, which impacts directly on the expectation of formulation of creative ideas and the willingness to share through organisational learning. Creative leadership could enhance creativity and when designed to support organisational idea generation, knowledge is automatically shared. Sharing incremental ideas for innovation may be considered a low risk activity while sharing radical ideas may carry high risk (Abdullah, 2005:1-16). This interaction suggests that creative ideas are available in organisations, but the culture determines the willingness to share. The researcher is of the notion that the socialisation of knowledge is an essential component of the new leadership paradigm as it extends the spiral of knowledge throughout the organisation (Deal & Kennedy, 1982:18; Farmer *et al.*, 2003:619).

2.7 THE SOCIAL NATURE OF KNOWLEDGE

2.7.1 The socialisation of knowledge

Knowledge socialisation deals with the process of knowledge exchange between the knowledge worker, the community of practice and the organisation's innovation repositories (Bontis, Crossan & Hulland, 2002:437; Handzic & Chaimungkalanont, 2004:57). Cognitive schemas are mental representations of knowledge that have been formulated through cognitive scripts (Snowden, 2001:7). These schemas create knowledge stimuli for shared critical knowledge resources. The combination of human cognitive schemas with artificial intelligence potentially leverages the organisation's future value proposition and maintains its future competitive advantage through continuous learning (Brewster *et al.*, 2000:213). This new intra-connectivity of third-generation knowledge has replaced the interconnectivity of first-generation knowledge management, which focused primarily on the gathering of information, which manifested in isolated islands of knowledge. According to the researcher, the main criticisms of the theoretical models disseminated during this study is the lack of socialisation of knowledge and the leadership imperative (Wenger, 2000:228; Zollo & Winters, 2002:340).

Communities of practice embody the ability to learn, collaborate, and provide an essential platform that fosters learning and collaboration across the organisation. Communities function as tangible vessels that enable organisations to meet

important challenges presented by the knowledge era (Saint-Onge & Wallace, 2003:32). Knowledge productive organisations communicate structured information through networks (Garvey & Williamson, 2002:19). Learning is a social activity where implicit and explicit knowledge is transported through situated learning (Garvey & Williamson, 2002:88). Situated learning takes on a particular significance in relation to knowledge productivity and the generation of new knowledge, which translates into reflection and reflexivity in action. The key process of socialisation occurs through communities of practice and is achieved through intense dialogue that focuses on domain relevant narratives. Reflection in knowledge practice is an essential ingredient of knowledge management activities. Reflexivity is the search for new solutions. Perpetual challenging maintains the dialectic tension among knowledge workers (Taylor-Bianco & Schermerhorn, 2006:457; Thompson & Heron, 2005:383).

Successful collaboration requires the development of new capabilities, skills, organisational processes and tools. With the knowledge-driven business environment imposing the need for an unprecedented level of partnership through networks, the capability to collaborate and create integrated solutions can create significant value for an organisation. It is expected from internal collaboration to draw on the expertise that resides across functional areas and business segments to drive an integrated solution (Schönström, 2005:17-29; Zakaria *et al.*, 2004:15-27). External collaboration facilitates an organisation's participation in networks that capitalise on organisational strengths in a value creation network that proffers integrated solutions on all levels of the organisation (Saint-Onge & Wallace, 2003:33; Wenger & Snyder, 2000:139).

Knowledge acquisition is a transfer and transformation process, whereby knowledge is extracted from the expertise of knowledge workers and stored as explicit organisational knowledge (Housel & Bell, 2001:94). By continuously funnelling vast amounts of information into innovative combinations, a knowledge platform can be leveraged throughout the organisation for diverse knowledge scenarios (Dalkir, 2005:170). The concomitance model (Steyn, 2006:118) creates an extension to the spiral of knowledge through the five dimensions of creativity. The ease of access of information can fuel the organisation renewal and provide learning to innovation hubs for future growth (Wenger, McDermott & Snyder, 2002:19).

According to Nonaka and Takeuchi (1995:242), continuous innovation is dependent on continuous knowledge socialisation for future knowledge creation. Creativity and subsequent innovative implementation are viewed as organisational knowledge

embodiment during which the conversion of tacit, personal knowledge to explicit organisational knowledge is circuital (Garvey & Williamson, 2002:136; Jackson *et al.*, 2003:231). The researcher argues that this continuous transfer of knowledge combinations, is the major barrier created by management who still seeks to keep information exclusive and power dependent. Frequent communication and dialogue increase the transfer of all forms of knowledge to support strategic knowledge rotation through formal and informal networks among different organisational functions and technology to enable free access to information. Although Nonaka and Takeuchi (1995:290) propose the socialisation of the knowledge model for organisational learning. The critique offered by the researcher from a postmodern perspective is that free access to all information is not enabled as a formal strategic function.

Inter-functional co-ordination and communication facilitate the learning process through networks, but requires a corporate culture of willingness to share information with all departments. Huyssen (1990:355), Jameson (1984:53), Clarke and Clegg (2000:25) suggest that in a culture where departmental communication is flexible and open to change an increase in knowledge productivity is leveraged by the exponentiality of learning processes inherent to the organisation (Garvin, 1993a:80; 1993b:177; Graetz, 2000:555; Jorgensen, 2004:95). Inter-functional communication communities of practice could also be established and empowered to respond to internal and external collaborative networks (Stokes & Logan, 2004:199-207). Knowledge networks comprise of multiple networks, which require unilateral cognitive creativity, which aligns with external collations where strategic alliances are formed (Cheng, 2005:608). Such business alliances drive networks, which enable participation and collective resource building, thereby sustaining competitive advantage. These business networks enhance competitive advantage by establishing formal knowledge driven frameworks (Housel & Bell, 2001:16).

It is in the midst of knowledge redundancy and ambiguity that new knowledge is created as conflictual. This translation may promote further elaboration and creative dialogue and establish a process of dialectic tension within knowledge management practise, (Garvey & Williamson, 2002:51) and thereby contribute to enhance innovative solutions (Dalkir, 2005:53; Selen, 2000:349). When knowledge workers share a common cognitive ground, the articulation of creative architectural syntaxes are communicated more clearly and the time between knowledge transfer and application is shortened (Borghini, 2005:23). The process of internalisation of explicit

knowledge is promoted by leadership management when the creative product is an overarching process in which different functional teams share division of labour and a collective strategic vision (Garvey & Williamson, 2002:93). Team dialogue could create dialectic tension through competitive dynamics, which may further enhance argumentation for best approach decision-making processes (Nonaka & Takeuchi, 1995:214). Within such a competitive business environment, companies increasingly strive to become more innovative as new ideation is a critical commodity generated by knowledge workers. In the creativity process, knowledge workers should become highly involved in creative and innovative activities to be perpetually challenged and set new parameters for creative and intelligent decision-making (Andiopoulos, 2000:34).

The continuous process of organisational knowledge creation, dissemination and innovative embodiment could provide for the effective utilisation of immediate decision-making and conversion from tacit to explicit knowledge instantaneously (Malhotra, 2003). It is only when knowledge is shared and transferred into a skill that it becomes useful and in demand. The conversion of tacit into explicit knowledge contributes towards a competitive edge as leadership becomes more future focused and realise the vast benefits from its inherent creative potential (Dalkir, 2005:218). Tacit knowledge is personal, difficult to formalise and deeply rooted within individual experiences values and emotions of the knowledge worker. These technical and cognitive dimensions need to be exploited through synergy, trust and integrity (Orlikowski, 2002:249-273).

The knowledge worker is the crucial conduit of information - establishing a specific relationship between formal communities of interest and informal fellowship groups (Housel & Bell, 2001:32). These groups gather to utilise shared knowledge, enhance organisational learning and create new value for knowledge harvesting. They are not constrained by geographic boundaries as they operate virtually and are opportunity driven (Von Krogh, 2000:51). Drucker (2005:18-19) emphasises the role of knowledge management as the leverager of knowledge dissemination. Increased knowledge productivity and sustainable competitive advantage depend on the most efficient application of knowledge to drive future wealth through the interaction of knowledge worker teams (Stankowsky, 2005:172).

This discussion highlights a number of characteristics that are relevant to the effective socialisation of knowledge. The fundamental objective of knowledge

management is to achieve synergy between information technologies and the creative and innovative capacities of knowledge workers. The suggested requirements for the alignment of the knowledge worker with the intra-organisational dynamic, is described in the concomitance model (Steyn, 2006:118). The socialisation process is described as instrumental for synchronising the organisation with the internal and external facets within the wider business environment (Amidon, 1997:81; Kanter, 1983:4).

Given the increasing relevance of the knowledge value chain (Skyrme, 2001b:34) in the socialisation process, players in knowledge-based organisations act as knowledge entrepreneurs. The term knowledge entrepreneur seems more appropriate in this context than knowledge worker, given the changing nature of organisations and work roles within the knowledge dispensation (Dyer & Nobeoka, 2000:345-367; Malhotra, 2000:15). The researcher suggests that knowledge workers in the third era of knowledge management are the engineers that construct an inter-connected repository for knowledge.

Hagel and Armstrong (1997:110) and Schönström (2005:17-29) describe the importance of the social and economic value of virtual knowledge communities as crucial to effective learning. The participants encourage ongoing dialogue, generating networks of personal communication and enforcing a sense of identification within a specific community of interest. All communities share basic characteristics, regardless of the collective scenario that contributes towards the particular organisational strategic intent. Innovational leadership and a lenient culture are imperative to drive virtual organisations. Mutual engagement is the foundation for a shared repertoire, as knowledge workers collaborate towards strategic knowledge enablement (Kanter, 1997:21; Tobin, 2004).

Different members rotate between knowledge roles within the community of practice. Saint-Onge (2005:56) and Sydow and Staber (2002:997) and Teece (1998b:289) describe these roles as: champion, sponsor, facilitator, pilot and leader. The champion ensures support at the highest organisational level, while the sponsor serves as the bridge between the business unit and the organisation. The facilitator has the most demanding role-classifying role for directing and distributing diverse knowledge functions. These members share the responsibility for promoting the community of practice, generating interest, demonstrating its value within the organisation, as well maintaining continued support from management. The

establishment of a community identity is dependant on the level of sharing that takes place within the knowledge organisation (Dalkir, 2005:122; Takeuchi & Nonaka, 2004:1378-141; Tobin & Snyman, 2003:30; Zakaria & Amelinckx, 2004:15-20).

Borderless economies subsist in a competitive knowledge environment where commercial success is based on the collective interaction and learning of organisations through knowledge alliances. Knowledge as a competitive asset is no longer confined to one organisation but includes entire networks of knowledge-trading organisations in the global industry. This connectivity enables each organisation to align products and services and forecast future opportunities with fluidity (Edvinsson, 2002: 72-76; Selen, 2000:346-353). Inter-organisational networks develop knowledge sharing and trust relations to develop standardisation, which is imperative in the socialisation process (Selen, 2000:346-353). This collaboration, across commercial and industrial sectors, enhances the application of information technology and creates specific usable competitive knowledge solutions.

The process of knowledge asset creation necessitates these transformation processes through which information evolves into tacit assets. The knowledge worker's implicit expertise translates into valuable organisational knowledge. The tacit-explicit spectrum of knowledge, shared between individuals, groups and organisations, diffuses information, manifests knowledge and eventually produces innovation. Takeuchi and Nonaka (2004:27) explain that innovation drives the socialisation of knowledge from an inferred approach towards organisational strategic intent. This research investigates the knowledge transformation process and its relation to leadership.

The spiral of knowledge enables the future value proposition as building effective collaboration and knowledge co-ordinating mechanisms have become the competitive advantage of the global market place (Leonard & Swapp, 2004b:88-97; Takeuchi & Nonaka, 2004:9). Leadership is opportunity driven, its prudent use of knowledge resources and exact information selection synchronised with knowledge socialisation drives the strategic objective. The knowledge worker is the active pivot driving the knowledge spiral propelled by information technology. Multiple knowledge layers develop, enabling internal and external networks to become knowledge platforms and foundations for new knowledge solutions. These processes precede the transition from the tangible to the intangible asset (Dretler, 2004:80; Nonaka, 1990:18; Nonaka, 1991; Nonaka & Teece, 2001:9; Teece, 1998a:76).

According to Takeuchi and Nonaka (2004:54), knowledge conversion transforms tacit knowledge into explicit knowledge through four interdependent processes: Firstly, conversion from tacit to explicit knowledge involves a socialisation process. Secondly, tacit knowledge is made explicit through the externalisation process. Thirdly, explicit knowledge is converted to implicit knowledge and fourthly, implicit knowledge becomes explicit during the internalisation process (Dalkir, 2005:58; Powel & Snellman, 2004:199-220).

The most difficult knowledge conversions to achieve are those of a tacit nature expediting explicit knowledge (externalisation), and moreover explicit to tacit knowledge (internalisation). Knowledge re-use and sharing is enabled by the knowledge spiral, which has its starting point at the individual knowledge worker level and moves upward through expanding communities of experts through continuous interaction (Dalkir, 2005:58; Garvey & Williamson, 2002:94; Takeuchi & Nonaka, 2004:9). The fluidity of knowledge as described by the postmodernists requires a repository of learning for the continuous updating of the organisational memory (Weindberger, 2001).

2.7.2 The learning organisation

The learning organisation is defined as a space for exchange and discourse of formal and informal knowledge through the communication of individual learning among knowledge workers. Stankowsky (2005:6) considers four constructs that are linked to organisational learning: knowledge acquisition, information distribution, information interpretation and organisational memory. Organisational learning need not be conscious or intentional, as learning happens through organisational processes and functional responsibilities. An organisation learns through the processing of information, where the range of individual potential behaviours is changed and knowledge dissemination occurs. The learning organisation is characterised by the need of human capital to continually enhance its capacity to collect new knowledge solutions within a culture that encourages anticipating, reacting and responding to change (Garrick, 1998:23; Garvey, 1999:54; Ford, 1996:1112; Senge, 1990:293).

Wenger *et al.* (2002:15) highlight the responsiveness of the learning organisation to new information by means of continual, critical re-evaluation. The ability to gain insight and understanding from experience through experimentation, observation, analysis and a willingness to examine both successes and failures, is the foundation

of an effective learning organisation (Jackson *et al.*, 2003:373). The researcher believes that the future view of the learning organisation is based on an adaptive and creative process of learning, which promotes the community of practice through organisational concomitance. Senge (1990:292) postulates that increasing adaptability is the first stage of double-loop learning (Stacey, 1995:477). The second stage is generative learning, which emphasises continuous experimentation and feedback to define and solve problems. The third stage requires whole systems thinking through shared vision, team learning, and continual creative tension and knowledge exchanges and highlights the importance of knowledge leadership. The five dimensions of creativity, which are assessed in this study, create the foundational aspects for the evaluation of creative capacity of the learning organisation within the culture of the new knowledge economy. (Jarvis, 1992:25; Kanter, 1983:20).

2.7.3 COLLABORATION THROUGH CONCOMITANCE

A definition for a collaborative organisation is one where values and objectives of employees and management are aligned (Nonaka & Teece, 2001:28; Sveiby & Simmons, 2002:12; Takeuchi & Nonaka, 2004:17; Tiwana, 2000b:81; White, 1988). The level of collaboration is driven by the level of knowledge complexity. Decision-making is shared through communities of practice and strategically driven by organisational leadership and management diverse components (Bennet & Bennet, 2004:57; Bessant & Caffyn, 1997:28; Callahan, 2000; Chang & Ahn, 2005:114; Kezar & Eckel, 2002b:435; Stokes & Logan, 2004:172).

An effective knowledge management strategy is based on the collaborative abilities of knowledge resources manipulated for a strategic competitive advantage. In the knowledge economy, the most important drivers needed to accomplish strategic objectives are innovation and the trading of knowledge on demand (Athey, 2002:21; S kyrme, 2001b:100). Innovation is fuelled by knowledge generation creating linkages between existing information segments and integrates organisational competencies (Kaplan & Norton, 2004:216; Saint-Onge, 2005:64). Strategic knowledge management systematically co-ordinates the organisation's human capital, technology and processes to add value through processing best practices into corporate memory (Dalkir, 2005:141; Kazan & Ernest, 2000:14; Kogut & Zander, 1992:383).

Organisational leveraging of creative leadership occurs through diverse knowledge environments formulating appropriate strategies based on collaboration (Stokes & Logan, 2004:211). The collective element is imperative to leverage these critical outcomes, resulting in the discarding of outdated knowledge and leadership to embed new knowledge solutions (Huysman & DeWit, 2002:18; Nonaka, 1990:72; Uzumeri & Nembhard, 1998:132). The concomitance model of Steyn (2006:118) concurs and emphasises the importance of synchronicity among all functions of the organisation as a precursor for knowledge competitive advantage. The alignment between competitive advantage and concomitance is attained when organisational knowledge is linked to strategic intent and installs the critical networks to enable collaborative knowledge exchange. Knowledge resources facilitate the achievement of strategic plans with greater speed and accuracy. An effective knowledge management strategy integrates diverse intellectual assets, by creating usable repositories of knowledge, which contributes to the organisation's collective knowledge architecture (Ardichvili, Page & Wentling, 2003:64; Bouthillier & Shearer, 2002; Drucker, 1992:20; Kakebadse *et al.*, 2003:32; Nonaka, 1990:19; Stacey, 2000:72; Uzumeni & Nembhard, 1998:52).

Innovative strategic intent initiates forums of learning and knowledge sharing (Garvey & Williamson, 2002:175). Knowledge is leveraged by the synergistic interaction of knowledge workers with technology, to obtain future competitive strategic objectives (Saint-Onge, 2005:136). Knowledge is leveraged by demand rather than supply strategies. Therefore, training methodologies should be integrated into management and knowledge leadership practices (Powell & Liddell, 2003:9; Sterman, 2000; Swart & Kinnie, 2003:120-140; Wenger, 2000:52). The strategic objective is further enabled by networks delivering knowledge-added value (Hansen, Nohria & Tierney 2000:30-35). Leonard and Swap (2004b:90) recommend that all levels of management are included in the construction of a knowledge strategy, transforming tacit and explicit knowledge into a competitive advantage through collaboration (Desouza & Awazu, 2005:12; Kreitner & Kinicki, 1998:281; Malhotra, 2000:115; Polanyi, 1983).

A definition for a collaborative organisation is one where the values and objectives of knowledge workers and leadership are aligned and a climate exists for mutual trust and respect (Nonaka & Teece, 2001:32; Sveiby & Simmons, 2002; Tiwana, 2000b:8). All knowledge is shared and pooled together to optimise the organisation's

operations and opportunities (Lee & Lee, 2000:281; Stokes & Logan, 2004:205; Orlikowski, 2002:249; Petrowski, 2000:308).

Conventional strategies have become inappropriate and obscure the modern organisation's vision. Collaboration can become the driving factor to formulate the strategy for the reinvestment into human capital whereby the organisation attempts to recreate and reinvent its business propositions. The concomitance model represents an organisation that practices and maintains a holistic organisational approach, where human capital is committed and creativity and innovation is recognised as an important tool and embedded within the collective strategic core competencies. Collective problem-solving opportunities are promoted by creating a forum where all relevant participants in the organisation are valued. The concomitance model focuses on the importance of the entire organisational commitment towards creativity as it links directly to strategic intent. The researcher adopted a systems thinking approach to the wider conceptualisation of the constructs introduced via this model.

As outlined it is imperative for leadership to be committed to the new learning organisation to compete effectively in the new knowledge economy. The model furthermore suggests that cross-functional teams should be aligned into creative forums to facilitate the creative and innovative processes needed for economical expansion. These forums should in addition, continuously accommodate and enhance open communication channels to increase the fluidity of information and enable diffusion of strategic knowledge and access to information throughout the organisation.

The organisation's ability to harness the creative and innovative potential of its knowledge workers is driven through creative leadership. This nurtures a culture conducive for the development of tacit assets and unleashes tacit knowledge and imbeds a learning organisation. The model further suggests that the learning organisation excels when it is able to tap into the commitment and capacity of all its members to learn continuously. The building of a shared vision inspires human capital to identify scenarios for the future and develop new propositions through a collaborative team effort. Far greater levels of complexity and uncertainty can be successfully understood and manipulated through leadership's congruence with concomitance the economisation of future scenario and the manipulation of environments allow for more opportunities to arise are be recognised and acted upon

(Garvey & Williamson, 2002:70; Leonard & Strauss, 1998:5; Lipnack & Stamps, 1994:11).

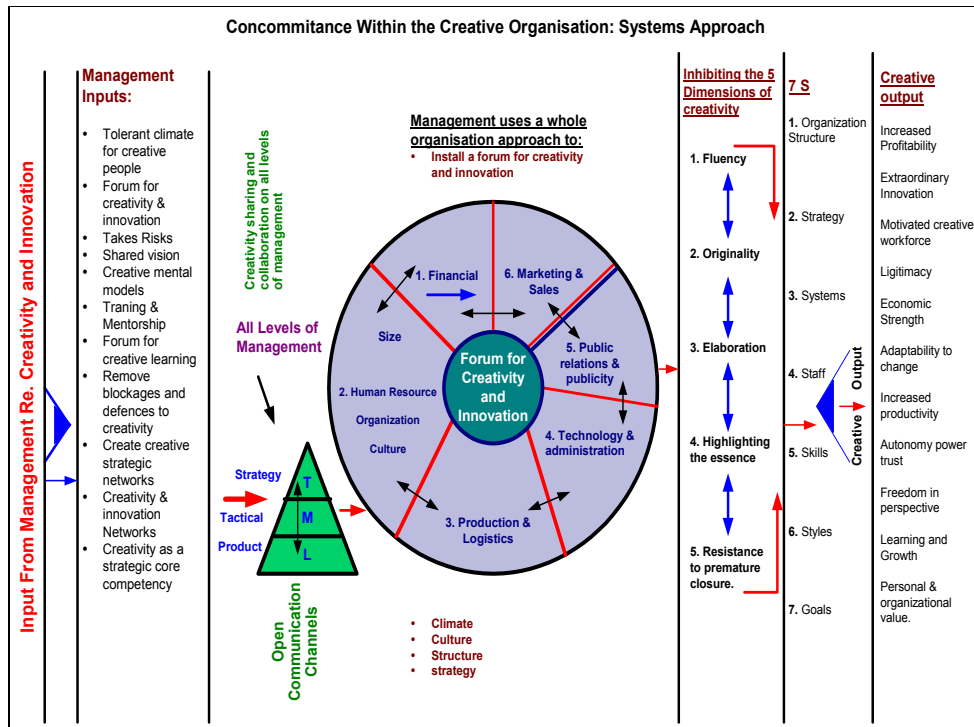


Figure 2.1: Concomitance within the knowledge-based organisation: a holistic organisational approach (Steyn, 2006:118).

For the knowledge-driven organisation, innovation not only represents the opportunity to expand and maintain its knowledge rent advantage, but also the opportunity to significantly influence its position in the industry continuously. Innovation is not only a weapon in the current competitive markets, but also an important source driving social and knowledge entrepreneurship. Continuous innovation through collaboration provides the organisation with the opportunity to leverage concomitant forces to ultimately influence its future position and harness innovation to create purposeful and focused economic and social harvesting to achieve its full potential.

Collaborative leadership is the major driver for organisational concomitance as it synergises and activates cross - functionality within all functions and segments of the organisation - ensuring all levels of management are incorporated. Establishing and maintaining an innovative culture is the responsibility of concomitant leadership. Knowledge leadership is accountable for the contribution made to its capability for

the implementation of strategically sustained innovation (Davila *et al.*, 2004: 264-267).

Leadership's responsibility extends to the overseeing and development of knowledge metrics to ensure a supportative culture and climate, which encourages knowledge librarianship and trading. Through collaborative leadership, organisational learning could reach its optimal potential, as silos are eliminated and new future challenges become shared visions through guidance and concomitant exchanges.

The purpose of a learning organisation is to identify leverage points where change and creatively inspired innovation can have the epitomised beneficial effect for the future organisation. Placing training methodologies in action for personal and team knowledge mastering, creates a high level of knowledge efficiency needed for the consistent maintenance of the organisation's strategic intent. This is achieved through the concomitant installation of a forum instrumental for the establishment of a culture and climate that supports innovation (Cheng, 2005:605-622; Garvey & Williamson, 2002:181; Little & Ray, 2005:16; Love, Fong & Irani, 2005:165; Malherba & Montobbio, 2000:40; Selen, 2000:346-353; Zakaria *et al.*, 2004:6-15).

2.8 CONCLUSION

For organisations to achieve a high level of success in the new knowledge economy, it is essential to develop the forces of creativity, innovation and knowledge productivity. Without creativity, which is internally generated and acquired through training and productive re-engineering, innovation cannot be achieved (Garvey & Williamson, 2002:138). Creativity and innovation should become an essential element of the future organisations' strategic mentality.

It has become apparent from the literature that organisations are still experimenting with the process of introducing creativity to all stakeholders, as these constructs are complex and difficult to implement. Managing knowledge productivity is a well-accepted notion, but managing creativity is a paradoxical concept in modern organisational development. Management implies control, which appears to oppose creativity, but when transformed through creative leadership, innovation and creativity can be harnessed as important determinants for a competitive advantage for sustaining the economy of knowledge (Cheng, 2005:605-622; Politis, 2003:55-56).

By contrast, creative leadership essentially empowers knowledge workers rather than to motivate them. Creative leadership encourages a corporate culture, which encourages inherent talents to be developed for the enhancement of creative and productive work, and thereby provides a climate conducive to creativity (Drucker, 1994a:11-28). Knowledge productivity and creativity are closely linked, both in definition and in human motivation. When leadership introduces communities of practice, it promotes creativity as its primary human capital objective and adds essentially to the knowledge value chain and the overall strategic intent.

Various models were used to provide a theoretical framework for the epistemological review and the concomitance model (Steyn 2006:118) was selected to combine the collective integrative referencing from contemporary literature. The literature advocates that effective commercialisation of innovations depends on an organisation's leadership, culture and its competencies in knowledge production and technology. These opportunities for innovation are strongly influenced by the creative input of leadership, to install the appropriate facilities for the reinforcement of creative exploration of new ideation as an urgent strategic challenge.

In the next chapter the research methodology employed, will be introduced. The sampling techniques, measurement instrument designs and a triangulation of methods together with a proposed data analysis will be discussed.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Throughout the first two chapters of this study, the research questions have been posed. These were derived from insights and perspectives that were accumulated and presented within the reality of the momentous change currently occurring within the knowledge economy. This chapter is an explanation of the research designs implemented and the empirical study conducted to find answers to the research questions. The research sought a general and integrated explanation of the dynamics of leadership and its impact on knowledge productivity based on theoretical models within the boundaries of the contemporary epistemology of knowledge management praxis.

The research was specifically formulated to facilitate the development of an integrated approach for the harnessing of organisational and individual creativity as drivers of competitive advantage. The new generation of knowledge management is the result of the inevitable evolution within this field. The researcher attempts to introduce a new knowledge based leadership paradigm for the achievement of competitive advantage in the impending knowledge economy. This research project endeavours to present a vision of the *postmodernist* reality of knowledge management within the context of intervention, using both inductive and deductive reasoning that refer to a combination of quantitative and qualitative research strategies.

In this chapter, an overview of the research hypotheses, key concepts and selected variables that formed part of the study is provided. This includes a discussion on how the researcher arrived at the findings derived from existing theories and perspectives. The focus of this chapter is on an exposition of the research procedures followed and data collection techniques employed to fulfil the aims of this study. It refers, furthermore, to the units of analysis and the drawing of a scientific sample from which the data analysis is derived. The researcher also provides an overview of the data handling processes, which includes the pre- and post-testing and the application of the diagnosis of the contemporary or *postmodern* organisation.

Due consideration is given to the validity and reliability of the study. The researcher concurs with Baumann (2000:28), Garvey and Williamson (2002:19), and Housel and Bell (2001:73) that the reflexivity of social reality and the fluidity of knowledge creation are constructed as inter-subjective, emphasising thus the importance of the multi-modality of events and relationships within the discontinuous knowledge economy.

3.2 THE MULTI-METHOD APPROACH (TRIANGULATION)

The research design was informed by an approach referred to as research triangulation. This approach is based on a combination of scientific research methods to collect both qualitative and quantitative data from various target groups within the knowledge economy (Couger, 1993:8; Coyle, 2000:225; Csikszentmihalyi, 1996:313; Hussey & Hussey, 1997:75). Due to the complexity of different realities (Leedy & Ormrod, 2001:91), it is often problematic to study a phenomenon in its totality. Multiple methods such as triangulation enable a more holistic perspective on a given context. Hussey and Hussey (1997:75) suggest that triangulation as a research method has a number of strengths and encourages productive research by enhancing quantitative methods supported by qualitative interventions.

The rationale for the triangulation method followed in this research is further expressed by Jankowicz (1994:35) who suggests that questionnaires, interviews and participant observation are potentially overlapping in scope in which the researcher contains the information through qualitative interviews and structured questionnaires, reinforced by observation and evaluated through documentary analysis. This inclusiveness provides validation for the utilisation of both methodologies. Leadership, collaboration and the nature of the current organisational climate in the knowledge economy are integrated to explore the innovation capacity and creative competencies within knowledge-intensive organisations. For this reason, the researcher applied these combined methods of triangulation to explore the relationship amongst individual creativity, knowledge productivity, managerial effectiveness and innovation awareness. Leedy and Ormrod (2001:91) refer to these combined methods as methodological triangulation (Garrick & Rhodes, 2000:54; Huberman & Miles, 2002:54; Jack & Raturi, 2006:345; Reed & Hughues, 1992:92; Tsoukas & Knudsen, 2003:16).

Triangulation entails the utilisation of a variety of data collection techniques to study convergent evidence from different sources. This is specifically applied to enhance synergism, serendipity, scrutiny and structure in the research process. This serves to also enhance validity and reliability of scientific enquiry. Hussey and Hussey (1997:74) and Terre Blanche and Durheim (1999:128) support this notion and describe triangulation as the utilisation of several research methods in a single research paradigm. The main advantage of using triangulation in contrast to only administering one measurement instrument lies in the fact that the reliability and validity of the results obtained will be enhanced, which should positively support the findings of the research (Coleman, 2000:15; Cook & Brown, 1999:385; Cooke, 2000; Crouch, 1980:285; De Dreu & West, 2001:1193; Leedy & Ormrod, 2001:91; Silverman, 2001:20).

The researcher decided on triangulation as a result of the complexity within the knowledge driven environment being investigated and as a point of departure to utilise the possible advantages of interventions to investigate the constructs before and during the intervention, but also to gain more holistic insights to proffer scientific recommendations.

Scholarly discourse in the field of knowledge management provides the empirical grounding of this research design. According to Johannessen *et al.* (1999:116-128), managing and organising creativity and innovation in the knowledge economy requires a new leadership paradigm to establish best practice. To meet these challenges, organisations need to focus their attention towards knowledge-enabled leadership as knowledge is the principal source of economic rent (Nonaka & Takeuchi, 1995:18; Swan *et al.*, 1999:262; Terblanche 1999:2). According to Woodman *et al.* (1990: 23), organisational creativity and innovation are interpreted as the most valuable features for the development of human capital within this transient knowledge-intensive economy. The various dimensions evaluated within this study require different tools to leverage new knowledge to obtain snapshots of the multi-dimensional nature of creativity and recursive innovation in the postmodern landscape.

Organisational creativity intimately relates to innovation since the latter can also be achieved via the culture instituted by leadership. Through incremental or radical initiatives, new ideation could be fomented to produce original future value propositions (Amabile, 1996, 1154–1184; West, 2001, 460–464). These notions

bring to the fore the magnitude of the role-played by leadership. Cohesiveness and the level of cooperation within the organisation are also important factors driving creativity and innovation within the knowledge society (Borghini, 2005, 19–33). This suggests that creativity cannot be studied in isolation but needs to be approached from a holistic point of view, especially as organisational creativity is leveraged both by the individual and collectively by knowledge workers. The fostering of creativity is enacted within a complex and dynamic research arena with both internal and external forces at play.

For instance, the seven phases of creativity are multi-dimensional and refer to the identification and formulation, investigation, exploration, revelation, confirmation, reformulation and realisation within knowledge productivity. A multidimensional research design could lead to meaningful learning and insightful experiences (Abou-Zeid & Cheng, 2004: 261; Tidd *et al.*, 2001:6). Within this research, the focus is on creativity as a process of new knowledge creation as it is discovered and presented to connect and transform the contemporary knowledge-trading organisation. The ability to form associations and analogical connections drive the creative process (Sydänmaanlakka, 2002:148). Levesque (2001:34) suggests three steps for the organisation to install knowledge leadership to enhance knowledge productivity, namely defining leadership's ability to create a culture and climate to facilitate best processes and specifying the knowledge expertise of human capital with reference to the product, business field and the industry particulars. The third step aligns the organisation's internal and the external processes with the strategic intent. This integrative approach to knowledge management also validates the researcher's choice to triangulate.

Twiss (1995:103) explores the organisation's ability to adapt and innovate as primary cognitive styles of creative solution search. The leadership of certain organisations are better positioned and equipped to imbibe and utilise novel ideas harvested from their creative human capital as they are receptive to new ideation and innovation-based problem-solving. Leadership defines the direction and shapes the vision of the organisation to meet the challenges of the new knowledge society. The researcher invites discourse regarding contemporary leadership and notes that leaders who promote knowledge workers as critical assets in braising the organisation for future challenges are pivotal to establish future knowledge competency. These leaders, described as developmental knowledge leaders (Dalkir, 2005:13), are characterised by their ability to inspire trust and develop servanthship to

facilitate effective team exchanges by providing the architecture to support knowledge generation. The researcher utilises this integrative approach to substantiate the multidimensional application of leadership in a postmodern milieu.

From a postmodern perspective, Hamel (2000, 311-329) and Baumann (2000:18) argue that knowledge is dynamic, depending on the interrelationship between culture and leadership in the networked economy. They suggest that the organisational culture relates to fluidity of knowledge and the cultural dynamics deployed (Snowden 2001; Saint-Onge & Wallace, 2003:147; Tidd *et al.*, 2001:336; Brooks, 1994:223). This envisioned culture promotes knowledge sharing through the integration of knowledge tools and taxonomies whereby knowledge access and exchanges are achieved (Brown & Duguid 1991:45; Busse & Mansfield 1980:91; Davenport & Glaser, 2002: 107-110; Garvey, 1999:45; Gruber & Duxbury, 2001:48; Stokes & Logan, 2004: 45; Sveiby & Simmons, 2002: 420-433; Torrance & Ball, 1984).

For the purposes of this study, triangulation is implemented as knowledge socialisation necessitates knowledge exchanges among communities of practice and navigates the organisations innovation repositories (Handzic & Chaimungkalanont, 2004:57). The networks and interactions extract value from the organisation's intangible assets through collaborative exchanges of the collective cognitive schema. Cognitive schemas are mental representations of knowledge that have been formulated through cognitive scripts and are combined with artificial intelligence potential (Amabile & Kramer, 2007). This new intra-connectivity of third-generation knowledge through interconnectivity eliminates organisational knowledge silos (Brewster *et al.* , 2000:213; Kurtz & Snowden, 2003: 462-475) and facilitates a palimpsestic construction of the research design deployed, primarily to gain a prismic understanding of the role of leadership, creativity and innovation within the contemporary organisational knowledge-trading environment.

As already described in Chapter One, the research was grounded by the empirical rationale that forms the basis of the epistemological challenges in the current complex knowledge management environment. This study explores the relationship among creativity, innovation awareness, knowledge productivity and managerial effectiveness and investigates the dynamics of organisational culture and leadership in the postmodern knowledge landscape. The research strategy employed for the purposes of this study could be best described as exploratory descriptive and explanatory in nature and furthermore, the research questions are encapsulated

within the title of this thesis: *“Creative leadership as the essential driver of organisational competitive advantage for sustaining the economy of knowledge”*.

The first question that will be investigated refers to the relationship among individual creativity, innovative ability, knowledge productivity and managerial effectiveness. The second research question explores the development and enhancement of individual creativity and innovation awareness and the effect of learning interventions. The third question enquires into the relationship between organisational culture and climate and the enablement of knowledge solutions through leadership. The fourth research question refers to the required characteristics necessary for creative leadership to enhance and enable a competitive advantage in the knowledge economy.

The following were identified as the specific sub-problems to be explored in this study (refer to Chapter One, 1.3):

- Does leadership encourage fluidity of knowledge in organisations through team exchanges?
- Are organisations harnessing individual ability for creativity and innovation to drive competitive advantage and productive knowledge exchanges?
- Can creative leadership enhance individual and team creativity within organisations?
- What is the role of organisational culture and climate for the facilitation of information flows, knowledge management and the learning organisation?

The researcher is of the notion that knowledge productivity and the capacity to innovate can contribute to advancing the contemporary knowledge-based organisation and aims to contribute to the understanding of the collective harnessing of creativity within organisations. The outcome of this research process within this complex field of knowledge management is to derive meaningful conclusions and to provide a greater understanding of the roles of leadership to facilitate creativity and innovation as drivers for future competitive advantage.

3.3 RESEARCH DESIGN

In designing the research paradigm, an integrated approach was followed to discover, describe and explain new social realities for future reflexive discourse in emphasising the evaluation of new knowledge gained.

3.3.1 The research process

This section elaborates the research design, highlighting the types of research techniques employed and the research paradigm applied. It concludes with the five phases of the research, namely an enquiry into creativity, innovation, knowledge productivity and managerial effectiveness and includes the pre- and post-test intervention studies employed in Phase One. The section then discusses Phases Two and Three and the diagnostic instruments employed. Phase Four presents discussion surrounding the semi-structured interview schedules that were employed and lastly, Phase Five introduces the deployment of the non-directive interviews.

An experimental design was utilised and survey research was used in Phases Two and Three (Hussey & Hussey, 1997:63) to obtain information relating to the management constructs under investigation, and more specifically to determine the relationship that exists among the range of management constructs being investigated. The survey research was completed by surveying a broad population from which a sample was extracted within South African industries which produced respondents (n = 261). The criteria regarding the respondents are discussed in Chapter 3.

3.3.2 Phases of the research

The researcher employed a phased approach to gather the data. The collection of data took place in five phases.

Phase One consisted of an experimental research design which sought answers to research questions one and two: *“Is there a relationship among individual creativity and innovative ability, productivity and managerial effectiveness?”* and *“Can individual creativity and innovative ability be developed and enhanced through learning interventions?”* During Phase One, participants were administered two measurement instruments, namely the *Torrance Test of Creative Thinking* (Torrance

1984) and the *Baseline Management Behaviour Questionnaire* (Kriek, 1990), which measured the five dimensions of creativity and the creative strengths of research participants. Phase One firstly served to establish baseline information and secondly participants were henceforth randomly divided into three independent groups. Group one (n = 111) served as the control group, while groups two (n = 100) and three (n = 50) as treatment groups. The two treatment groups received intervention batteries, which consisted of creativity enhancement exercises, such as the “paradoxical principles” and “creative decision making” using “positive uncertainty” (Gelatt, 1991:60; Handzic & Chaimungkalanont, 2004:58). They received these immediately after the baseline information was obtained from Phase One. Treatment group two (n = 50) received additional intervention batteries, which included the advanced creative decision making tools (Gelatt, 1991) together with the scenario batteries within the construct of formal communities of practice. Treatment group one did not receive the last battery of interventions (see Annexures A4 to A8).

To investigate the research questions in Phase One, two hypotheses were formulated. The hypotheses are stated in Chapter One, Section 1.4 and the detail of the data pertaining to the Pearson Correlation data is perusable in Annexure A9 to A18.

In Phase Two the following question is posed: “*What are the required and overarching characteristics of the current culture in knowledge-intensive organisations within the imminent knowledge economy?*” This phase employed survey research and consisted of an empirical enquiry into leadership principles in the context of such factors as communication, information sharing and organisational culture. The importance of continuous learning, alignment with organisational strategic intent, team exchanges and leadership vision were foundational to this part of the study. The data obtained was also included in the regression analysis (see Annexure B).

This phase of the study involved the collection of quantitative data by means of the *Collaborative Leadership Quotient Instrument* developed by Stokes and Logan (2004). Data obtained in this phase of the investigation was evaluated to establish correlations among the variables tested and to enable the researcher to perform a descriptive analysis and was also included in the regression analysis.

The constructs promoting creative leadership are foundational to this research and include leadership communication, information sharing and ease of access to information, continuous learning and organisational culture, alignment, individual and team exchanges, visionary leadership, culture and trust, culture and team goals, tactical objectives, strategies and organisational culture for knowledge implementation. These constructs represent the main themes that underwrite the measurement instruments used in this triangulated system (Robson, 2002:25; Saunders & Thornhill, 2003:273; Sarantakos 1998:14; Stokes & Logan, 2004: 212).

In Phase Three the current innovation climate of the knowledge organisations under scrutiny are investigated to find a praxis that would develop new leadership initiatives to add competitive advantage in the future knowledge economy. It involved the collection of quantitative data by means of the *Innovation Climate Survey* developed by Davila *et al.*, (2004:290). The questionnaires were distributed amongst the two intervention groups that were selected from the various industries who concurred to the prescribed quasi-experimental criteria for research in the knowledge management field. The data was evaluated by the researcher to determine correlations between the constructs investigated and to provide a descriptive analysis of the variables related to the innovation culture, which were embedded within the selected organisations (see Annexure C).

In Phase Four qualitative research was deployed by means of a semi-structured interview schedule and included seven focus groups taken from both treatment groups, which consisted of 56 top and middle management knowledge workers within the chosen sample of knowledge management praxis. A semi-structured interview schedule (Annexure D) was developed by the researcher to deliver qualitative inferences. Focus groups represented knowledge workers that were extracted from the sample to gain an in-depth understanding of the variables to permit for data gathering previously not included under standardised measuring instruments (see Annexure D).

In Phase Five non-directive interviews were utilised which included knowledge management experts and a diverse group of research participants to collect additional data, to clarify deficiencies that might have existed and to serve as a resonator regarding new development in the study field. Individual interviews with both treatment groups, consisting of 48 middle and top management level

participants were performed to provide a wide scope of information for the final analysis (see Annexure E).

The table below reflects the various phases of the research and indicates the methods of data collection associated with each phase as well as the objective of each phase. A more detailed description of each phase follows after the table.

Table 3.1: The research process

Phase D	ata gathered	Activities M	ethod	Sample size	Objectives
1	Quantitative	<ul style="list-style-type: none"> • Experimental design • Pre-testing • Control group and two intervention groups • Post-testing 	<p><i>Torrance Test of Creative Thinking.</i></p> <p><i>Baseline Management Behaviour Questionnaire</i> (Kriek, 1990).</p>	n = 261	To firstly obtain base line information from pre-testing to measure creative and innovative ability and secondly conduct pre-testing to assess creative and innovative development through intervention programmes.
2	Quantitative	<ul style="list-style-type: none"> • Survey research 	<i>Collaboration Leadership Quotient Instrument</i> (Stokes & Logan, 2004).	n = 261	To measure the characteristics and dynamics of collaboration leadership required for third generation knowledge management.
3	Quantitative	<ul style="list-style-type: none"> • Survey research 	<i>Innovation Climate Diagnostic</i> (Davila et al., 2004).	n = 261	To assess the innovative climate and culture within the particular organisation (Individual and organisational dynamics).
4	Qualitative	<ul style="list-style-type: none"> • Focus group interviews 	Semi-structured open-ended interviews elaborating on the leadership and innovation diagnostic survey.	8 focus groups purposefully selected from all SA industries n = 57	To evaluate organisational and individual attitudes towards creative leadership and innovation dynamics within and outside organisational structures.
5	Qualitative	<ul style="list-style-type: none"> • Non-directive interviews 	Non-directive structured and unstructured interviews. Themes partially taken from Davila et al., (2004)	Individual interviews n = 48	To gather information nuances and subtleties through informal engagement with leaders in knowledge management praxis.

3.4 MEASURING INSTRUMENTS

The research process involved a number of different research methods in the collection of data, also defined as methodological triangulation of quantitative and qualitative data, which was discussed in the introduction of this chapter. The following section elaborates on the specific detail inherent to the individual phases and probes the propositions made by the researcher.

The *Torrance Test of Creative Thinking* (1984), the *Baseline Management Behaviour Questionnaire* (Kriek, 1990), the *Leadership Collaboration Quotient* (Stokes & Logan, 2004) and the *Innovation Climate Survey* (Davila *et al.*, 2004) were administered during this exploration. These instruments are highly regarded in knowledge management practice as they consistently achieve a high level of internal validity and reliability. The empirical findings have been widely published in the literature relating to knowledge management in the knowledge economy. For these reasons, they are considered to be the most appropriate instruments for this study (Saunders *et al.*, 2003:81).

3.4.1 Phase One

This phase engaged in an experimental research strategy and introduced the *Torrance Test of Creative Thinking Diagnostic* (1984) and explains the data collection process. The *Baseline Management Behaviour Questionnaire* (Kriek, 1990) is included in Annexure A3(ii). Innovation awareness, managerial effectiveness and knowledge productivity are the three variables measured with this instrument

3.4.1.1 Objective

The objective of Phase One was to collect data that could be used to provide statistical evidence to answer research question one “*Is there a relationship among individual creativity and innovative ability, productivity and managerial effectiveness?*” and research question two “*Can individual creativity and innovative ability be developed and enhanced through learning interventions?*”

3.4.1.2 Measurement instruments

The researcher selected an experimental design to be used for the gathering of applicable data, namely the *Torrance Test of Creative Thinking* (1984) and the *Baseline Management Behaviour Questionnaire* (Kriek, 1990). The two instruments are discussed below.

3.4.1.2.1 Torrance Test of Creative Thinking (1984)

The *Torrance Tests of Creative Thinking* has been widely used in a great variety of research projects, including leadership and management studies where it is used to assess the creativity levels of managers (Torrance 1984). Torrance (1984) developed three Figural tests and a Verbal test to assess creative thinking and additional creative strengths of the research participants based on the operational definition of creativity. The major categories of creative thinking ability measured by the instrument are fluency, flexibility, highlighting the essence, elaboration and resistance to premature closure.

The *Torrance Test of Creative Thinking* measures the five dimensions of creativity and the additional creative strengths of participants by using the A, B and C level pictorial and innovative title questions, which are included in the *Torrance Test of Creative Thinking* test battery. The type of data provided by these sections of the *Torrance Test* is quantitative.

The *Torrance Test of Creative Thinking* was developed by Torrance (1984). The battery of tests used to assess creative thinking have been made available for use in research and experimentation after about fifteen years of sustained research and development by Torrance and his associates at the University of Minnesota and the University of Georgia as well as by investigators throughout the world. Since 1980, the *Torrance Tests of Creative Thinking* measurement instrument has been widely used in a great variety of research projects and several encouraging long-range validity studies have been reported.

The *Torrance Test of Creative Thinking* is used to assess the creativity levels of managers, based on the operational definition of creativity, according to Torrance (1984). The *Torrance Test of Creative Thinking* manual for administering this test is used for Streamlined Scoring and for the standardisation of scores obtained by

research participants. Three batteries of test activities were employed for the purposes of this research, which were the Verbal Form A index and the A and B Figurative indexes. The standard score sheet for measuring adult creativity is included in Annexure A. The standard score sheet is also aligned with the measurement of managerial effectiveness within the organisational leadership and knowledge management arena for the purpose of this particular study.

As mentioned above, the major categories of creative thinking ability that Torrance measured are fluency, flexibility, highlighting the essence, elaboration and resistance to premature closure. The researcher deems it important to elaborate on these five dimensions as they form a core component of this multi-modal exploration.

- **Fluency:** The production of fluency focuses on the newness or uniqueness of ideas as a criterion and maintains that an act is creative if the respondent reaches the solution in a sudden closure that necessarily implies a degree of novelty applied by the respondent. The idea might be artistic, mechanical, theoretical or administrative, particularly in its function of solving organisational problems or in the decision making process (Amabile, 1998: 76-87).
- **Originality:** Osborne (1992:47) demonstrates how business philosophy and the possibility of higher productivity is derived from original thinking by creative managers who can respond to leadership and new behaviours where leadership exemplifies openness to influence, commitment to the success of others, willingness to acknowledge their own contributions to problems, personal accountability, originality and trust. Torrance describes originality as creative potential versus conformity. Creativity has been seen as contributing original ideas, different viewpoints and new ways of investigating problems. Conformity is seen as doing what is expected by not disturbing or changing the *status quo* (Amabile, 1998, 76–87).
- **Highlighting the essence:** Majaro (1988:89) postulates that even though high quality ideas are produced by the respondent, the dividing line in creative thinking is the fact that responding impulsively to ideas as they trigger the inner imagination and fantasy, leads to new discoveries and unorthodox solutions. It is difficult to observe this process as patterns of behaviour and thoughts are unconventional and the creative impulse enriches the quality of experience and

activities by aligning these thoughts and feelings with the problem and simultaneously discovering the best proposition. Leonard and Swap (2004b:88-97; Sarantakos 1998:26; Silverman 2001:15) postulate that a rudimentary diagnostic skill is used to span through a huge amount of information and divergent problems, highlighting three qualities. These qualities are discovery, adventurousness and congruency. Leonard and Swab (ibid.) are insistent that a creative environment should provide for freedom to respond directly and accurately to highlight the essence of the problem in this transient economy.

- **Elaboration:** Sternberg (2000:67) makes the assumption that the creative manager identifies the solution to the problem through careful observation and participation and thereby understands and has insight into the broader environment as it reflects in this systematic process through the integration of diverse information. Ongoing idea creation and elaboration on those ideas are transformed into a complete product, which adds value to the organisation's full embodiment of inventions, designs and scientific theories. Majaro (1988:88) postulates that managers ideally should emphasise the capacity to think by analogy as this is fundamental to finding alternative and novel responses and solutions.
- **Resistance to premature closure:** Ideas that are generated through the suspension of judgement are intuitive and focus on different angles or levels to save ideas from premature rejection. Knowledge managers who can suspend judgement are more valuable to the organisation during idea generation exercises, such as brainstorming or creativity enhancement workshops. They furthermore increase the quality and quantity of the team's creative output, which is achieved by a complex selection of albeit unusual ideas and spontaneous participation in group discussions. According to Majaro (1988) the group decides which ideas should be implemented and where suspended judgement should be applied (Amabile, 1998: 76–87).

Torrance (1984) identified thirteen creative strengths, which are important capabilities or skills required to produce a creative response. The responses obtained from the respondent to both the verbal and figural tests provide evidence for the existence of these abilities, which are scored through the figural and verbal qualities of creative potential.

The thirteen creative strengths measured by applying the *Torrance Test of Creative Thinking* (1984) are the emotional responsiveness of the response, articulation and storytelling, movement or action, expressiveness of the titles, synthesis or combinations, unusual visualisation, internal visualisation, extending the boundaries, juxtaposition of two incongruities, richness of imagery, incorporation of abstract information and in-depth utilisation of source. The Streamline Scoring System measures the creativity dimensions and creative strengths of the participants and will be included as it contributes to the validity and reliability of this measurement instrument.

Scoring for the fluency reflects the respondent's ability to produce a large number of ideas with words. The fluency score is the number of interpretable relevant responses. Activities 2 and 3 are scored for fluency, to be considered, a response must contain the incomplete figure (activity 2) or the parallel lines (activity 3, Form A) or the circle (activity 3, Form B).

Scoring for the Originality\Verbal Flexibility represents a research participant's ability to produce a variety of ideas, to shift from one approach to another, or to use a variety of strategies. The scoring of originality is based on the statistical infrequency and unusualness of the response. When evaluating originality, the focus must be on the use of the stimulus (incomplete figure, pair of lined or circle) rather than on the title. The scorer must look at the specific use made of the stimulus.

Scoring for the Abstractness of Titles relates to the research participant's ability to synthesise and organise cognitive processes. At the highest level, there is the ability to capture the essence of the information involved, to know what is important, enabling the respondent to see the picture with more depth and richness.

Scoring for Elaboration is based on two assumptions that underpin the scoring of elaboration for the Figural tests. The first is that the minimum and primary response to the stimulus figure is a single response. Essentially, the scorer must ask, "*What is the minimum detail that I must see for this to be a?*" Examples are given in the regular scoring manuals of some of these minimum sets of detail and for some of the most common responses. The second assumption underlying the scoring of elaboration is that the imagination and exposition of detail is a function of creative ability, appropriately labelled elaboration.

Resistance to Premature Closure is based on the research participant's ability to persist and delay closure long enough to make the mental leap that would effect original ideas. Less creative persons tend to leap to conclusions prematurely without considering the available information, eliminating chances of more unique and original images.

The Checklist of Creative Strengths provides a set of 13 criterion-referenced measures in contrast to the norm-referenced measures. The Verbal Average is the average score for the verbal fluency score, verbal flexibility score and verbal originality score. Figural Average is the average score of figural fluency, figural originality, titles, elaboration and resistance-to-premature closure.

The Creativity Index is calculated after regular scoring, and scorers review each test for evidence of specific creative strengths. Ratings on creative strengths are given for each item on the checklist of creative strengths. Pooling these ratings and the average standard score from the profile yields the creativity index, which has been found to be indicative of overall creative potential. An interview is conducted with all research participants and the qualitative data obtained is used to score the checklist of creative strengths of every individual participant. The researcher inserted an empty page during testing for the use of additional remarks or drawings and included these during the process of evaluation.

Referring back to the operational definition that Torrance (1984) provided for creativity, the emphasis was on the fact that creativity should be understood as a process which produces a product that is focused on the person and which is influenced by the effects of the environment (Amabile, 1998: 76-87). The approach was not the identification of creative thinking as a single ability component. Instead, the scientific problem-solving method for the development of these tests was utilised as rationale. Principles such as resistance to early closure, structuring, integrating, problem-solving and control of tension long enough to make the mental leap necessary, breaking away from the obvious, the tendency towards disruption of structure in order to create the new, and finding purpose for something that has no definite purpose and to elaborate on it in such a way that the purpose is achieved, were included in the evaluation scoring methodology.

3.4.1.2.2 Reliability and Validity of the Torrance Test of Creative Thinking

The *Torrance Test of Creative Thinking* (1984) is a standardised instrument offering a high level of internal reliability (Saunders *et al.*, 2003:81). All questions and scales are standardised and generically applicable to all management populations. The test does not include the universum of creative abilities but includes standardised scales for the Verbal and Figural Forms A and B. The sets of tasks contained in the *Torrance Test of Creative Thinking* Figural and Verbal batteries, Forms A and B, which were used in this research, sampled a wide range of creative abilities and provided the researcher with an adequate assessment of the respondent's creative potentialities. The test tasks selected for inclusion in the Figural and Verbal Forms A and B were chosen deliberately by the researcher because it is believed to enhance the different dimensions assessed. Cronbach (1987:414) postulates that if psychological instruments that are used in research are standardised, they offer a high level of internal validity.

A number of test-retest reliability studies were conducted in all forms for the test tasks that make up Verbal and Figural Forms A and B of the *Torrance Tests of Creative Thinking*. Many studies have been conducted to conclude adequate test-retest reliability for all respective batteries of this measurement instrument.

Reliability and usability of the *Torrance Test of Creative Thinking* has been verified by over 1 000 published research articles based on the application of the test. Torrance has been open to criticism throughout the development of the test and many aspects of the test were adapted and changed since it became available for empirical application.

The content and construct validity of the scoring variables constituting the streamlined scoring system have been explored in a factor-analytic study, which assembled considerable theoretical and empirical research to support the content validity of each of the indicators used for scoring. Leedy and Omrod (2001:134) and Jankowicz (1994:145) support the conservation study, yielding measures of conservation of quantity, length, distance, and discontinuous quantity. Most of the creativity variables in this investigation correlated significantly with all five the dimensions of creativity.

To ensure content validity, two important questions should be considered. Firstly, whether the instrument is really measuring the kind of behaviour that the researcher assumes, and secondly, whether it provides an adequate sample of that kind of behaviour. To establish whether a measuring instrument has content validity, the definition of the concept and the information collected should be measurable. The important criteria for content validity of this investigation have been adhered to by the researcher. There was consensus by researchers in this field about the definition of the concept to be measured. The concept is multi-dimensional, consisting of several sub-concepts, and the research process is lengthy and complex. A specific correlation co-efficient is needed to obtain valid assumptions (Jankowicz, 1994:134).

Criterion validity, variously called concurrent validity or predictive validity, involves multiple measurements of the same variables. The term concurrent validity has been used to describe a measure that is valid for measuring a particular phenomenon as the present time, while predictable validity refers to the measure's ability to predict future events. An example of the former would be a creativity scale that is capable of distinguishing between creative and non-creative research participants. This measuring instrument is valid for current or future discriminations and is the central point of criterion validity. The measurement process entails the use of an additional measurement of the concept as a criterion by which the validity of the new measure may be checked (Hussey & Hussey, 1997:57; Jankowicz, 1994: 134).

When dealing with construct validity, a large number of research studies employing the *Torrance Test of Creative Thinking* have been conducted to increase an understanding of the constructs being measured by the *Torrance Test of Creative Thinking*. Some of these studies involved the comparison of the personality characteristics of research participants achieving high scores on the test with those research participants who achieved low scores, while others involved the establishment of correlations between creativity and other measures. Torrance demonstrated a clear theoretical process underlying the test. The test scores indicated that a high degree of reliability and validity were achieved.

3.4.1.2.3 The Baseline Managerial Behaviour Questionnaire (see Annexure A3 ii).

The *Baseline Management Behaviour Questionnaire* employed by the researcher relates to knowledge productivity, managerial effectiveness and the innovation

awareness levels of research participants. The researcher selected the *Baseline Management Behaviour Questionnaire* (Kriek, 1990), which has been used extensively in industry to investigate organisational leadership in this phase. The results obtained provided an initial basis for Phase One for the determination, planning, implementation and the evaluation of the selected interventions.

The *Baseline Management Behaviour Questionnaire* measures innovation awareness, knowledge productivity and managerial effectiveness. The baseline values obtained will be used to establish the impact of the intervention after a period of 24 months.

The *Baseline Management Behaviour Questionnaire* was developed by Kriek (1990) and is widely used in all industries in South Africa and abroad. The *Baseline Management Behaviour Questionnaire* was developed to measure the managerial effectiveness and the productivity levels of individual managers within the knowledge economy. The instrument focuses specifically on management appraisal, organisational development and training and establishes norms for effective managerial behaviour in knowledge organisations by establishing standardised scales for innovation awareness, managerial effectiveness and knowledge productivity.

Managerial effectiveness and knowledge productivity are the primary mainstays of the investigative process of this research project and are measured by the following dimensions contained in this questionnaire:

- **Dimension one:** General elements of management (planning and organising, delegation, control and development of subordinates);
- **Dimension two :** Managerial style (sensitivity, leadership, tenacity and negotiation);
- **Dimension three:** Decision-making and problem-solving (analysis of problems);
- **Dimension four:** Technical and professional (energy, initiative, tolerance for stress, flexibility and adaptability);
- **Dimension five:** Effective communication and establishing open communication channels;
- **Dimension six:** Development (self-development and development of team);
- **Dimension seven:** Overall job performance;
- **Dimension eight:** Overall level of knowledge productivity; and

- **Dimension nine:** Innovation awareness: the participant's involvement and readiness to innovate is measured together with judgement, creativity and decisiveness. Innovation awareness is an important variable, which is measured in this dimension and attracts a separate score.

This numerical innovation-rating instrument is based upon a five point Likert scale where one equals low and five equals high. Research participants were required to rate their innovation awareness within and outside their organisational environments. The innovation awareness instrument was adapted from the *Baseline Management Behaviour Questionnaire* (Kriek, 1990) to indicate a separate score, which was compared to the baseline score and to implicate the validity of the measurement instrument. This instrument was used for this study as it has been implemented in various consulting and research projects. This instrument is designed around the knowledge economy constructs and shows evidence of the constructs measured within this research paradigm.

Kriek (1990) suggests, in a review of the *Baseline Managerial Behaviour Questionnaire*, that the critical elements of management are planning, organising, control and leadership through pro-active activation. The sub-elements of management, which are co-ordination, delegation, communication and motivation, are critical tools for a manager's success in human capital management. Kriek and co-workers at Baseline Instruments Limited have completed several reliability studies, which indicate that it is possible to keep the scoring reliability of the norm-referenced, and criterion referenced above the 90 levels.

Two major predictability studies have been completed during recent years and large batteries of research participants were tested across all industries in South Africa. The data was analysed according to the different dimensions of knowledge management and the scoring variables were correlated with each of the particular criteria. In the first and second batteries, the number of research participants tested indicated that the total of criterion-related indicators and the managerial dimensions are consistently significant throughout most industries in South Africa.

3.4.1.2.4 Reliability and Validity of the Baseline Management Behaviour Questionnaire

The *Baseline Management Behaviour Questionnaire* is a standardised instrument offering a high level of internal reliability and validity (Saunders *et al.*, 2003:81). Reliability focuses on the consistency of the measurement obtained from the variables under scrutiny and also implies that the same result should be obtained when the test is re-measured, assuming the situation has not changed. Thus, the *Baseline Management Behaviour Questionnaire* meets these requirements (Jankowicz, 1994:134)

The statistical method for inferring the relative reliability or unreliability of this test and the subsequent correlation was considered. The reliability of the *Baseline Management Behaviour Questionnaire*, the *Collaborative Leadership Questionnaire* and the *Innovative Climate Survey* were assessed using three methods: split-half reliability to check internal consistency on the questionnaire; test-retest assessment using continuous scores and checking results at different times; and thirdly, the use of alternative or equivalent form reliability.

The *Baseline Management Behaviour Questionnaire* contains 165 basic questions for type results and assists in increasing reliability. Test-retest reliability of the *Baseline Management Behaviour Questionnaire* demonstrated consistency over time. Where changes in type are reported, it often concerns only one managerial dimension and not the entire profile. The researcher can expect to find some margin of error in these test results. The concept of error of measurement, as applied to the *Baseline Management Behaviour Questionnaire*, could impact on the reliability of the managerial dimensions as the questionnaire was firstly completed by a superior, secondly by a peer, thirdly by a subordinate, and finally by the respondent. These scores were independently calculated on the averages and then used for statistical inference. Several reliability studies engaging with the above variables were thus completed. These studies have established that this standardised instrument possesses scoring reliability based on norm referencing and criterion referencing applicable to all the levels evaluated in this test.

Validity is determined by how well a test measures what it intends to measure. Cozby (1989:165) discusses the different ways in which validity can be measured and postulates that face validity focuses on whether the client agrees with the findings.

Part of the administration procedure of this instrument requires validation from the respondent while content validity covers the domain of whether the questionnaire is appropriate and relevant (Leedy & Ormrod, 2001:176).

In respect of construct validity, the focus is on the psychological meaningfulness of a test and how it relates to measuring behaviour in situations where the construct is perceived to be an important variable. Most of the validity evidence of the *Baseline Management Behaviour Questionnaire* is obtained under this category of construct validity.

3.4.1.2.5 Sample

During the entire research process, the researcher employed theoretical purposive sampling to create an operational ideal population (Saunders *et al.*, 2003:124). The researcher selected the sample using a non-probability sampling method. This was selected for the purpose of this study as the researcher intended to institute a control group as well as two treatment groups that would undergo a pre-planned set of diagnostics and intervention modules for pre- and post-testing research schedules. When research is exploratory in nature and the pool of suitable research participants is unknown, then non-probability sampling is the most suitable method to collect data (Saunders *et al.*, 2003:125-128). The objective for using non-probability sampling is derived from the researcher's aim to generate theory and a wider understanding of the social and theoretical processes of the constructs under investigation. In this particular instance, representativeness was less important than the essential data gathered from research participants. The researcher reinforced non-probability sampling for judgement as it was used to select those particular research participants who exhibited the appropriate characteristics relevant to this research (Leedy & Ormrod, 2001:124).

Purposive or judgment sampling (Saunders *et al.*, 2003:143-146) was used to conduct the research as required by the theoretical demands of the study. Theoretical sampling is judgemental as the researcher selected a sample based on the theoretical constructs under investigation, which can be regarded as ideal of the total population. The judgement will be formulated on the basis of the available information and the researcher's prior knowledge about the research participants. This sampling method relies heavily on the subjective considerations of the researcher and less on the scientific criteria for randomness. This sampling method has

empirical application in light of the fact that the researcher has a broader understanding of the sample being studied (Saunders *et al.*, 2003:127).

An initial sample, which consisted of three hundred research participants (n = 300), was used. The sample (n = 300) was tested for the purposes of collecting baseline information from which conclusions could be derived at the end of the research project. Thirty-nine questionnaires were contaminated and discarded, which rendered the total respondents used for the purposes of this research project equal to two hundred and sixty one research participants (n = 261).

The sample size for Phases One, Two and Three consisted of two hundred and sixty one top- and middle level managers from a wide variety of industries in South Africa specifically engaged in innovation and creativity initiatives in the context of knowledge management and where future knowledge propositions were included in the future strategic intent of the businesses in which they were involved (n = 261).

Two treatment groups were selected from the sample population. Treatment group one consisted of one hundred research participants (n = 100) and treatment group two consisted of fifty research participants (n = 50). A control group consisting of one hundred and eleven research participants (n = 111) was constituted which represented the research participants not selected for the treatment groups, but who were willing to participate in the research project.

All research participants who participated in this phase of the research project were subjected to post-testing after eighteen months to establish the impact of the interventions administered during this research period. The maturation of the sample was successful although two percent of the sample was naturally excluded. The core strategic implications included knowledge acquisition for harvesting and trading and the exposure to knowledge worker roles and profiles. Further criteria were based on the organisation's involvement with creativity and innovation as a critical part of organisational development techniques and creativity and innovation as a specific strategic intent in the organisation. Although these criteria were important pre-conditions for sampling purposes, knowledge experts were also included in the sample to provide additional perspectives and to create a wider application in this particular field of study (Cozby, 1989:35; Saunders *et al.*, 2003:126).

The target sample was selected from all industries in South Africa and the rationale for using a probability sample was to represent as broad a sample as possible.

The sample was taken from the following industries (See Figure 3.1 below):

Industry Sample	Size	Percentage
Insurance industry	22	8.4
Government	26	10.0
Medical sector	23	8.8
Legal sector	25	9.6
Financial sector	24	9.2
Entrepreneurs	22	8.4
Education and Training	23	8.8
Business Consulting	22	8.4
Marketing and Sales	25	9.6
Engineering	21	8.1
Human Resources	28	10.7
Total	261	100

Figure 3.1: Industry sample

The research participants were purposively selected according to knowledge worker parameters and criteria suggested by Skyrme (2000: 261) and Housel and Bell (2001; 32) within the above industries. The ideal population for the purpose of this research includes the following criteria within knowledge management praxis:

- Three to four years managerial experience within knowledge management;
- Top and middle level managers on level five to eight according to the Patterson scale;
- All managerial dimensions were part of their job descriptions;
- Trading and dissemination of knowledge instead of the traditional production factors;
- Main responsibilities include new knowledge creation and the search for continuous new knowledge combinations to enable innovation within their spheres;
- Work within groups to utilise shared knowledge for the creation of new value for knowledge harvesting are mainly opportunity driven through efficient application of knowledge;

- Responsible for the creation of future wealth through the socialisation of knowledge;
- Exposed to group and team interactions regarding knowledge productivity;
- No differentiation between gender or race.

Research participants were also selected on the basis of their involvement and experience in knowledge management practices and a specific prerequisite for the participation in this investigation was that the organisations, where the research participants were employed, were all managed by the philosophy of intellectual capital as a primary organisational asset driver for competitive advantage in that particular industry or sector.

3.4.1.2.6 The Intervention Modules for Pre- and Post-Testing

Intervention batteries were administered to the participants who were involved in the pre- and post-test phase of the research process. These intervention modules were based on creativity enhancement exercises using research by Gelatt (1991), Skyrme (2000), Amabile (1998) and Sternberg (2000) that enhanced creativity and innovation in the individual and organisational contexts. In addition, the researcher combined these with a wide range of creativity awareness methods, such as creativity scenario planning and creativity funnelling processes based on Torrance (1984). Furthermore creative decision-making and innovative awareness, using positive uncertainty (Gelatt, 1991:1-65), introduced the paradoxical principles, personal paradigm shifts and creative user case studies to facilitate growth in personal creativity and introduced new mental models for creative thinking. The researcher also included Amabile's (1998) and Sternberg's (2000) research regarding interventions to enhance creative thinking. Scenario planning portfolios were included, which were administered to the community of practice, intervention group two (See Annexure A4 to A9).

3.4.1.2.7 Data collection

Appointments were made with the human resource management departments of selected organisations and government institutions throughout diverse industries in South Africa. Appointments with research participants were scheduled and a creative environment was constructed. The *Torrance Test of Creative Thinking* (1984), the *Baseline Management Behaviour Questionnaire* (1990), the *Collaborative Leadership Questionnaire* (2004) and the *Innovation Climate Survey* (2004) were administered in the same sitting during March 2005. The sample size was 261.

The two measurement instruments were administered simultaneously because both questionnaires require similar environmental settings to measure the dimensions under investigation.

The *Torrance Test of Creative Thinking* (1984) requires ninety minutes and the *Baseline Management Behaviour Questionnaire* (1990) requires one hour to be completed. The *Collaborative Leadership Instrument* (2004) takes twenty minutes and the *Innovation Climate Questionnaire* (2004) takes fifteen minutes to be completed. The researcher is a qualified and registered psychometrist and was consequently able to administer, facilitate and score the tests. In total, one hundred and eighty five minutes were needed to complete all questionnaires.

Torrance (1984) advocates that when testing an atmosphere conducive to creative thinking should be constructed. The researcher endeavoured to create this atmosphere by providing a quiet space, playing classical music and providing snacks and soft drinks. Sufficient time was allocated to research participants to familiarise themselves with the environment.

Although the research participants were provided with pre-care information prior to the testing phase of the research, the research situation and intentions were again explained by the researcher. Any queries relating to participation, interventions and confidentiality issues were answered. The researcher stressed the importance of the intervention and introduced the electronic interface website, <http://www.centreforinnovations.com>, which was constructed for the purpose of this research project. This site is available for exchanges and support of innovations from all industries, art, and communication and offers related literature.

Two treatment groups received creativity-training interventions over a period of eighteen months, which included scenario planning initiatives, creativity awareness exercises and group and individual innovation exchanges (Annexure A). Face-to-face training and non-interactive participation through a website also took place. A website allowed research participants to participate in the research project unhindered after hours (www.centerforinnovations.com). Communication channels between the researcher and the research participants were established to ensure continuous constructive interaction since the inception of the project.

The interventions administered to the treatment groups consisted of the following interventions (Annexure A). Intervention Battery Schedule One consisted of intervention stage one and intervention stage two of creative decision making exercises. Positive uncertainty was a key aspect of this course to establish a creative and innovative awareness amongst research participants (Annexure A). Intervention Battery Schedule Two contained additional scenarios (Annexure A), which included the following scenarios:

- **Scenario one:** 2010 – Create a best-worst case scenario. What innovations can be used in both scenarios?
- **Scenario two:** Global energy sources. There is a need for new energy sources. Apply creativity to innovatively solve the problem.
- **Scenario three :** Create new innovative techniques for secure financial transactions with specific emphasis on money laundering, fraud and corruption
- **Scenario four:** Global communication. Innovate!
- **Scenario five:** Health and wellness. Optimise!
- **Scenario six:** Education. Create a better world.
- **Scenario seven :** Cellular phones for information and knowledge enablement; global communication.
- **Scenario eight :** Work place scenario painting exercise. Best and worst case scenarios to be painted. Present value proposition on canvas; creative brief.
- **Scenario nine :** Develop logo, slogan and trademark for knowledge identity enablement in the workplace.

Post-testing commenced in March 2007 and measured the participants' creativity levels, innovation awareness, knowledge productivity and managerial effectiveness. The *Torrance Test of Creative Thinking* and the *Baseline Management Behaviour Questionnaire* were re-administered during this phase of the research.

3.4.1.2.8 Data handling and statistical analysis

Once the *Torrance Test of Creative Thinking* questionnaires were returned, they were manually assessed by the researcher according to the pre-described evaluation criteria included in the test. Hypothesis testing was performed to establish whether the results obtained were significantly different from the expected values and the correlation co-efficient, which was obtained from the scoring variables. This standard table of the test was scrutinised to ascertain the validity and reliability of the co-efficient random scores as they relate to the South African managerial context (Annexure A). The data was analysed according to the structured pre-described method of the test. The number of research participants and their obtained raw scores were analysed by the researcher to formulate recommendations and to establish the creativity indicators and creative strengths that could be derived from the variables under investigation. The *Torrance Test of Creative Thinking* was assessed on a raw score, standard score and a percentile obtained on all five dimensions respectively, including the total creativity score, which was statistically manipulated to deliver a mean score that is indicative of the overall creativity of participants tested.

The standard scores, according to the *Torrance Test of Creative Thinking*, are obtained through the streamlined scoring sheet and are recommended to assessors as it reduces scoring errors and assists in identifying the creative strengths of the respondent and serves as a record for continuous referencing. The raw scores obtained for each of the five norm-referenced measures of the streamlined scoring can be manipulated to provide a variety of scores that enable the researcher to compare sets of scores with references or norm groups. For example, raw scores can be converted to a percentile rank, T score, Z score, or a standard score (such as the AGCT, deviation IQ's CEEB, etc.). The type of score derived from the manipulation and its value to the researcher most often depends on the intended use of the score. The emphasis in this study was on knowledge management, which made particular reference to the management norm-measures provided in this diagnostic.

The *Torrance Test of Creative Thinking* manual (1984) provides tables for converting raw scores for the five norm-referenced measures to standard scores, using 100 as the mean and 20 as the standard deviation (Annexure A). This score can be

converted, if desired, to a “T”-score by dividing the standard score by two. The score can be converted to another score such as for the *College Entrance Examination Board* test and other college-admission tests by multiplying the standard score by five. An estimate of the percentile rank can be derived from the small profile scale on the Streamlined Scoring Sheet. Standard scores of the *Torrance Test of Creative Thinking* are determined on the basis of grade level national norms, since creative development is not always linear and scores at each successive grade level are higher than the previous grade. These norms are based on large numbers (1 000 to 3 000 per grade level).

Research culminated in the analysis and interpretation of the data set, which was collected. The analysis process involved realigning the data in order to assess significant differences resulting from interventions and demographic characteristics. The aim of this analysis was to relate empirical findings to theoretical viewpoints and to find new applications that could add new theoretical value to management practices in the future knowledge economy (Hussey & Hussey, 1997:17; Leedy & Ormrod, 2001:121).

Data gathered during the pre- and post-tests by means of the survey instruments administered were captured into a Microsoft Excel spreadsheet. The data was to serve as statistical support for the testing of a number of hypotheses relating to the first two research questions, namely *“Is there a relationship among individual creativity and innovative ability, productivity and managerial effectiveness?”* and research question two *“Can individual creativity and innovative ability be developed and enhanced through learning interventions?”* (see Annexure A1).

The following hypothesis tested if any relationship exists between individual creativity and innovative ability, knowledge productivity and managerial effectiveness. For this, Pearson Correlation coefficients were calculated and tested for significance:

H_0 : Correlation coefficient_{*i,j*} = 0

H_1 : Correlation coefficient_{*i,j*} ≠ 0

where *i, j* = test variables

The second set of hypotheses tested for significant differences between pre- and post-tests scores. Significant increases in mean scores would provide a basis for

arguing that creativity and innovative ability were developed through learning interventions. The following hypothesis was stated:

H_0 : Sample mean (pre-test score_i) = Sample mean (post-test score_i)

H_1 : Sample mean (pre-test score_i) < Sample mean (post-test score_i)

where i = test variable (i.e. fluency, originality, highlighting the essence, elaboration and resistance to premature closure)

Non-parametric statistics (Mann-Whitney) were calculated to test for differences (see Annexure A4 to A9).

Non-parametric test scores were also calculated (Kruskall-Wallis) to determine if the pre-test scores differed significantly between the test groups. The acceptance of the null-hypothesis signified that there is no significant difference between the scores the conclusion can be made that participants were indeed from the same sample population and were assigned to a specific test-group on a random basis. This was a pre-requisite for constructing a pre- and post-test design as methodological point of departure. The hypothesis stated is:

H_0 : Sample mean (pre-test score_i) = Sample mean (pre-test score_j) = Sample mean (pre-test score_k)

H_1 : Sample mean (pre-test score_i) \neq Sample mean (post-test score_{ij}) \neq Sample mean (pre-test score_k)

where i, j, k = test variable (i.e. fluency, originality, etc.)

A similar hypothesis was stated to test for significant difference between post-test scores. A p-value of less than 0.05 would suggest significant differences between sample means (see Annexure A1).

3.4.2 Phase Two

This phase deployed survey research and introduced the Collaboration Leadership Quotient Instrument and explained the data collection process (Stokes & Logan, 2004) (see Annexure B).

3.4.2.1 Objective

The *Collaboration Leadership Quotient Instrument* (Stokes & Logan, 2004:209) was used in Phase Two. The objective of Phase Two was to obtain information on the characteristics and dynamics of leadership's ability to create a collaborative work environment.

The *Collaborative Leadership Quotient Instrument* was selected for the purpose of this research project and it is a standardised instrument tendering a high level of internal reliability (Saunders *et al.*, 2003:257) and consists of high construct, content validity and high test and retest reliability. The leadership evaluation instrument is based on the Stokes and Logan consultancy template, which includes the constructs evaluating responsiveness, innovation, competency and efficiency of knowledge-based leadership. These constructs impact significantly on the characteristics of the future orientated leadership style as postulated by Johannessen *et al.* (1999), and forms the basis of this research.

The theoretical model postulated by Johannessen *et al.* (1999:118) is regarded by the researcher as most appropriate for the future knowledge economical paradigm, which underscores this empirical exploration. The Stokes and Logan measurement instrument constitutes a standardised evaluation instrument, which was developed for the diagnosis of knowledge productive organisations. This instrument has been successfully applied internationally in organisations such as IBM and 3M to all management levels as well as in learning organisations to evaluate knowledge and collaboration. Stokes and Logan (2004:113) have demonstrated their intent and success in building a learning culture within the organisations they consult with and have been extensively involved in formal processes, which consistently produce best practices and establish communities of practice.

3.4.2.2 Measurement instrument: The *Collaborative Leadership Quotient Instrument* (Stokes & Logan, 2004)

3.4.2.2.1 Introduction

The *Collaborative Leadership Quotient Instrument* focuses on three components related to the cognitive, emotional intelligence and motivational aspects of the collaboration leadership process. The Stokes and Logan instrument enables the researcher to access behavioural facets and attitudes of knowledge workers to be active participative members in collaboration networks. The instrument probes team members with regard to the knowledge effectiveness and availability of an organisation's collaborative infrastructure. This integrated instrument focuses on twelve dimensions and seven building blocks to establish a coherent collaborative framework within knowledge management praxis (Stokes & Logan, 2004:212).

The *Collaborative Leadership Quotient* measures four elements, which are the willingness of respondents to collaborate in co-creating and sharing knowledge, the level of support respondents receive, the degree to which knowledge organisational systems, policies, procedures and infrastructure support collaboration and finally, it measures the organisation's readiness to enter into collaborative relationships with customers, suppliers and potential partners. The instrument provides quantitative data on twelve themes within the knowledge economy.

These specific themes are two-way communication, ease of access of information, continuous learning, organisational alignment, sense of community, vision, leadership, trust, goals, strategies, tactical objectives and implementation. The twelve dimensions are contrasted with the two-way flow of information, the ease of access to information enhanced by structured information, continuous learning, alignment and the sense of belonging to an organisational community. The collaborative infrastructure was constructed upon the seven building blocks, which are a shared vision, a respected leadership, trust, common goals, supportive strategies, tactical objectives and action plans for implementation (Stokes & Logan, 2004:121). The themes under investigation are briefly discussed below.

Two-way communication focuses on the communication infrastructure, keeping the respondent informed, stimulating two-way communication, management response, enjoyment of diversity of opinions, taking into account the needs of others when

communicating, explaining the respondent's need to others and interrogating whether the information the respondent takes to work is current and complete.

Ease of access to information establishes the level of searching for information, whether customers have access to information, whether respondents have access to information and whether the respondent communicates ideas so that they are easily understood. These results were aligned with the learning organisation, which is a foundational construct that underpins this study.

Continuous learning deals with the encouragement of learning, the value of learning, the ability to source information to be able to learn, evaluation of competencies and the ability to build knowledge structures independently. Leadership alignment questions respondents on whether members of the organisation are aligned to collaborative work, data, information and knowledge. Respondents are tested on similarities between the group and the organisation. Group objectives are investigated in the understanding of objectives. Alignment of activities with the organisational vision and integration of personal knowledge with others are perused.

Communities of practice are evaluated in the sense of allegiance the respondent has towards the organisation and the support the respondent receives from co-workers. The knowledge procedures are investigated by means of technology and leadership cooperation is investigated. Respondent preference on teamwork, work environment and general support are also investigated.

Leadership within the knowledge organisation is probed to establish whether knowledge skills development and participative decision-making take place in the organisations under scrutiny. Management encouragement and commitment to collaborative work processes is measured. The respondent's role in taking responsibility and initiate actions by taking the knowledge leadership position is evaluated.

The organisation's vision relating to knowledge management is further evaluated by probing whether knowledge workers are included in the vision and whether the vision is supported by an accepted and dynamic set of clear knowledge values, to generate imaginative thought. Trust and respect as core values and fair treatment in the organisations are dissected. Perception regarding the relationship between the

respondent and the manager is determined as to establish whether individual weaknesses, reliability and skills impact on the perception of trust.

The goal setting process is evaluated on the basis of individual inputs into the collaborative process, and evaluates the involvement of participants, their commitment and the clarity of organisational intent. These strategies are evaluated by means of alignment and coordination, communication, consultation to gain understanding of the strategies used to evaluate the involvement of customers in the execution of strategies. Tactical objectives are evaluated using the resources needed for implementation, communication and individual participation, group objectives in formulating objectives and the encouragement given to achieve organisational objectives from a leadership perspective.

During this research phase, knowledge implementation of future innovation and leadership initiatives, which are the most crucial elements of the strategic management process, will be evaluated by means of the underlying communication process, expression of view points, challenging work, team work, and leadership skills level of research participants in achieving goals and objectives within this knowledge management exploration.

Research participants were requested to indicate their responses on a five point Likert scale.

3.4.2.2.2 Measuring the Collaboration Leadership Quotient (CLQ) (Stokes & Logan, 2004)

Measuring the ability of individual employees to collaborate is the first step towards building a collaborative organisation. Collaboration requires motivated personnel with the requisite emotional and intellectual skills and access to needed tools and information. A methodology was devised for measuring the collaborative capacity of a knowledge organisation and its human capital. If a programme implemented in a knowledge organisation is to be effective, the existing levels of collaboration should begin with an assessment of the existing level of collaboration between knowledge workers and leadership and their respective attitudes. It is also important to determine the level of effectiveness of the organisational infrastructure that supports leadership collaboration and the respective abilities of knowledge organisations to collaborate with their customers, suppliers and prospective strategic alliances.

The assessment of the collaborative culture of the organisation is included, as well knowledge systems, procedures and processes, which are essential in the planning of a efficient collaboration implementation process. An understanding of the reality of the organisation culture, as expressed by its constituent members and in its vision, practices, processes and procedures, will provide the necessary understanding of the collaboration gaps across the entire organisation. With this information, the researcher can determine the priority and sequencing of measures to create a successful collaborative organisation. While some organisational processes can be modified relatively easily; other processes can take considerably longer. The same holds true for cultural mind-set changes and the position of potential future leadership.

The *Collaborative Leadership Quotient Instrument*, which includes the *Collaboration Quotient*, (CLQ), is a suite of collaborative knowledge management diagnostic that permits the researcher the to administer an assessment of the knowledge organisation's readiness to collaborate. The information gathered allows for appropriate decision making in order to build a collaborative organisation. The collaboration tools consist of the following four elements:

1. The *Collaboration Leadership Quotient* (CLQ), which measures the willingness and ability of individual employees to collaborate in co-creating and sharing knowledge;
2. The Managers' *Collaboration Quotient* (MCQ), which measures the level of support and encouragement for collaboration from senior executives and the middle managers;
3. The *Organisational Collaboration Quotient*, which measures the degree to which the organisation's current systems, policies, procedures and infrastructure support knowledge collaboration;
4. The *Collaborative Commerce Quotient*, which measures the organisation's readiness to enter into collaborative relationships with customers, suppliers and potential business partners. The following two indexes are included within this collaborative leadership diagnostic.

3.4.2.2.3 The Collaboration Leadership Quotient (CLQ) (Stokes & Logan, 2004)

The most fundamental building blocks of a collaborative organisation are the interpersonal relationships between the members of the organisation. In order to

measure the willingness and ability of each member of the organisation to collaborate, direct questions were posed, deploying semi-structured and non-directive interview schedules.

The *Collaboration Leadership Quotient* (CLQ) assesses knowledge workers through a series of questions within the framework of the five collaborative messages and the seven collaborative building blocks of the knowledge organisation. A CQ profile provides information on the leadership's collaborative strengths and weaknesses and, hence, identifies developmental gaps in behaviour and attitude within knowledge management practice. It also determines each knowledge worker's perception of the collaborative leadership capability within the knowledge organisation (Stokes & Logan, 2004).

By aggregating the CLQ scores of knowledge workers, the readiness levels of working groups, departments, divisions and the organisation as a whole can be determined and the researcher can compare the different responses received. Through a series of questions probing individual performance and the collaborative infrastructure of the knowledge organisation, the knowledge workers could provide a lucid picture of the current status of collaborative leadership within the organisations under scrutiny (Stokes & Logan, 2004).

An analysis of responses will provide a sense of the strengths and weaknesses of the organisation's collaborative leadership capacity. From this information, the researcher will be able to determine what goals, strategies and tactical objectives the organisation needs to embed its potential for becoming a more collaborative knowledge organisation. The collaboration assessment process also creates awareness among participants of the value of collaboration and the importance of leadership in the knowledge economy.

The *Collaborative Leadership Quotient* is divided into three basic components corresponding to the cognitive, emotional intelligence and motivational aspects of collaboration and generates three fundamental measures, namely:

1. The intelligence quotient, or IQ, which measures the cognitive skills required for collaboration;
2. The emotional intelligence quotient, or EQ, which measures the social skills required for collaboration, and

3. The motivational quotient, or MQ, which measures the motivation to collaborate within knowledge-driven organisations.

From the three measures of IQ, EQ and MQ we can generate two versions of the *Collaboration Quotient*, one which we call the average *Collaboration Quotient* and denote by CQav and the other the effective *Collaboration Quotient*, which is denoted as CQ. The average *Collaboration Quotient* is obtained by adding the IQ, EQ and MQ measures and dividing by three:

$$CQ_{av} = (IQ + EQ + MQ) / 3$$

The effective *Collaboration Quotient*, on the other hand, is the product of IQ, EQ and MQ:

$$CQ = IQ \times EQ \times MQ$$

The values of IQ, EQ, MQ and CQav provide information on how well and where progress is being made by individual knowledge workers. The CQ or the effective *Collaboration Quotient*, composed of the product of IQ, EQ and MQ, however, gives a measure of the effectiveness of the collaborative leadership contributions. Because collaboration should be balanced, the knowledge worker should possess all three skill sets to be effective. If any one of the skill sets have not been developed to an adequate level, then that individual's ability to collaborate is compromised. And finally, if knowledge workers are socially skilled and have good ideas but are not motivated to share with others, very little or no collaboration will take place. It therefore follows logically that a successful collaborator must score high in all three quotients, IQ, EQ and MQ, and therefore the product of these three quotients is a measure of leadership collaboration effectiveness of individual knowledge workers and is combined in the respective construct score measurements (Stokes & Logan, 2004).

The *Collaboration Leadership Quotient* instrument is specifically designed to assess the most relevant behaviours and attitudes of leadership and knowledge workers to be an active collaborating member of a knowledge organisation. Different authors on emotional intelligence have identified their versions of the important emotional and motivational competencies from different theoretical perspectives. Appropriate competency categories from these different models, along with additional competencies that the researcher deems essential for building a collaborative organisation, have served as important references in this research design to explore

collaborative leadership in contemporary knowledge intensive organisations (Garvey & Williamson 2002: 19; Housel and Bell, 2001: 56).

3.4.2.2.4 Measuring the seven building blocks of leadership in a collaborative organisation

The *Collaboration Leadership Quotient* instrument is divided into 12 sections, corresponding to the constructs under scrutiny, namely: two-way communication, ease of access to information, continuous learning, alignment and community, and the seven building blocks of a collaborative organisation, which are vision, leadership, trust, goals, strategies, tactical objectives and implementation. The researcher deploys these categories to probe and construct the basis of the model of collaboration for the contemporary knowledge organisation. These essential interwoven enabling elements are imperative for the functioning of a collaborative organisation in the knowledge economy. The responses to the questions that will be requested will be valued on a Likert scale of 1 to 5, where 5 denotes almost always, 3 denotes 50% of the time, 1 denotes hardly ever and 2 and 4 are intermediate values. The weighting of each question varies, according to the factors that can be determined through regulative questioning. (see Annexure B).

3.4.2.2.5 Validity and reliability of The Collaborative Leadership Quotient Instrument

The *Collaborative Leadership Quotient Instrument* is a standardised instrument availing a high level of internal reliability and validity (Saunders *et al.*, 2003:81). Validity and reliability of this instrument is also derived from various studies performed by Stokes and Logan (2004:211). In respect of construct validity, the focus is on the psychological significance of this diagnostic and how it relates to measuring organisational collaborative behaviour and leadership dynamics within generic organisations in situations where the construct is perceived to be the most important variable under scrutiny. In this study, all the constructs are related directly to the variables, which are measured. The evidence for the validity of the *Collaborative Leadership Instrument* is obtained through the standardisation derived from the generic use of this instrument as it has been standardised to consequentially give internal validity to the test. All questions and scales are standardised and generically applicable to all populations used in contemporary knowledge management (Stokes & Logan, 2004:220).

Reliability relates to the consistency of the accuracy and performance of a measuring instrument. Jankowicz (1994:145) suggests that reliability implies that the same result should be obtained when the test is re-measured, assuming the situation has not changed. Thus, during the measurement process of the *Collaborative Leadership Questionnaire*. The researcher took cognisance of the respective profile type of the participants and expected that results would be similar when the tests were re-administered to the same sample.

The reliability of the *Collaborative Leadership Questionnaire* was assessed utilising three methods, which included split-half reliability to check internal consistency on the questionnaire, test-re-test assessment using continuous scores and checking results at different times, and thirdly by achieving equivalent form reliability.

Test-retest reliability of this test demonstrates consistency over time. Where changes in type are reported, it often relates to the collaborative leadership dimension and not to the entire organisational profile. Some margin of error can be expected and its impact on the leadership collaborative dimensions provided adequate measures of reliability and validity.

3.4.2.3 Sample

The same sample used in Phase One also constituted the sample for Phase Two of the research.

3.4.2.4 Data collection

The *Collaboration Leadership Quotient Instrument* (Stokes & Logan, 2004) was administered to research participants for completion.

3.4.2.5 Data handling and statistical analysis

Data gathered from the Leadership Instrument used in Phase Three was statistically analysed by means of examining one-way frequency tables produced. The standard mean was also calculated, which provided a sufficient base from which to derive recommendations on the constructs tested by the instrument.

Evaluation of proportions and descriptive statistics allowed detecting variation in the data and deducing relevant findings.

The data obtained from Phases One and Two were also used as input for the constructing of three regression models in order to identify those items that best explain variation in dimensions such as knowledge productivity and managerial effectiveness, (see Annexure A10 to A18). The following three regression models were defined, namely:

Regression function 1:

Knowledge Productivity = f (*managerial effectiveness, innovative awareness, total creativity*)

Regression function 2:

Managerial effectiveness = f (*fluency, originality, highlighting the essence, elaboration, resistance to premature closure, innovative awareness*)

Regression function 3:

Knowledge Productivity = f (*two-way communication, ease of access of information, continuous learning, organisational alignment, sense of community, vision, leadership, trust, goals, strategies, tactical objectives, implementation*)

Regression coefficients were calculated using the ordinary least squares method. The results would help identify characteristics of creative leadership as defined through the constructs knowledge productivity and managerial effectiveness (see Annexure A3).

3.4.3 Phase Three

This phase introduces the Innovation Climate Survey diagnostic and explains the data collection process. Survey research was deployed during this phase (see Annexure C).

3.4.3.1 Objective

The objective of this phase of the research was to determine the current innovation climate by using the *Innovation Climate Survey* developed by Davila *et al.* (2004:290). This diagnostic assesses a wide variety of organisational culture and climate variables that relate to innovation ability and knowledge productivity of contemporary organisations under scrutiny.

3.4.3.2 Measurement instruments: *Innovation Climate Diagnostic Survey* by Davila *et al.* (2004) (see Annexure C)

The *Innovation Climate Diagnostic Survey* was developed by Davila *et al.* (2004) to establish a measurement of culture as a facilitator of creative and innovative behaviour in organisations by measuring innovation across the organisation and the cultural norms associated with innovations critical to understanding the obstacles to innovation within organisations that participates in knowledge management praxis.

The questionnaire measures thirty-six cultural constructs associated with creativity and innovation in organisations. These include short or long-term profit orientation, innovation as management focus and management tolerance for innovation. This instrument further evaluates the knowledge management component within the cultural constructs: management tolerance towards failure, cohesiveness with organisational norms and organisational communication process and characteristics and includes specific questions probing the realities of leadership.

The following levers for an innovative climate and culture were located by Davila *et al.* (2004:211) to create particular managerial positions that correlated with the specific variables under scrutiny. These variables were identified on the following premises.

The first premise that underscores the standardised questioning diagnostic is the organisation's ability to identify novel innovation strategies in an environment in constant change. It furthermore focuses on the attributes that make an organisation successful within its present marketing environment and how it explores diverse opportunities for competitiveness. The second premise pursues the organisations' ability to use innovative best practices and its willingness to take risks and speed-to-market to introduce superior products to the market. The third premise focuses on

the leadership and innovation investment, which the organisation deploys, and how its human capital is allowed the freedom to create, explore, take risks and capitalise on their innovation investment. These premises are paradoxical as they attempt to maximise innovation by reducing productivity-driven scheduling and through this, introduce the levers for an innovation-based culture.

The levers that are measured are: continuous improvement goals and the ability of the organisation to deliver innovation continuously; incremental innovation periods versus radical innovation periods; efficiency and speed to market and how innovation adds to current value and exudes its future value.

The measure which the organisation uses to embrace innovative processes and deal with unexpected events is also included. Whether the organisation promotes learning events, pride and feeds the confidence of its human capital to ensure continuous innovation versus threats and judgements that discourage creativity and innovation within its organisational constructs. The management of uncertainty and ambiguity and the ceasing and recognition of opportunities in the final lever is included in this comprehensive innovation diagnostic.

The *Innovation Climate Survey* includes the following main innovation strategies and processes, which are foundational to the holistic approach taken by this instrument, as laid out below.

Innovation strategies:

- Strong strategic alignment between creativity and innovation initiatives and business strategy;
- A widely understood innovation strategy with clear leadership and managerial support;
- Strong well-developed innovation platform existing within organisational boundaries;
- A very clear understanding of customer needs;
- A clear and strong leadership approach to valuing innovation projects based on incremental semi-radical and radical taxonomies.

Innovation processes:

- A strong market information and customer database exists when new insights are gathered and discussed;
- Continuous visioning and idea processes are encouraged;
- Effective ideas screening processes are encouraged;
- Good innovation project management discipline is maintained;
- Fast and fluid innovation processes are supported by leadership and management;
- Advanced processes for constant improvement are maintained.

Resources:

- Business and technology departments are aligned and collaborating continuously for new future value propositions;
- Strong cross-functional teams using most appropriate human capital to steer innovation strategy into new markets, actively hiring staff with non-traditional perspectives, including those taking postmodern perspectives on human capital into account;
- Effective building of core competencies and strategic alliances to meet future innovation needs.

Organisational strategies:

- An incentive system that rewards its human capital for innovation achievements;
- High degree of constructive interaction and cooperation exists across all organisational functions;
- Explicit senior management and leadership takes the responsibility for organisational results and shares it collectively with human capital;
- Effective creative leadership is diffused throughout the organisation.

The above premises are encapsulated within this elaborative organisational diagnostic.

3.4.3.3 Validity and reliability of the Innovation Climate Survey

The *Innovation Climate Survey* is a standardised instrument (Davila *et al.*, 2004) offering a high level of internal reliability and validity (Saunders *et al.*, 2003:81). Furthermore, the validity and reliability of this instrument is derived from the same factors influencing Davila *et al.* (2004). In respect of construct validity, the focus is on the organisational development meaningfulness of a test and how it relates to measuring behaviour in situations where the construct is perceived to be an important variable. Most of the validity evidence of the *Innovation Climate Survey* is obtained under this category of construct validity.

Reliability is consistently achieving constant test measures and is confirmed by Jankowicz (1994:145), who states that the same result should be obtained when the test is re-measured, assuming the situation has not changed. The *Innovation Climate Survey* adheres to these precepts. The statistical method for inferring the relative reliability of this test and the subsequent correlation was considered. The *Innovation Climate Survey* was assessed using three methods: split-half reliability to check internal consistency on the questionnaire; test-retest assessment using continuous scores and checking results at different times; and thirdly, achieved equivalent form reliability (Terre Blanche & Durheim 1999:58).

Test-retest reliability of the *Innovation Climate Survey* demonstrates consistency over time. The researcher expects to find margins of error in these test results as they could impact on the reliability of the organisational innovation dimensions.

Validity is determined by how well a test measures what it intends to measure. The administration procedure of this instrument requires validation from the respondents as this standardised instrument has clearly produced content validity which covers the domain of the questionnaire and ensures its appropriateness and relevance (Leedy & Ormrod, 2001:176).

3.4.3.4 Sample

The same sample used in Phase One also constituted the sample for Phase Three of the research.

3.4.3.5 Data collection

The *Innovation Climate Diagnostic Instrument* (Davila *et al.*, 2004) was administered to research participants to investigate the current innovation climate of the organisations under scrutiny and sought to find a praxis that would develop new leadership initiatives to add competitive advantage in the future knowledge economy. The *Innovation Climate Survey* (Davila *et al.*, 2004) conducted survey research, which enabled the capturing of quantitative data amongst the two intervention groups that were selected from the various organisations over a spectrum of industries. The questionnaires concurred with the prescribed integrative quasi-experimental criteria for this survey strategy within the knowledge management field. The data was evaluated by the researcher to determine correlations between the constructs investigated and to provide a descriptive analysis of the variables related to the innovation culture, which are embedded within the selected organisations.

The interpretation of the data obtained from this instrument allowed the researcher to focus on the gaps that exist between the current and the ideal situation. The researcher is of the notion that new leadership practices could optimise the innovation process; foster a culture of creativity to provide future organisations with a compelling vision of sustainable value propositions.

3.4.3.6 Data handling and statistical analysis

Data gathered from the *Innovation Climate Diagnostic Questionnaire* used in Phase Three was statistically analysed by means of examining one-way frequency tables produced. The standard mean was also calculated and provided a sufficient base from which to derive conclusions from the constructs tested by the instrument.

Evaluation of proportions and descriptive statistics allowed the detection of variation in the data and the deduction of relevant findings.

3.4.4 Phase Four

This phase introduces the semi-structured interview scheduling that was administered to both intervention groups to enhance triangulation (see Annexure D).

3.4.4.1 Objective

The objective of Phase Four of the research project was to collect in-depth information from the research participants to discover their values and norms within the knowledge economy. This was achieved through skilful discussions, which harvested a wide variety of opinions about knowledge leadership, knowledge productivity and how these knowledge workers observed creativity and innovation and how it related to their particular workplaces within the knowledge economy.

3.4.4.2 Measurement instruments: Semi-Structured Interview Scheduling

The design of the semi-structured interview schedule was based on existing knowledge management praxis derived from a large body of scholarship. A *postmodernist* perspective was taken by the researcher in the structural design, incorporating postmodern definitions of leadership, knowledge management, human capital organisational structure and culture.

This semi-structured interview schedule included a variety of theoretical perspectives, which were foundational to this study. In summary, these perspectives are encapsulated within the core concepts of this triangulated study. They include Scott and Bruce's (1994: 582) strategic path model for individual creativity and innovation; Martins and Martin's (2002:62) organisational culture model for the enhancement of creativity and innovation and strategic leadership; Borghini's (2005: 27) distribution cognition model that explores the complexity of the creative processes and advises on innovation regarding knowledge organisations; and the knowledge productivity and managerial effectiveness model by Hall and Mairesse (2005:5), which provides a criterion for the establishment of innovation capital for increased productivity, the dimensions of creativity as well as knowledge exchanges. The researcher adds Johannessen *et al.* (1999:117-124), whose model underpins the characteristics of knowledge leadership for innovation enablement within the postmodern organisational landscape. In addition, Skyrme's (2000:261) knowledge based organisational model for the creation of a particular condition for the effective knowledge management and the dissemination of valuable organisational knowledge is utilised. The model of Amidon (Siau and Messersmith, 2003:57-80) is included in the dissemination as well, and is used to analyse the capability of organisations to create and implement new ideas. Finally, the concomitance model proffered by Steyn

(2006:118) promotes the notion that the entire organisation feeds dialogue through a forum facilitated by creative leadership.

The social nature of knowledge management is specifically underpinned by the researcher through knowledge exchanges to establish a unique set of inter-group dynamics to enhance the empirical value of this study.

The above models were used to gain a deeper understanding of respondents' perceptions with regard to the constructs being tested by this research project and were also included in the pilot test. The semi-structured interview schedule assisted the researcher to maintain the qualitative dimension of the research process to ensure that relevant data was extracted through the qualitative questionnaire completion. (The semi-structured interview schedule is contained in Annexure D).

3.4.4.3 Sample

Focus groups were used during this phase of qualitative data collection to obtain a multi-dimensional view of the knowledge workers within this sample.

Purposive or judgment sampling (Saunders *et al.*, 2003:143-146) was used to conduct the research as required by the theoretical demands of the investigation. Theoretical sampling is judgemental as the researcher selected a sample based on the theoretical constructs under investigation, which can be regarded as representative of the total population. The judgement will be formulated on the basis of the available information and the researcher's prior knowledge about the research participants. This sampling method has empirical application in light of the fact that the researcher has a broader understanding of the sample being studied. All research participants who participated in this phase of the research project were divided into seven groups of eight participants.

3.4.4.4 Data collection

A pilot test of the semi-structured interview schedule was performed amongst five respondents and were taken randomly from the two intervention groups. A formal discussion was held, the purpose of which was to evaluate the relevance of the questions posed. This exercise was taken to establish whether the wording was clear and to also test the electronic means by which the feedback was transmitted. As a

result of the pilot study, particular modifications were made to the statements to improve clarity. The researcher deemed the need for pre-testing the semi-structured interview schedule to determine ideal sample sizes and to ensure that all respondents understood the contents of the research questions. The designing of the semi-structured interview schedule excluded ambiguous and vaguely worded items.

Focus groups were constituted based on the professional positions of research participants and the researcher endeavoured to maintain low numbers as far as possible. Each group consisted of eight participants. The composition of groups was homogeneous in terms of individuals who had had enough experience in common so that they could enter into a discussion about the topic in question.

Group members were more familiar with each other at this stage of the research and shared values, norms, assumptions and beliefs based on their common organisational experience related to the knowledge economy. Research participants were grouped according to their organisational level based on their knowledge task roles and leadership roles. This conforms with Werner (2005:186), who suggests that cross-organisational levels should be avoided as supervisor-subordinate relationships may inhibit participation and willingness to communicate in a focus group scenario.

The focus group discussions were characterised by lively debates concerning the research issues. Individuals in the group discussions were co-operative by firstly discussing the purpose and the type of information sought, as well as mentioning the people in the organisation that would be interested in, or affected by the conclusions and recommendations of this part of the project.

The focus group discussions took place by posing a sequence of questions that stimulated, maintained and directed the flow of discussions to ensure that the discussions was broad enough and structured sufficiently to provide relevant data which was specific, concrete and possessed sufficient detail. A small number of questions were posed, structured from general to specific and the questions were preceded by a statement of the purpose and research value in assisting the group discussion to flow and which were followed by a number of statements in which the researcher continuously set the context of the discussion. The researcher ensured that diversion from the predetermined order in which the questions were asked was

minimised. Special attention was given to ensure that the researcher made appropriate interventions and probes to maintain focused discussion on a particular question, legitimising various viewpoints and preventing some individuals from dominating the discussion at the expense of other participants and to the detriment of the purpose of the group discussions.

The researcher found that the focus groups exhibited a need to communicate within their individual knowledge structures and negotiate meaning to clarify certain arguments pertaining to knowledge leadership and creativity, which revealed the diversity of their views and opinions. The group discussions assisted the researcher to re-evaluate his previous position on purpose of criteria relating to qualification, amendment and contradiction of collective industrial opinion. The group interviews offered a particular source of validation to support the interpretive data obtained in the phase.

3.4.4.5 Data handling

According to Hussey and Hussey (1997:140), the researcher faces a number of challenges in qualitative data analysis. These include the reduction, structuring and de-textualising of data. Terre Blanche and Durheim (1999:38) and Zikmund (2000:58) indicate that data reduction is a form of analysis that sharpens, sorts, focuses, discards and recognises data in such a way that final conclusions can be drawn and verified. In a phenomenological study, the mass of field notes, documents and interview transcripts collected by the researcher must be condensed to support the research objectives. Hussey and Hussey (1997:140-145) propose that a systematic way of summarising the data must be accessed. Often data is collected in a sequential or chronological structure, which might not be suitable for analysis. When a study commences within a theoretical framework or within pre-defined themes, these might provide a structure for creating categories into which data can be fitted and analysed.

The de-textualising of data involves the conversion of text into diagrams and illustration for analysis and presentation purposes. Hussey and Hussey (1997:247-275) note that there are a number of different approaches available to analyse qualitative data and that the researcher is guided by the research paradigm adopted. One approach the researcher can follow is to quantify the data, either formally or

informally, to convert the qualitative data into numerical data. Another approach is to employ non-quantifying methods.

Firstly, all transcripts were reviewed and where applicable, linked to the research notes made by the researcher. The next step involved the identification of responses that were regarded as relevant. These were referenced and coded by the researcher. The next step involved the categorisation of all participants. The last phase of the analysis involved the generalisation of responses by means of a subjective review of issues by the researcher in order to gain an understanding of the research participants' perceptions with regard to the impact on the knowledge economy.

It is also important to note that the most common error made by researchers when utilising the interview, as a research method is the problem of interviewer bias. This relates to the bias effect of certain personal characteristics, such as perceived affiliation, race and gender effects, also called the research selectivity effect, on data collection and analysis. This is a common problem in research as many methods involve choices on the part of the researcher about which data to observe or select and which data to ignore and discard (Terblanche, 1990:282; Sterman, 2000:112). Sterman (2000:112) further highlights the importance of the researcher distortion error that may occur due to the intentional and deliberate distortion of the facts by the researcher, which may be due to certain preconceptions or prejudices inherent within the researcher. The research design of this investigation was therefore methodically specified in order to avoid such errors.

The researcher rearranged and analysed the data obtained from this phase systematically and rigorously to essentially transform the nature of the data to comprehend and manage the various data flows and to integrate related data drawn from different themes. The key themes were extracted for further exploration.

The following activities were performed in order to construct the themes. Firstly, this included categorisation, which involved classifying all data into meaningful categories from the existing framework. Secondly, the unitising activity to establish the appropriate categories for textual data transference was performed. Thirdly, the researcher generated categories to design a suitable matrix to place the gathered data into cells for further subdivision. Finally, the researcher sought new ways to reveal patterns, which would reveal testable propositions and apparent relationships within the data.

3.4.5 Phase Five

This phase introduced the non-directive interviews, which complemented the researcher's triangulative stance in this investigation. Individual interviews were held with both intervention groups and a theoretical purposive method was used (see Annexure E).

3.4.5.1 Objective

The objective of Phase Five was to gather information nuances and subtleties through informal engagement. This phase consisted of focus group interviews (Hussey & Hussey, 1997:155), which took the form of non-directive interviews. These are strongly associated with the triangulative paradigm as this method of data collection was utilised to collect information about the feelings and opinions of the groups who participated in the research.

Individuals were monitored by the researcher and non-directive communicative scheduling took place throughout the process. The research project made use of individual interview schedule techniques to collect data and the sample represented 48 participants who were individually interviewed during the course of this study. The researcher introduced predetermined themes that were based on the variables that are foundational to this study. The participants were given the opportunity to converse freely about events, behaviour and beliefs in the context of knowledge management (Leedy & Ormrod, 2001:17).

The interviewees' perceptions guided the trajectory of the questioning and the researcher's conduct. The participants acted as respondents and informants regarding issues surrounding the knowledge economy and its effect on contemporary organisations.

3.4.5.2 Measurement instruments: *Non Directive-Interviews*

Non-directive interviews were held with participants, who included experts and leaders in the field of knowledge management. The two themes included in the non-directive are based on critical issues concerning leadership for future knowledge management praxis and are presented below.

Theme 1: Leadership, innovation and creativity in the knowledge-based organisation: Discuss

Theme 2: Characteristics required for creative leadership: Discuss

3.4.5.3 Sample

The sample consisted of forty-eight individual participants taken from a large variety of industries of which all were knowledge experts within the knowledge economy.

3.4.5.4 Data collection

Informal discussions were held with research participants and knowledgeable experts from industry to clarify pertinent issues related to the research themes throughout the duration of the research project.

A pilot interview was performed amongst five research participants, who were purposively selected from the two intervention groups and industry experts. Informal discussions were held, the purpose of which was to evaluate the relevance and the general understanding of the themes posed in the non-directive interviews. This exercise was performed to establish whether the wording was clear and also to complete a checklist for using semi-structured and in-depth interview (Saunders *et al.*, 2003:267). The researcher deemed the need for pre-testing the non-directive interviews to determine ideal focus group sizes and to ensure that all respondents understood the themes under scrutiny.

The design of the individual non-directive interview schedule was informed by the professional positions of the participants with reference to their immersion in the knowledge economy. Individual knowledge workers were also at ease with their colleagues as they shared similar values, norms, assumptions and beliefs based on their common organisational experience as relating to knowledge work. These non-directive discussions posed a sequence of themes that stimulated discussions to ensure relevance and validity to this dialogic phase. The researcher recorded the interviews to legitimise and process the various viewpoints.

The individual knowledge workers exhibited a need to communicate within their individual knowledge structures and work spaces to negotiate meaning and clarify certain arguments pertaining to knowledge leadership and creativity, which revealed the diversity of their views and opinions. These discussions further assisted the researcher to validate the theoretical grounding of the supporting literature.

3.4.5.5 Data handling

The researcher recorded and transcribed the information and integrated all responses to create a report on the informal findings to use as supportive data on which to base the recommendations.

As previously described, the analysis of the qualitative data that was generated during this phase of the research followed a general analytical procedure, as described by Hussey and Hussey (1997:24). The researcher rearranged and analysed the data obtained from this phase systematically and rigorously to essentially transform the nature of the data to comprehend and manage the various data flows and to integrate related data drawn from different themes. The key themes were extracted for further exploration based on apparent patterns and relationships, to draw and verify conclusions and recommendations (Terre Blanche & Durheim, 1999:54).

According to Terre Blanche & Durheim (1999:62), the following four activities are important to perform in order to construct information of particular themes during qualitative data gathering. Firstly, this included categorisation, which involved classifying all data into meaningful categories from the existing framework. Secondly, the unitising activity to establish the appropriate categories for textual data transference was performed. Thirdly, the researcher generated categories to design a suitable matrix to place the gathered data into cells for further subdivision. Finally, the researcher sought new ways to reveal patterns, which would reveal testable propositions and apparent relationships within the knowledge economy.

3.4.5.6 Reliability and Validity of the Non-Directive Interviews

To overcome interviewer and interviewee bias, the researcher ensured complete readiness for the interview as the themes were pre-selected and well researched. The scope employed to test understanding and the approach to recording information

was adhered to. Credibility is promoted through the supply of relevant information to participants before the interview. Validity and reliability were enhanced by supplying the participants with a list of the interview themes and issues, which related to the knowledge management arena before the interviews. This enabled the participants to consider the vastness and complexity of the field. The value of allowing the participants to prepare themselves for these intense discussions also allowed access to organisational documentation, which facilitated triangulation of the data provided (Saunders *et al.*, 2003:255).

The purpose of using non-directive interviews were to obtain a deeper understanding of the participants' explanations and meanings. The researcher particularly explored and probed explanations and meanings by providing the participants with copious time to develop their own responses. In addition, the researcher avoided projecting personal views and provided ample opportunity for participants to add any further relevant comment. A full record of the interview schedule was compiled immediately after it had taken place to enable the exact and meticulous recording of the explanations and general points (Cozby, 1989:56; Saunders *et al.*, 2003:260).

When deploying non-directive in-depth interviews, the generalisability of findings could be a concern. The researcher achieves transferability of this qualitative research within a case study that encompasses the entire knowledge management milieu (Saunders *et al.*, 2003: 260). Secondly, the researcher related the research project to existing theory to demonstrate a broader significance. Lastly, this relationship allows for theoretical propositions to be advanced and tested in other contexts and provides implications for the relationships between theory and research since the identification of existing theory and its application will be necessary as the researcher embarks on the collection and interpretation of data.

3.5 ENHANCING THE RELIABILITY OF THE STUDY

To enhance the overall reliability of the investigation, some definitions and explicit explanations were considered for this research when communication with research participants took place. Sincere attempts by the researcher were made to ensure that the title of the research project was fully covered. The research question, within the knowledge economical context, was posed to groups of prospective participants to collect information and gain their opinions of their understanding of what the research entailed and what should be included in the investigative process. This feedback was

imperative as it added to the researcher's triangulative approach, which is foundational to the thinking in this particular study.

High construct validity was achieved through the questions on which the research participants were requested to elaborate and justify their choices and opinions. The research method facilitated continuous communication between the researcher and research participants. This forum, which was created by the researcher, eliminated any risks that could negatively affect the research project. The researcher therefore aimed to minimise the effect of error during each stage of the research process, thereby increasing the likelihood of achieving minimum standards of validity.

The researcher attempted to exercise great awareness towards the issue of personally influencing the results and has avoided the use of leading questions. The researcher is of the opinion that the information has been thoroughly validated and the reliability of the results is strengthened with the wide perspectives obtained from the individual knowledge workers under scrutiny.

3.6 CONCLUSION

This chapter documented the study design and the methodology followed in researching the nature and impact of leadership within a *postmodern* knowledge management paradigm. The research process followed a phased approach in administering several measurement instruments to obtain quantitative data supported by qualitative phases based on focus group interviews and non-directive strategic conversations with knowledge workers. The researcher used methodological triangulation to gathering both qualitative and quantitative data. The emphasis was on both standardisation of the data and quality and depth of unique context.

The quantitative phase of the research project involved the collection of quantitative data by means of the *Torrance Test of Creative Thinking* (Torrance, 1984), The *Baseline Management Behaviour Questionnaire* (Kriek, 1990), The *Collaborative Leadership Questionnaire* (Stokes & Logan, 2004) and the *Innovation Climate Questionnaire* (Davila *et al.*, 2004).

Content and construct validity was included for all measuring instruments used and a discussion regarding the enhancement of the reliability of this study is included. All data and measuring instruments may be found in Annexures A to E. In Chapter Four the data will be presented that had been collected from the sample utilising the different methods discussed.

CHAPTER 4 PRESENTATION OF RESULTS

4.1 INTRODUCTION

The research explores and expounds upon the role of creativity and innovative ability as drivers of competitive advantage in the new knowledge economy facilitated by leadership action. The problem, background and rationale of this research were introduced in Chapter One. The literature review was presented in Chapter Two. Chapter Two deals with the ability of the organisation to project individual creativity and innovation into the knowledge harvesting process by focusing on leadership and the utilisation of communities of practice as primary vehicle for collaboration. From the literature overview, it became apparent that organisational culture, leadership and the ability of knowledge workers to collaborate are important preconditions for the ability of individual knowledge workers to effectively contribute to the intellectual capital asset base of the organisation.

The methodology applied in conducting and completing the research project was discussed in Chapter Three. The research purpose, processes, logic and outcomes, as well as the research paradigm, phases and methods employed in a multidimensional research design, were presented. The triangulative research comprised of both qualitative and quantitative data.

The results obtained from the analysis of the data will be examined in this chapter and is presented according to the four research questions stated in Chapter One. To investigate whether individual creativity and innovative awareness could be developed through intervention, research participants were tested by means of the *Torrance Test of Creative Thinking* perusable in Annexure A1 to A3 (Torrance, 1984) and the *Baseline Management Behaviour Questionnaire*, perusable in Annexure A3(ii). The environmental factors impacting on individual creativity were determined by applying the *Collaborative Leadership Questionnaire* perusable in Annexure B (Stokes & Logan, 2004), and the *Innovation Culture Survey*, perusable in Annexure D (Davila *et al.*, 2004). These measuring instruments were applied in the Control and Treatment Groups One and Two for both pre- and post-testing phases.

The collective sample completing the above questionnaires consisted of three hundred research participants (n = 300). Thirty-nine questionnaires were discarded. Two hundred and

sixty one (n = 261) completed questionnaires were collected and then annotated. These questionnaires were randomly categorised to constitute a Control Group (n = 111) and Treatment Groups One (n = 100) and Two (n = 50). The Control Group received no interventions hereafter, but participated in the post-testing.

Treatment Groups One (n = 100) and Two (n = 50) received Intervention Modules and after a period of twenty four months, participated in the post-test, which measured the innovative awareness and creative dimension levels of the research participants within the parameters of the research design.

Treatment Group One consisted of one hundred research participants, to whom Intervention Module One was administered. This group completed Intervention Module One over a period of 24 months with no structured intervention from the researcher. The research participants gave frequent feedback regarding their progress. Treatment Group Two received Intervention Module Two, which consisted of the same intervention modules as those received by Treatment Group One but the former group received the additional scenario constructs.

As noted in Chapter One and Three (see Chapter One, 1.3.2; Chapter Three, 3.4), the *Torrance Test of Creativity Thinking* is designed to measure the creative ability of the research participants and is based on five dimensions which are fluency, originality, highlighting the essence, elaboration and resistance to premature closure. A score for creative ability can be calculated by analysing the data obtained. The *Baseline Management Behaviour Questionnaire* provides an indication of innovation awareness. The *Leadership Collaboration Quotient Questionnaire* measures leadership traits while the *Innovation Culture Survey* establishes the nature of the innovation culture and climate that prevails.

4.2 RESULTS AS PER THE RESEARCH OBJECTIVES

The results will be presented according to the phases in which the research was conducted and the respective research objectives will be demarcated.

4.2.1 Phase 1: Development of individual creativity and innovative awareness through selective intervention

The analysis of the data obtained by administering the measurement instruments involved three interlinking phases, namely:

- Analysis of Variance (ANOVA) to determine if the pre-test scores differed significantly between the test groups was performed. The acceptance of the null-hypothesis signified that there was no significant difference among the scores. The conclusion was made by the researcher that participants were indeed from the same sample population and were assigned to a specific test-group on a random basis.
- The second step of the analysis process involved searching for significant differences between the pre- and post-test scores amongst the three groups, which rendered three sets of scores to be analysed. The analysis confirmed that creative ability and innovative awareness, based on the analysis of the three sets of scores, could be developed through intervention activities.
- An ANOVA value was calculated to determine if the post-test scores differed significantly among the three groups. Significant differences were determined in the analysis process and confirmed that the intervention activities did have a positive correlation with the creative ability and innovative awareness of research participants.

The results obtained from the application of the quantitative instruments are presented below.

4.2.1.1 Testing for significant differences of pre-test scores

Table 4.1 contains the results from the analysis of the scores obtained from the *Torrance Test of Creative Thinking* and the *Baseline Management Behaviour Questionnaire*. The values represent the average scores obtained by each of the three groups in the pre-test phase. The p-values obtained from the ANOVA tests are also shown. The p-values greater than 0.05 indicate that no significant statistical difference exists amongst the three groups, respectively.

	Group:			ANOVA	Sign
	Intervention & COP: Pre	Minimal intervention: Pre	Control: Pre		
	n = 50	n = 100	n = 111		
Torrance Test					
Fluency:	94.7	97.5	106.4	0.004	*
Originality:	108.1	105.8	118.5	0.001	*
Highlighting the essence:	92.6	88.8	90.5	0.760	
Elaboration:	78.7	88.5	86.4	0.104	
Resistance to premature closure:	69.8	73.3	67.4	0.312	
Total creativity:	88.8	90.8	95.4	0.071	
Baseline Management Behaviour					
Innovative awareness:	2.9	2.7	2.8	0.217	

Table 4.1: Pre-test scores obtained from the Torrance Test of Creative Thinking and the Baseline Management Behaviour Questionnaire by the three test groups

The results show that across the three groups tested, the average obtained on the majority of the dimensions, namely: highlighting the essence, elaboration, resistance to premature closure, and the total creativity score, did not differ significantly. This is shown in Table 4.1 by the p-values, that reflect a value greater than 0.05. The significant differences seen in the fluency and originality dimensions (p-values less than 0.05) is not regarded as relevant in the context of total creativity not being significant different. It can therefore be concluded that the three groups were taken from the same sample population and that the baseline achieved can be used as point of departure.

4.2.1.2 Testing for significant differences of pre- and post test scores

The results in Table 4.2 below show the average pre- and post-test scores for Treatment Group Two that received Intervention Module Two and scenario constructs over the 24-month period. The p-values obtained from the T-tests indicate significant statistical differences among groups across all the creativity dimensions. The p-values less than 0.05 indicate a rejection of the null-hypothesis in favour of the alternative. Visual inspection of the average scores reveals that post-test scores are significantly higher than the pre-test scores.

	Group:			ANOVA	Sign
	Intervention & COP: Pre	Minimal intervention: Pre	Control: Pre		
	n = 50	n = 100	n = 111		
Torrance Test					
Fluency:	94.7	97.5	106.4	0.004	*
Originality:	108.1	105.8	118.5	0.001	*
Highlighting the essence:	92.6	88.8	90.5	0.760	
Elaboration:	78.7	88.5	86.4	0.104	
Resistance to premature closure:	69.8	73.3	67.4	0.312	
Total creativity:	88.8	90.8	95.4	0.071	
Baseline Management Behaviour					
Innovative awareness:	2.9	2.7	2.8	0.217	

Table 4.2: Comparison of pre- and post-test scores for Treatment Group Two

The average score obtained for innovative awareness as construct increased significantly from 2.9 to 4.5 over the 24-month period. This is indicative of a positive effect achieved by the intervention.

The results in Table 4.3 below show the average pre- and post-test scores for Treatment Group One that received Intervention Module One. The p-values obtained from the T-tests indicate significant statistical differences among groups across all the dimensions. The p-values less than 0.05 indicate a rejection of the null-hypothesis in favour of the alternative. Visual inspection of the average scores reveals that post-test scores are significantly higher than the pre-test scores.

	Group:		T-test	Sign
	Minimal intervention: Pre	Minimal intervention: Post		
	n = 100	n = 100		
Torrance Test				
Fluency:	97.5	111.5	0.000	*
Originality:	105.8	122.3	0.000	*
Highlighting the essence:	88.8	99.6	0.023	*
Elaboration:	88.5	99.4	0.004	*
Resistance to premature closure:	73.3	85.3	0.003	*
Total creativity:	90.8	103.7	0.000	*
Baseline Management Behaviour				
Innovative awareness:	2.7	4.2	0.000	*

Table 4.3: Comparison of pre- and post-test scores for Treatment Group One

The average score obtained for innovative awareness as construct increased significantly from 2.7 to 4.2. This is indicative of a positive effect achieved by administering Intervention Module One.

The results in Table 4.4 below show the average pre- and post-test scores for the Control Group. The pre- and post-test scores do not differ significantly, except for Innovative awareness. The p-values obtained from the T-tests indicate no significant statistical differences among groups across all of the creativity dimensions. The p-values higher than 0.05 indicate that the null-hypothesis of equal means cannot be rejected.

	Group:		T-test	Sign
	Control: Pre n = 111	Control: Post n = 111		
Torrance Test				
Fluency:	106.4	106.3	0.981	
Originality:	118.5	118.6	0.985	
Highlighting the essence:	90.5	90.5	0.995	
Elaboration:	86.4	86.6	0.940	
Resistance to premature closure:	67.4	67.5	0.985	
Total creativity:	95.4	94.0	0.549	
Baseline Management Behaviour				
Innovative awareness:	2.8	4.1	0.000	*

Table 4.4: Comparison of pre- and post-test scores for the Control Group

Considering the results presented in Tables 4.2 to 4.4, it is evident that the interventions did have a positive effect on the development of the creative ability between the two intervention groups only and not on the control group.

4.2.1.3 Testing for significant differences of post-test scores

The last step in the analysis included an ANOVA to determine whether the post-test scores differed significantly across the test groups. The p-values obtained from the ANOVA tests indicate significant statistical differences among the three groups across all the variables and dimensions tested. The p-values less than 0.05 indicate a rejection of the null-hypothesis in favour of the alternative. The results are presented in Table 4.5.

	Group:			ANOVA	
	Intervention & COP: Post n = 50	Minimal intervention: Post n = 100	Control: Post n = 111	p-value	Sign
Torrance Test					
Fluency:	128.5	111.5	106.3	0.000	*
Originality:	138.0	122.3	118.6	0.000	*
Highlighting the essence:	121.5	99.6	90.5	0.000	*
Elaboration:	118.4	99.4	86.6	0.000	*
Resistance to premature closure:	106.1	85.3	67.5	0.000	*
Total creativity:	122.4	103.7	94.0	0.000	*
Baseline Management Behaviour					
Innovative awareness:	4.5	4.2	4.1	0.019	*

Table 4.5: Post-test scores obtained from Torrance Test and Baseline Management Behaviour Questionnaire by the three test groups

The results from the ANOVA confirmed that the average scores across the groups differed significantly. Additional post-hoc testing confirmed differences amongst all three groups (Annexure A).

The significant differences confirmed that the interventions did have a direct positive relationship with the improvement in creative ability. With regard to innovative awareness, the interventions contributed towards the development in this area, however, additional variables could have contributed to the changes.

4.2.1.4 Relationship among individual creativity, innovative awareness, productivity and managerial effectiveness

	Correlation coefficient			
	Managerial effectiveness n = 50	Productivity n = 100	Pearson p-value	Sign
Torrance Test				
Fluency:	0.34	0.20	0.000	*
Originality:	0.28	0.16	0.000	*
Highlighting the essence:	0.21	0.09	0.000	*
Elaboration:	0.26	0.20	0.000	*
Resistance to premature closure:	0.25	0.21	0.000	*
Total creativity:	0.36	0.22	0.000	*
Baseline Management Behaviour				
Innovative awareness:	0.52	0.46	0.000	*

Table 4.6: Correlation coefficient of the above constructs

The correlation coefficients are all considered to be significant as the p-values are less than 0.05. The correlation ratio was calculated while controlling for the group.

The results indicate that a positive significant linear relationship exists between Innovative awareness and Managerial Effectiveness ($r = 0.52$). This relationship is also strongest of all relationships tested. This is followed by the relationship between Innovative awareness and Knowledge Productivity ($r = 0.46$). It should be noted that the relationships might be considered as mediocre and explain less than 30 percent of the total variation in the original variable, it is nonetheless significant. Other variables not measured in this study might interactively together with Creativity and Innovative Awareness contribute more towards improving Managerial Effectiveness and Knowledge Productivity, but this is beyond the scope of this study.

The linear relationships between Total Creativity and Managerial Effectiveness ($r = 0.34$) and Total Creativity and Knowledge Productivity are also significant.

4.2.2 Summary

The results confirmed that the average post-test scores were significantly higher than the pre-test scores for the two intervention groups across all dimensions, whilst on the other hand, the Control Group did not show any difference. There was no improvement in Innovative Awareness amongst the Control Group, which suggests that the development of the creativity dimensions are directly linked to the interventions which were administered to the two treatment groups but that innovative awareness is convergent in nature and not directly linked to the interventions.

The post-test scores for Treatment Group One, which received minimal intervention, were significantly lower than Treatment Group Two, which included additional intervention, including communities of practice and scenario constructs. This suggests that the additional interventions, could have significantly affected the creative dimensions of the research participants.

The results suggest that creative ability can be improved through structured intervention. The results achieved confirm that the extent of intervention enhanced the development of creative ability. Innovative awareness shows a higher correlation with managerial effectiveness (0.52) than with knowledge productivity. Finally the data indicates that the relationship between innovative awareness and managerial effectiveness is stronger than the relationship that exists between creativity and knowledge productivity. The linear weak relationships between Total Creativity and Managerial Effectiveness ($r = 0.34$) and Total creativity and Knowledge Productivity ($r = 0.20$) are also significant.

4.2.3 Phase 2: The relationship between leadership and organisational culture in the knowledge management context

This objective evaluated the perceptions of knowledge workers towards leadership and its impact on collaboration, creativity and innovation in the workplace.

4.2.3.1 Perceptions towards collaborative leadership, culture, creativity and innovation in the workplace

The *Collaboration Leadership Quotient Instrument* (Stokes & Logan, 2004) was used to establish the perception towards collaboration in the workplace. Twelve themes were evaluated by means of sub-questions. These themes were underpinned by the practice of collaboration as the primary outcome of workplace culture and climate and leadership. A five-point scale was used with 1 = strongly disagree and 5 = strongly agree. The descriptive statistics of each theme can be viewed in Annexure C2.

In each of the figures below, the mean value for all sub-questions in a single theme is graphed.

4.2.3.1.1 Two-way communication:

The first theme endeavours to measure the nature of the two-way communication process that exists between leadership and the work group. From the mean ratings of the questions pertaining to two-way communication, agree that the information they bring is appropriate, current and complete (4.35) and that they enjoy diversity of opinion (4.33) and stimulate two-way communication (4.31). They were also in agreement that management responds (3.83) and that they can explain their needs to others (3.72).

The respondents neither agreed nor disagreed with the inadequacy of the communication infrastructure (2.89) and with the fact that management informs knowledge workers regarding new information (2.88). Research participants agreed most with the statement 'Information I bring is appropriate, current and complete' (4.35). This was followed by 'I enjoy diversity of opinion' (4.33), 'I stimulate two way communication' (4.31) and 'I take the need of others into account when communicating' (4.25). The perception regarding each of these sub-questions relate back to the perceived ability of the knowledge worker to facilitate two-way communication in the work group. A perception that two-way communication is driven by knowledge workers rather than by leadership seems can be deduced from these findings.

The research participants, 82% agreed that the information they brought was current and complete. It can be derived from the results obtained by the sub-questions that leadership communication is perceived by research participants not to be effective and that the supportive infrastructure for effective communication is lacking. Organisations do not respond to the needs of knowledge workers, as they do not provide access to information or clear communication channels. The mean ratings of statements are shown in Figure 4.1.

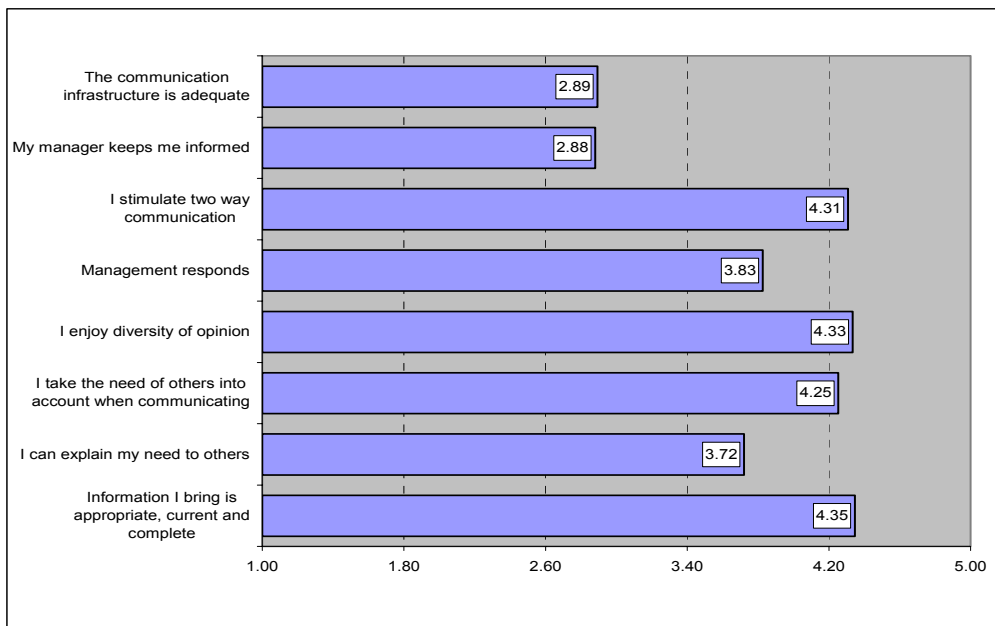


Figure 4.1: Two-way communication – mean ratings

In summary, organisational communication is regarded as less effective (2.89) as illustrated by the research participants. However, the communication within the community of practice appears to be more effective (4.35). Furthermore, a dialectic tension apparently exists between knowledge workers and management.

4.2.3.1.2 Ease of access of information

From the data indicating the response to the ease of access to information it is clear that the respondents agree (3.95) that they are able to communicate their ideas so that they are easily understood. The respondents neither agree nor disagree on whether they are able to search for information, whether their customers have access to correct information and whether they have access to the information to successfully participate in knowledge work. The theme 'ease of access to information' is measured from an internal and external perspective. Figure 4.2 below indicates that research participants are of the opinion that they do communicate

their ideas in such a manner that they are easily understood (3.95) which indicates that knowledge is created and disseminated. However, they indicate that they do not have adequate access to relevant information to complete their tasks (3.08) to formulate new ideas. The research participants (82%) neither agree nor disagree whether they can find critical information. The socialisation of knowledge and customer involvement was rated as 3.21.

It can be deduced that the research participants have no faith in the internal and external communication processes. Although the research participants (79%) regard themselves to excellent communicators (3.95), they are impeded by the deficient internal and external channels of information.

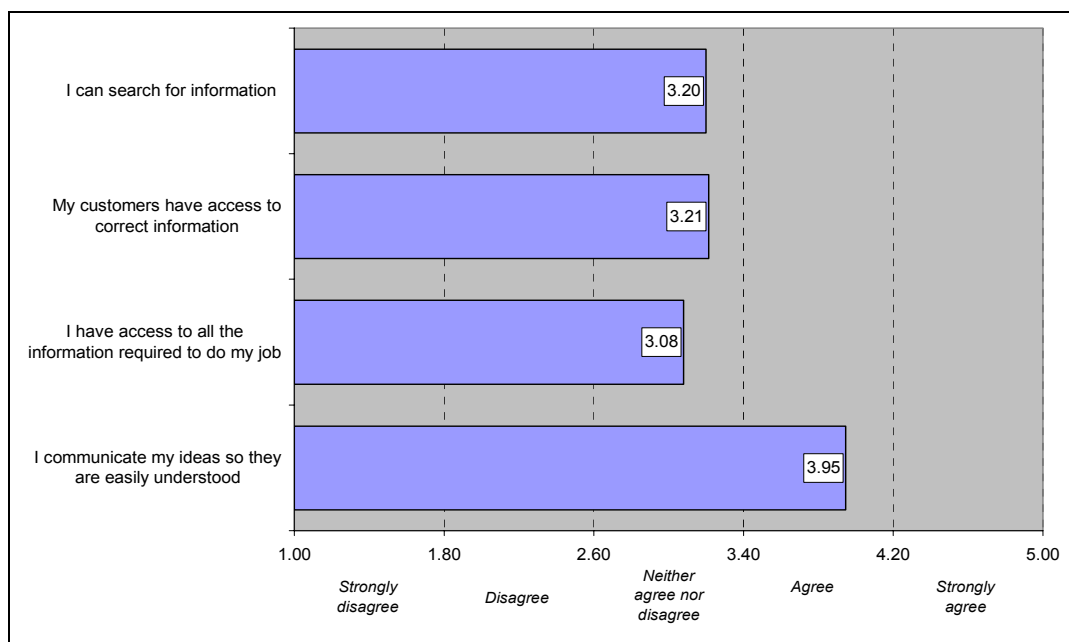


Figure 4.2: Ease of access to information - mean ratings

In summary, it could be deduced that information is not easily accessible to both internal and external stakeholders.

4.2.3.1.3 Continuous learning

This theme deals with continuous learning and aims to measure the organisation's ability to facilitate a learning environment by stimulating organisational learning on the one end of the continuum and knowledge workers' need for self-development on the other end. Figure 4.3 below indicates that learning is highly valued by research participants (4.09) and that research participants consider themselves capable of sourcing applicable knowledge (3.53). The

research participants (72%) neither agreed nor disagreed that they are able to evaluate knowledge competencies (3.45) and they were uncertain whether they (75%) are able to build knowledge structures independently within communities of practice (3.44). Organisational encouragement of continuous learning scored the lowest average rating (3.05). It can be reasoned that organisations do not support learning sufficiently enough as perceived by the research participants. This is in contrast to the high value status that is conferred upon learning and self-improvement by the knowledge workers.

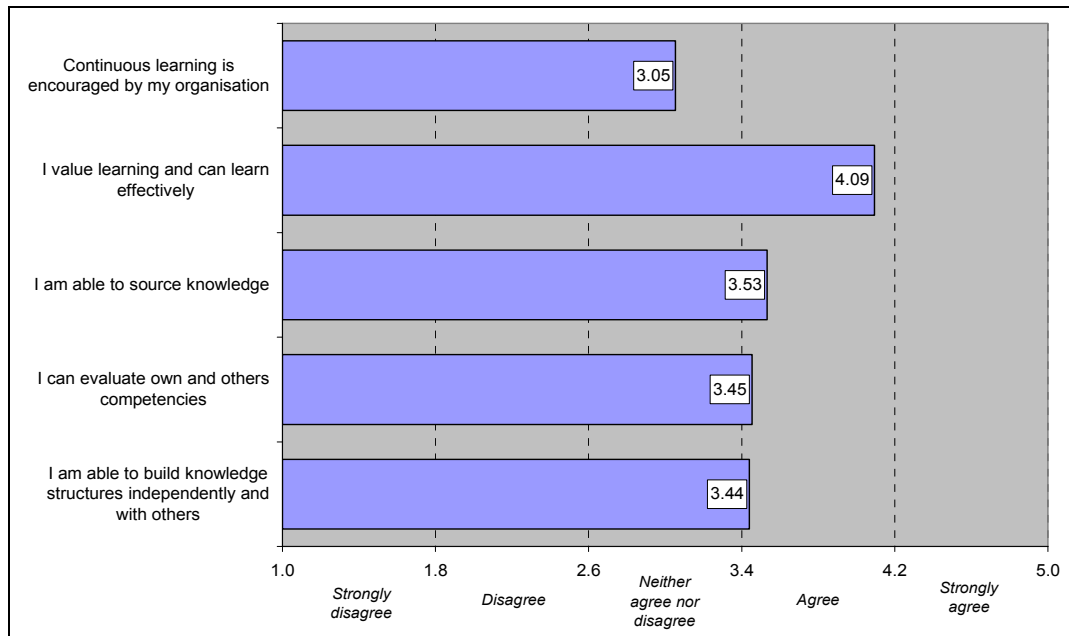


Figure 4.3: Continuous learning – mean ratings

In summary, the data could suggest that knowledge intensive organisations are not highly focused nor overtly encourage learning, although the knowledge worker apparently personally desires to harvest new knowledge to exploit and manipulate new opportunities in the knowledge economy.

4.2.3.1.4 Leadership alignment

This theme aims to describe and explore the alignment of leadership within the knowledge organisation. The sub-questions probe relevant issues fundamental to organisational alignment in the knowledge context. Alignment has a direct impact on organisational effectiveness and ultimately contributes to the achievement of a competitive advantage through knowledge productivity.

Research participants (82%) agree that they can share and integrate knowledge as indicated by the response obtained on the question 'ease of sharing and integration of knowledge (3.44). The research participants were in less accord with the other aspects associated with leadership alignment, such as the alignment of data, information and knowledge (2.76), collaborative work (2.85), identification of group objectives and the understanding of group objectives (2.95), finding and enhancing similarities between the group and the organisation (3.04). This was indicated by the neither agree nor disagree responses.

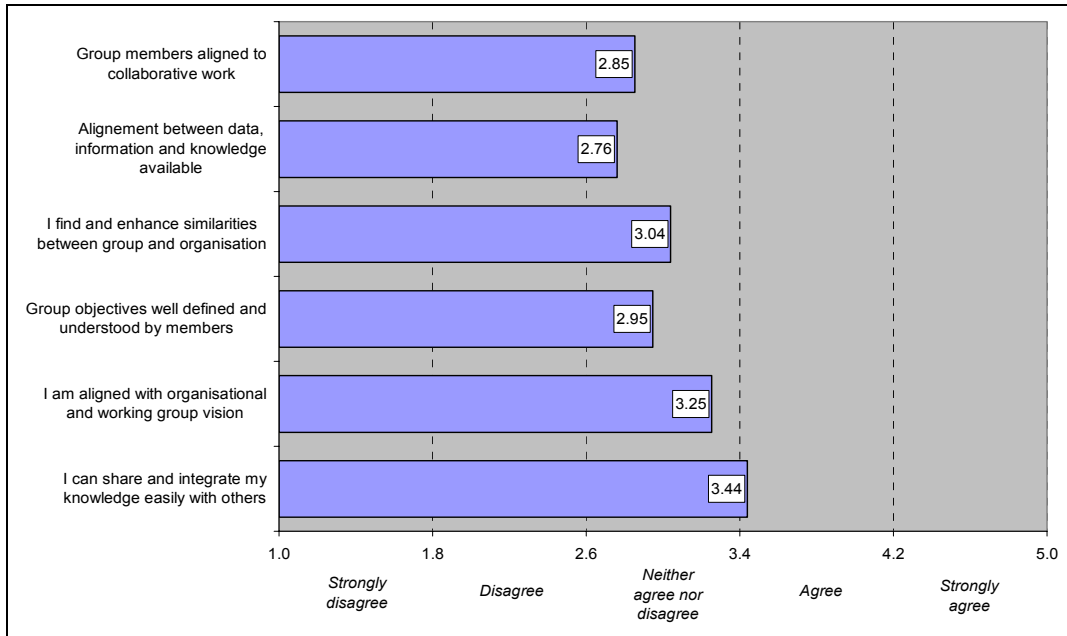


Figure 4.4: Leadership alignment – mean ratings

To conclude, the response indicates that knowledge workers perceived that inadequate levels of alignment exist in knowledge organisations as derived from their responses as pertaining to collaborative work practices (2.85), alignment with data (2.76), knowledge and information available and group objectives (3.04). However, in their own capacities in their formal communities of practice, there is sharing and diffusion of knowledge (3.44). It appears that within the organisation, knowledge silos could possibly exist.

4.2.3.1.5 Communities of practice

Communities of practice are the primary vehicles of collaborative work practices in organisations. This theme evaluated the sense of community within knowledge management and the sub-questions probed specific issues directly associated with 'community' within the workplace. From the data indicating the response to communities of practice it is clear that respondents (80%) agree that they enjoy their respective communities of work colleagues

(3.80). 'Importance of the workplace community' (76%) received the highest response (3.80) and have a strong sense of 'allegiance and loyalty to the organisation' (3.77). The respondents neither agree nor disagree on the 'supplementation of meetings with electronic communication' (3.24), sufficient opportunities for 'face-to-face communication' (3.25) and 'preference for group work over individual assignments' (3.25) are indicative of the research participants' perception that a 'sense of community' could be inappropriate as they responded with neither agree nor disagree. Group support received the second lowest response (2.95). Research participants (75%) agreed least with co-workers providing support and advice (2.92) in an informal context.

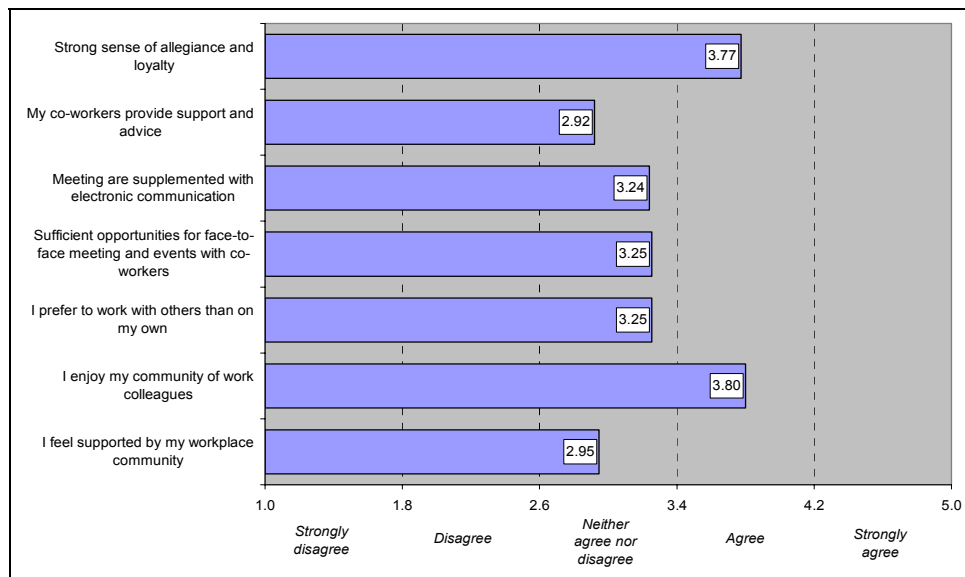


Figure 4.5: Community of practice – mean ratings

In conclusion, the results reveal that informal collaborative work practices are evident and a sense of community is perceived by the research participants. However, the results could suggest more encouragement. Knowledge workers have indicated that there could be a need for allegiance, collegiality and the formalisation of the community of practice (3.77) as participants feel the need to share knowledge with other knowledge workers (3.25), hence the establishment of informal communities of practice occurs spontaneously.

4.2.3.1.6 Vision

This theme and supportive questions aimed to establish insight into the organisational vision for strategic management processes and the alignment of the research participants with achieving the strategic intent through a thorough assimilation of the organisational vision. From the mean ratings of the questions pertaining to organisational vision the sample (83%)

strongly agree that they have the creative skills to contribute towards the vision of the organisation vision. Knowledge workers seem to have a strong vision of their own professional career paths and the alignment with the organisational vision (as they perceive it) within their personal capacity (4.05). Participants neither agreed nor disagreed whether the organisations vision is dynamic (3.19) and perceived that the human capital of the organisation did not have the same shared set of values (3.09) as the organisation. In addition, the results indicated that knowledge workers believe that they have the creative skills and enthusiasm to contribute towards the organisation’s vision.

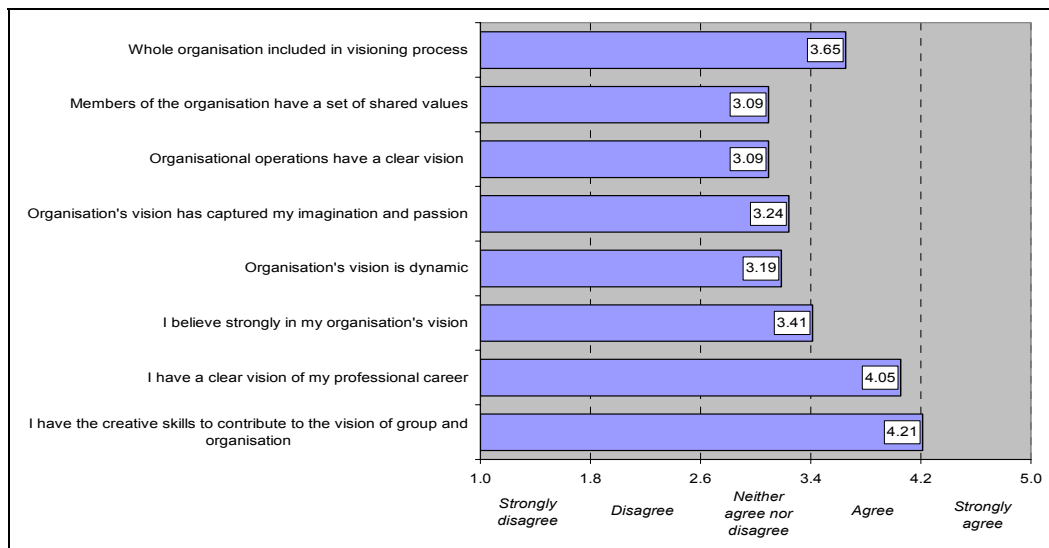


Figure 4.6: Vision – mean ratings

In summary, it appears from the results that building a shared vision is still challenging to a certain degree and apparently the power of visioning is not unlocked optimally. However, research participants responded more positively on this theme than on the aforementioned themes, which could indicate that more certainty regarding the knowledge vision exists and its role in the organisation.

4.2.3.1.7 Leadership

This theme measured aspects relating to leadership and is closely associated with the visioning capacity of leadership measured in the previous theme. Figure 4.7 displays the average scores obtained in this theme. It emerged that individual readiness to accept the leadership role and the knowledge worker’s self-confidence to assume the vectoral responsibility in knowledge management (4.57) is in sharp contrast to their perceptions of the organisation’s ability to provide and encourage leadership around knowledge management practice (2.84). Participants (73%) neither agreed nor disagreed with the results indicating that

current leadership does not support knowledge workers in assuming leadership positions as they are not encouraged to innovate and present their ideation (2.75). However, knowledge workers (75%) perceived themselves as capable of initiating leadership actions in their personal capacity (4.09) and were willing to accept responsibility (3.31). Respondents (83%) neither agreed nor disagreed that there was not adequate provision of training and development (3.31) and also perceived that collaboration as an essential element of leadership was important (3.20).

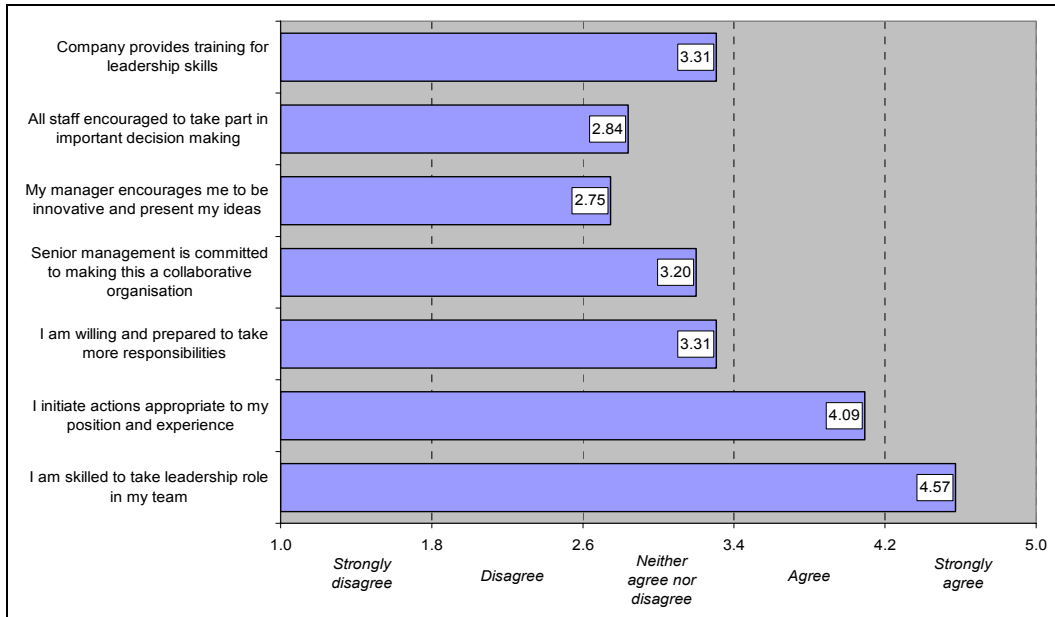


Figure 4.7: Leadership – mean ratings

Thus, the general response indicates that basic leadership functions such as participative management, empowerment, and transparent decision making practices could be enhanced. Encouragement from management is lacking and therefore it can be reasoned that leadership in the context of knowledge management, could be augmented.

4.2.3.1.8 Culture of trust

This theme tested research participants on the issue of the current trust relationship that exists amongst team members and the organisation. Figure 8.4 below contains the average response obtained on each of the sub-questions. The respondents neither agreed nor disagreed with most responses although the response relating to team members possessing appropriate skills and abilities (3.64) rated the highest (79%).

The responses obtained also indicate the participants perceive that they are supportive of each other (3.45) but perceive management as perhaps less trusting of the abilities of knowledge workers (3.28). The lowest responses achieved related to trust and respect as core values of the organisation as perceived (3.07) by the participants (81%) and that the organisation treats knowledge workers fairly (3.00), (85% of participants).

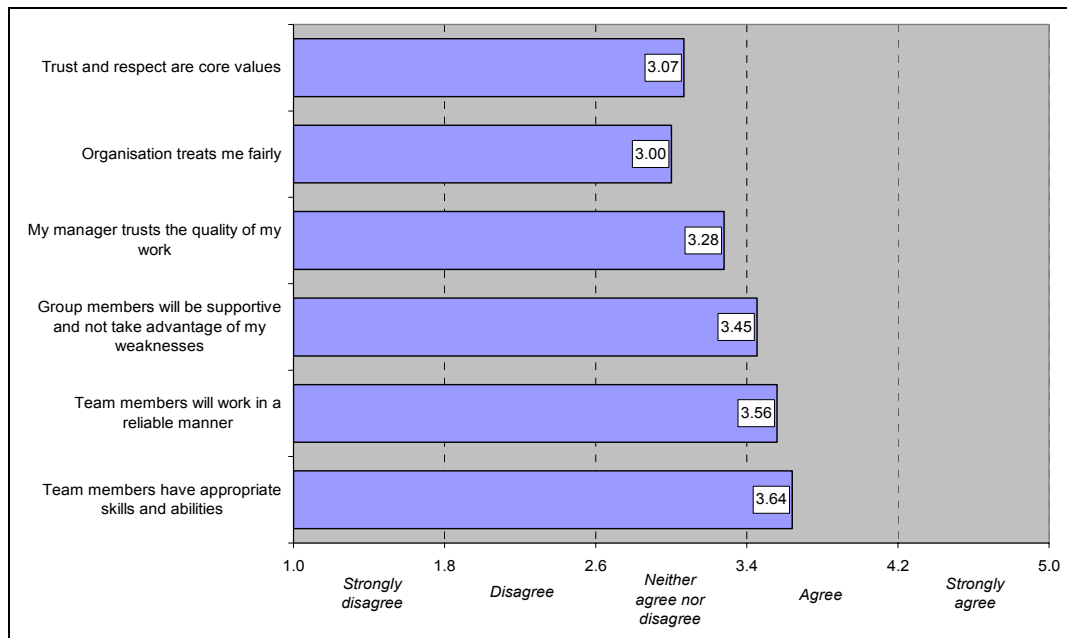


Figure 4.8: Trust – mean ratings

The findings on this dimension revealed that management could be perceived to not foster collaborative knowledge networks and processes and that trust could be enhanced within knowledge organisations.

4.2.3.1.9 Team goals

From the mean ratings pertaining to team goals the sample neither agreed nor disagreed on most themes. Goal setting was measured with the emphasis on the specific organisational practices directly affecting organisational goals, the process of goal setting and the value of goals in knowledge organisations. The highest ratings achieved were those of organisational goal clarity (3.32) and commitment to achieving these goals (3.32). The lowest ratings, which were neither agreed nor disagreed upon, were those of collaborative group goal setting (3.01) and the individual input on the determination of organisational goals (3.05).

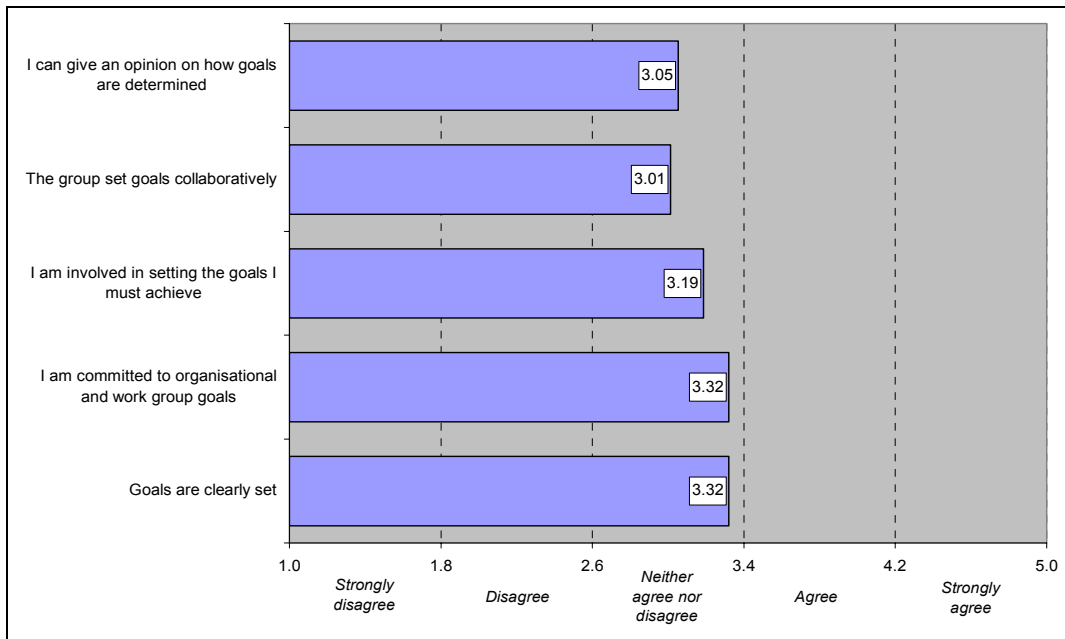


Figure 4.9: Goals – mean ratings

In summary, these results show that organisational goals regarding strategic intent could be enhanced and leadership could be challenged to find innovative ways to achieve this.

4.2.3.1.10 Leadership and strategic intent

This theme endeavoured to establish how leadership deals with the organisational strategic management process. The supportive questions contained the following variables: work process integration, communication, consultation, understanding work group processes and business strategy as well as customer involvement in strategy formulation. Perusal of the average scores for leadership and strategic intent indicates that the highest responses obtained were those relating to the participants' strategic knowledge of the organisation's (82%) present business strategies (3.52) and their proactive collaborating with clients to develop joint business strategies (3.27). The lowest scores were those pertaining to adequate communication flow between workgroups (2.57) and collaborative consultation to achieve work group strategy (2.67). Intermediate score were those relating to alignment and coordination of the strategies of work groups and departments (3.09) and whether research participants (82%) understood the work group strategies (2.91).

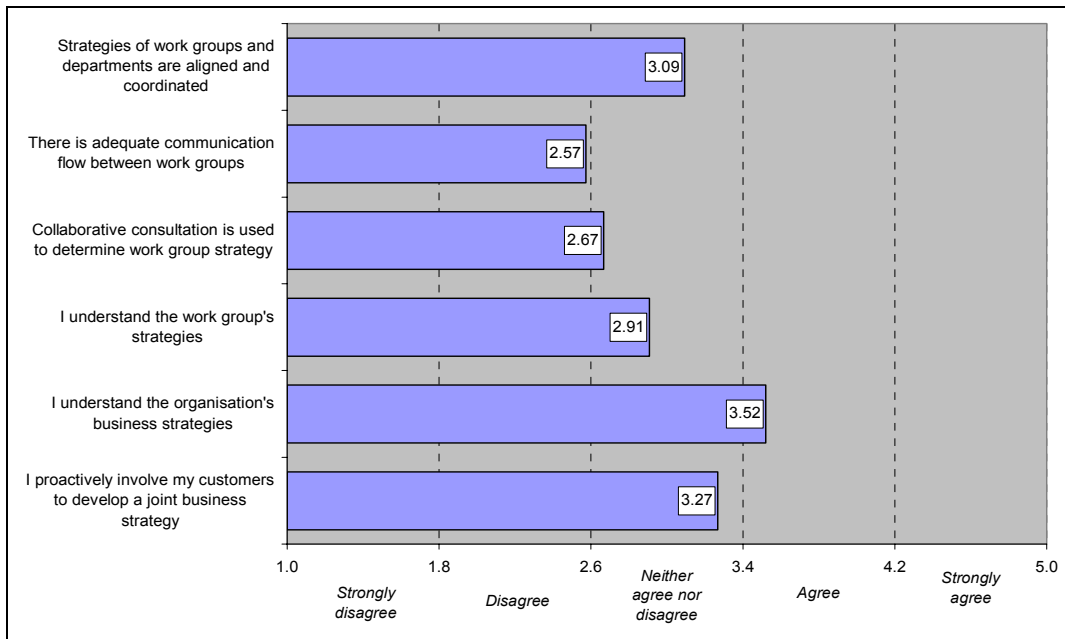


Figure 4.10: Strategies – mean ratings

To conclude, the results obtained indicate that the highest ratings were those of knowledge workers' understanding of organisational strategy and their perceptions pertaining to successful strategic collaboration with stakeholders. The lowest ratings were those pertaining to collaborations within the organisation. It appeared that it was easier to solicit support from external stakeholders than to find supportive alliances within the organisation.

4.2.3.1.11 Leadership and tactical objectives

From the mean ratings of the questions pertaining to leadership and tactical objectives the respondents neither agreed nor disagreed with all questions. From Figure 4.11 below, it can be established that the highest responses (82%) were those achieved where tactical objectives were successfully communicated (3.25) and co-ordinated (3.23). Group processes such as team encouragement to participate in creating objectives (3.08) and the research participants' perception of participation in the objective formulation process (3.00) received middle range responses. Resources allocated to achieving goals received a response rate of 2.87. The lowest ratings were assigned (75%) to the communication process surrounding well-defined organisational tactical objectives (2.71).

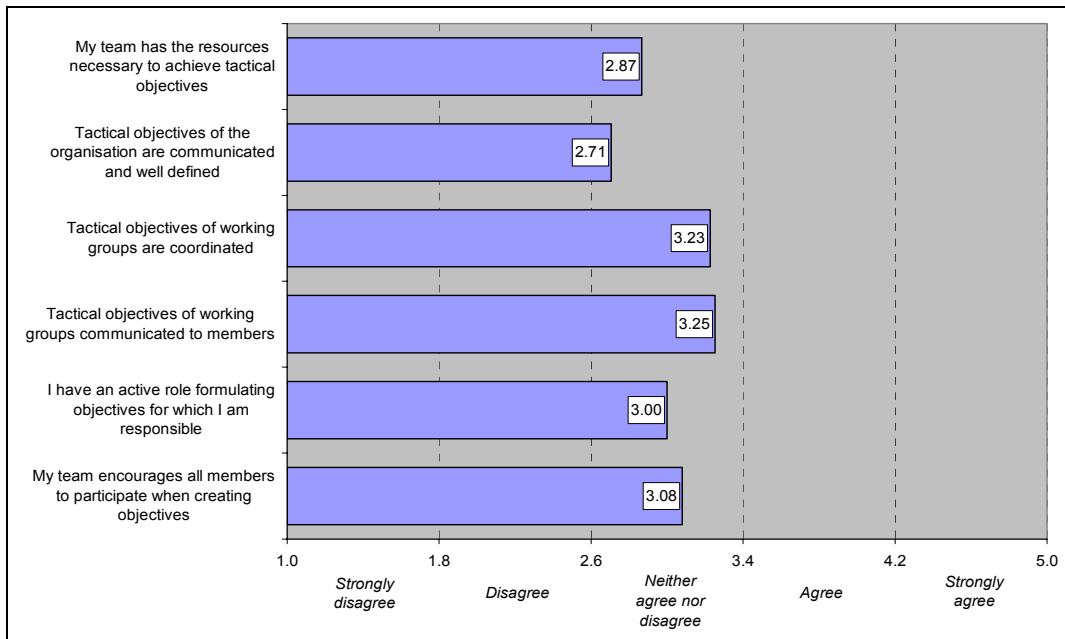


Figure 4.11: Leadership and tactical objectives – mean ratings

These results, together with those regarding trust, leadership and sense of community, point towards a duality that exists in the relationship between the individual and the organisation. This could indicate that the organisation is characterised by a division between leadership resenting organisational interests and the knowledge worker in their respective spheres within the larger organisational context.

4.2.3.1.12 Leadership and implementation

The leadership and implementation theme endeavoured to establish to what extent leadership focuses on communication tools, articulation of opinions, providing challenges, teamwork and ensuring sufficient creative and technical skills.

The highest response rate (75%) as indicated by Figure 4.12 below pertained to the challenge inherent in the work routine (3.64), collegiality with co-workers (3.61), and the ease of communication with team workers (3.37). The expression of views in teams achieved a response of 2.93, which could indicate that group communication processes need more encouragement from leadership. The lowest ranking (82%) was that technical skills necessary for effective work delivery (2.87) is required for sufficient knowledge management praxis.

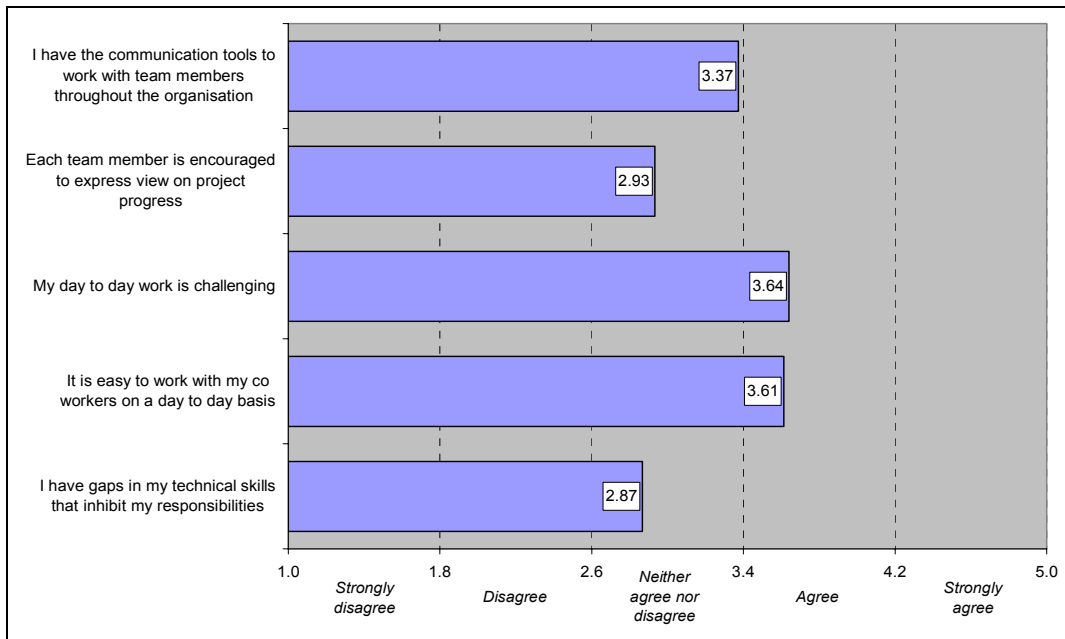


Figure 4.12: Implementation – mean ratings

From the above, it can be reasoned that the knowledge workers perceive that their ideas are suppressed in that they are not encouraged to contribute to work processes and projects and they perceive that the levels of training they receive are inadequate.

4.2.3.1.13 Summary of main themes

The different themes investigated synergistically provide a cognitive framework from which the researcher can deduce the leadership style outcome as perceived by the research participants. The results obtained are grouped according to response rate to establish the relationship between the different themes and the impact of leadership on organisational practices as contrasted with the themes.

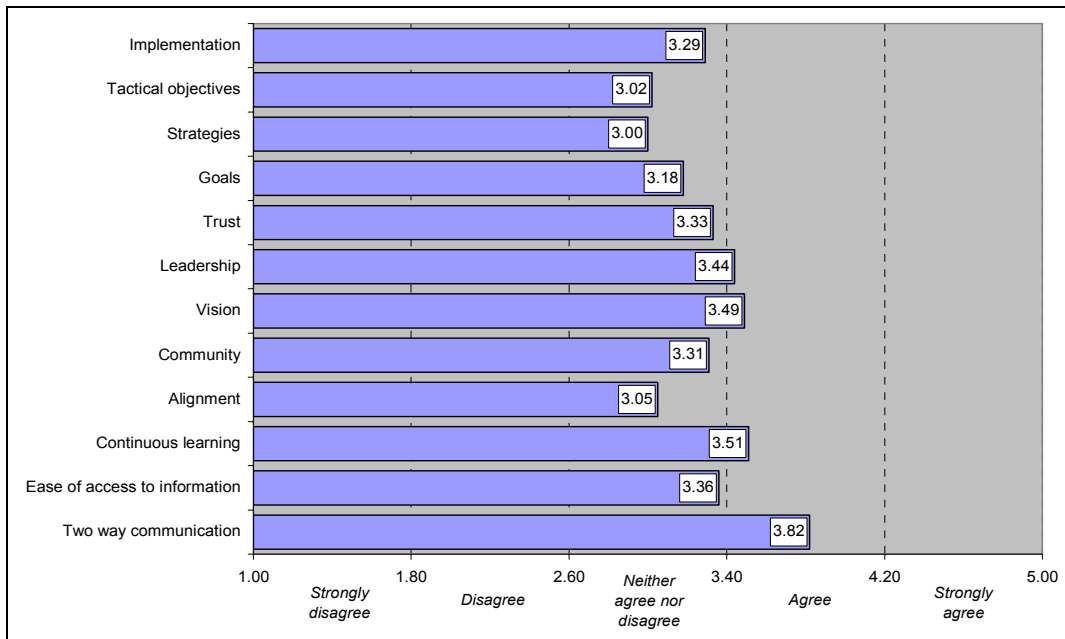


Figure 4.13: Themes – mean ratings

Figure 4.13 above indicates the average group means representing the various themes. The results indicate that the research participants were more positive towards statements relating to their skills and functioning within the organisation. Aspects relating to the organisation in enabling the individual to optimise performance yielded mainly neutral responses. This result could also indicate that there are differences in individual, group and organisational readiness for collaboration. The four themes, namely: two-way communication, continuous learning, visioning and leadership obtained responses higher, which could indicate that the individual knowledge worker is ready for the new paradigm of culture and thought. Ease of access to information (3.36), trust, received a neutral response (3.33), implementation (3.29) and goal setting represents the middle range responses obtained in the themes investigated. These scores indicate that the knowledge worker perceives that the tools provided by the organisation are not necessarily adequate for enhanced knowledge productivity or performance competence and indicates that apparently leadership and culture could drive the process to achieve enhanced knowledge management practice. The lower range of responses received were organisational alignment (3.05), tactical objectives (3.02) and strategies (3.00) which indicates uncertainty of responses. It is derived that the strategic leadership and management processes could be significantly improved. Communication of strategy and the implementation could be aligned to the organisational vision encouraging trust and thereby improve goal setting practices.

4.2.4 Phase 3: Perceptions towards innovative climate and culture

Table 4.7 contains the mean ratings that were obtained in the Innovative Climate Survey (Davila *et al.*, 2004) and represents phase three of the research project. Research participants responded on a scale of one to five, between two opposite statements.

Innovation Climate Survey	Mean
Leadership does not openly encourages future innovations	4.42
Management has a closed attitude regarding external alliances and strategic innovative partnerships	4.42
Management expects knowledge workers to be totally devoted to the development of the organisation	4.42
Leadership puts little emphasis on the management of people for innovative interactions	4.42
Formal vertical communications within the organisation are the norm	4.40
Planning focuses on rationing resources	4.27
Management decides without much input from other levels of the organisation	4.17
Innovation budgets are much less than the competition	4.15
The leadership offers no career guidance with appropriate power and titles for innovators	4.15
Leadership's knowledge of real customer needs is inferior to that of our competitors	4.15
Decision processes are elaborate and formal and do not encourage innovative inputs	4.13
Leadership's innovation knowledge is inferior to that of our competitors	4.13
The organisational culture is planning orientated creating analysis paralysis syndrome	4.10
Few resources are available for new innovative ventures including availability of time	4.10
The senior leadership is unaware of individual creativity and its important relationship with future innovations and competitive advantage	4.03
Management has low tolerance for uncertainty and flexibility	4.00
Management is looking for short-term profits	3.98
Management is not tolerant of failure	3.97
Leadership creates confidence and direction for future innovations and value propositions to be harnessed	1.38
Project failures are systematically reviewed and analysed for lessons to be shared through the learning organisation	1.23
Leadership drives service and products innovatively and is attuned to the market	1.52
Product and service managers tend to underestimate and under use technology for innovation	3.50
Customers and experts are never directly associated with the innovation process	2.57
Management has high tolerance for innovative knowledge workers	1.72
The organisation is able to make balanced choices regarding national and global innovations	1.72
Innovative successes are publicized and discussed	1.23
Management explicitly looks for innovation	1.20
Leadership does encourage departure from the corporate norm	1.20
Management encourages the systematic use of independent innovation task forces for special purposes	1.20
Specific Incentives exist for creative and innovative workforce	1.20
The leadership philosophy favours decentralization where knowledge workers can make decisions close to where the action is	1.20
Individual project innovation championing is encouraged and rewarded	1.20
High innovative value ideation is practiced in this organisation	1.20
Leadership sets reasonable innovative result expectations on new products and ventures	1.20
The human capital in this organisation are highly self-motivated and driven through creativity and innovation	1.20
Leadership has a clear vision of the role and focus of innovation in achieving its objectives	1.07

Table 4.7: Mean ratings – Innovation Climate Survey

The highest ratings was given to the statements 'leadership does not openly encourage future innovations' (4.42) and leadership expects knowledge workers to be totally devoted to knowledge work (4.42) and that leadership places insignificant emphasis on the management of people for innovative interactions (4.42). The lowest rating was given to 'leadership has a clear vision of the role and focus of innovation in achieving its objectives' (1.07). The results suggest that innovation, as a managerial issue is not a priority. The result obtained from this measurement instrument provides the following scenario.

Leadership tends to not openly encourage innovation and seems to have non-committed attitude regarding external alliances and strategic innovative partnerships. Leadership's knowledge of customer needs is inferior to that of the competition. They expect knowledge workers to be totally devoted to the development of the organisation and place insignificant emphasis on directing knowledge workers towards innovative interactions. Formal vertical communication within the organisation seems to be the norm and innovative successes tends to not be publicised nor discussed sufficiently. Leadership provides insignificant career guidance to innovators. Human capital in the organisation seems not to be characterised by self-motivation and is not driven through creativity and innovation. Management tends to seek for short-term profits with no long-term intent and product and service managers underestimate technology for innovation. The budget is perceived to be less than that of the competition.

The results furthermore reveal that planning tends to focus on rationing resources and management decisions tend to be undemocratic without including the input from other levels within the organisation. Leadership seems not to have a clear vision of the role and focus of innovation in achieving organisational objectives. The planning orientation is characteristic of the current organisational culture, which tends to facilitate an analysis paralysis syndrome and subsequently it seems that insignificant resources and time are made available for new innovative ventures. Management tends to have a low tolerance for uncertainty and flexibility and seems to not encourage a departure from the corporate norm. Management's tolerance towards failure seems to be low and innovative knowledge workers are not tolerated. Leadership tends to fail in establishing confidence or provide direction for future innovations and the formulation of future value propositions. Decision processes seem to be elaborate and formal and tend to not encourage innovative input and external stakeholders seem not to be directly associated with the innovation process.

The organisation seems incapable to perform a balanced selection process regarding national and global innovations whilst the leadership philosophy seems to favour centralisation, where knowledge workers are apparently isolated from the action and occasionally rendered

powerless in the decision making process. The perception is that leadership tends to be unaware of the value of individual creativity and its inherent positive relationship with future innovation and competitive advantage. Management seems to ignore an explicit emphasis on innovation and is unsuccessful in encouraging the systematic use of independent innovation task forces for special purposes as also illustrated by the lack of specific incentives for creative and innovative work. Project failures tend not to be systematically reviewed or analysed for lessons learnt and lessons to be shared throughout the organisation. High innovative value ideation seems not always practiced and leadership tends not to set or challenge innovative result expectations for new future products and ventures.

4.2.5 Phase 4: Semi -structured interview schedule. Perceptions towards organisational culture and climate for knowledge management

This phase of the research involved the gathering of qualitative information by means of semi-structured interview scheduling with management. The themes were devised and structured deploying the *Innovation Climate Survey* (Davila *et al.*, 2004). The qualitative process is discussed first. This provides important exploratory insight and conceptual understanding of the research participants' perceptions with regard to organisational culture and climate for knowledge management. Analysis involves dividing the data into manageable themes in order to identify patterns, trends and relationships. The aim of the analysis is to understand the various constitutive elements in the data through inspection and then to establish the relationships between the various concepts and constructs.

The data obtained in phase four will be reduced to facilitate the drawing up of the results. This process must be systematically deployed to ensure that the relevant and constructive conclusions are formulated.

The data was analysed and is presented below.

Step 1: Familiarisation and immersion

An overview of the data revealed that the knowledge workers in the organisation were disaffected by the pressure of the work and the managerial emphasis on knowledge production and quantity rather than quality. This was especially apparent when it came to producing solutions to problems as the time required to produce a sustainable long lasting solution was denied and interim measures had to be adopted instead. Results from management indicated an unawareness of the requirements of knowledge work and a desire

to use production based methods (overt processes) to evaluate staff cognitive processes (which can not be seen to be occurring). The differences on certain items are so vast as to indicate that knowledge workers and management are not interacting or communicating in a meaningful manner.

Step 2: Inducing themes and coding

In order to infer the general themes, the content of each item within the theme was evaluated. The themes are indicated below and the salient points identified from the discussion are listed in the table below. The three boxes indicate positive, negative and related comments on each theme item.

Is there a knowledge culture in the organisation that supports innovation? Discuss		
POSITIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> The organisation encourages knowledge sharing through repositories on the intranet 	<ul style="list-style-type: none"> Knowledge is locked in departmental knowledge silos Departments duplicate the work of other departments Communication is fragmented Knowledge sharing does not occur Creativity and innovation is not encouraged The engagement with creative thought becomes non-existent as leadership fails to incentivise or perpetuate innovative challenges No leadership encouragement exists and no strategic innovation intent is communicated to knowledge workers Leadership does not openly support creative thought, innovation exchanges -nor promote time and resources for the development of innovation awareness. 	<ul style="list-style-type: none"> No recognition is given for intellectual content Staff utilise the technical platform on the intranet whereas management does not involve itself with this important utility Culture limits innovation as no recognition is given for creativity and innovation Top management does not communicate innovative projects to stakeholders – this includes knowledge workers Leadership is unaware of the supportive role for creativity and innovation which is imperative for a learning organisation Knowledge workers yearn for leadership to fulfil a fostering parental role by navigating innovation and embedding a culture of creative thought.

Table 4.8: Theme One: Knowledge culture

Table 4.8 above states that a knowledge culture apparently does not support innovation efficiently due to the fact that knowledge is viewed as a departmental asset. Departments duplicate work because of the fragmented communication process and knowledge sharing does not take place. The absence of recognition for intellectual content, the non-alignment of vision, leadership's apathy towards the intranet and its failure to provide challenges and incentives for creative behaviour and to communicate information regarding innovative projects have a limiting effect on organisational culture. It is important to note that all findings pertain to the results obtained across all knowledge intensive organisations included in the sample.

Can your department or organisation be called a learning organisation? Discuss		
POSITIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> IT Department were given appropriate technical skills and learning occurred as knowledge was essential for operationality 	<ul style="list-style-type: none"> Information is not shared by knowledge managers No time is allocated for learning as managers are too productivity- driven There is only fragmented communication between knowledge workers and management The lack of learning inhibits the production of creative ideation 	<ul style="list-style-type: none"> Management is autocratic Production orientated The issue of power and possession of knowledge - inhibits knowledge sharing Leadership does not encourage learning to take place Information is power-based and not shared throughout the organisation

Table 4.9: Theme Two: The learning organisation

An interpretation of Table 4.9 above shows that the knowledge-driven organisations are not regarded as a learning entity since information sharing fails to occur, time constraints inhibit the knowledge sharing process and the communication process is fragmented. The autocratic management style and production orientated management style are regarded as being responsible for this situation. The IT departments within knowledge organisations regarded the learning process positively as they were satisfied with the information they received and the sharing of tacit knowledge. However, this view was not shared amongst all other departments under scrutiny, which felt that learning was not encouraged or diffused within contemporary organisations.

Discuss the support given for creativity and innovation in your department or organisation? Discuss.		
POSITIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> Managers are always open to creative and innovative suggestions from staff Knowledge workers expand creative and innovative initiatives however the organisation does not offer formal support 	<ul style="list-style-type: none"> No time is given for creative thought as the organisation is too productivity driven Information is not shared Ideas are not channelled Innovative ideas are not expanded upon and expires in the system Leadership does not formally market creativity nor innovation to internal or external stakeholders 	<ul style="list-style-type: none"> Management is autocratic No innovation-based training given Top management does not encourage creativity Leadership does not encourage creativity and innovation as part of formal strategy Leadership does not appreciate the creative potential nor the development of the dimensions of creativity

Table 4.10: Theme Three: Support for creativity and innovation

Table 4.10 indicates that managers do not provide support for creativity and innovation due to limited time, lack of shared information, non-channelling of ideas and because innovative ideas are not expanded upon. The reasons given for this are the autocratic style of management, lack of training and lack of encouragement. However, managers felt that they are always open to creative and innovative suggestion from staff.

What support do you give for creativity and innovation in your department? Discuss.		
POSTIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> Management ensures that there is no duplication of creative ideas Occasionally there is a reward or incentive given for innovation breakthroughs but the information is not communicated throughout the organisation 	<ul style="list-style-type: none"> Ideas are not channelled into innovation implementation Creative ideas are not expanded upon There is no time for creative exchange to occur 	<ul style="list-style-type: none"> Management is autocratic Creativity is seen as a high tech term No comprehension of the value of innovation Leadership does not communicate innovation to all levels of the organisation

Table 4.11: Theme four: Organisational support for creativity and innovation

Table 4.11 illustrates that managers do not know what kind of support to give for creativity and innovation because ideas are not channelled and expanded upon. The autocratic management style and the perception that creativity is a high-tech term with most managers not understanding what innovation entails are reasons for this situation. However, managers ensure that creative ideas are not duplicated.

What proportion of output is innovative (building on old concepts) and what proportion is creative (novel inventions)? What proportion of new creations (both innovative and creative) is implemented? Discuss.		
POSITIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> • No comments 	<ul style="list-style-type: none"> • No innovation occurs in the organisation as the culture is too productivity driven • Too productivity driven to have time for creative ideation • Silos exist between all business units • Most innovation decisions never reach into final stage of implementation 	<ul style="list-style-type: none"> • High staff turnover • There is no forum for creativity • A physical space is needed for innovation to occur and for creativity to develop

Table 4.12: Theme five: Innovation diagnostic

According to Table 4.12 the proportion of output that can be regarded as innovative and creative is low. The proportion that can be regarded as new and which is implemented is also low as little innovation occurs due to the maintenance of old concepts and organisations being too productivity driven. Time for creative ideation lacks and silos exist between business units. Most innovation decisions therefore never reach the final stage of implementation because organisations encounter high staff-turnovers.

Give your opinion on the need for innovation strategic knowledge management transformation of the		
A) Workplace B) Human capital? Discuss.		
POSTIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> • Knowledge workers establish their own meeting places and groups outside of the organisational context 	<ul style="list-style-type: none"> • Too bound by legislation, procedures and regulations • No strategic intent regarding innovation • No rewards for intellectual content 	<ul style="list-style-type: none"> • Culture promotes conformity • Leadership does not formally drive or appreciate creative and innovative initiatives

Table 4.13: Theme six: Innovation and strategic knowledge management

Table 4.13 elaborates on the opinion of managers that the need for strategic innovation knowledge management transformation of the workplace and human capital is high but that they are restricted by legislation and regulations, lack of a clear strategic intent and rewards for intellectual content as the organisational culture promotes conformity.

Does competitive intelligence and innovation connect knowledge management with the knowledge futures in your organisation? Discuss.		
POSTIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> • Knowledge workers do communicate informally regarding new innovations and creative ideation but these ideas are not capitalised upon 	<ul style="list-style-type: none"> • No communication platforms exist to drive creative ideas • No infrastructure for innovation is in place • No communities of practice exist • No incentives for new innovations exists 	<ul style="list-style-type: none"> • Individual knowledge workers meet privately to share knowledge and are dedicated • Knowledge workers focus on their own departments and no innovations are discussed or encouraged

Table 4.14: Theme seven: Competitive intelligence and innovation

Interpretation of Table 4.14 shows that the link between competitive intelligence, innovation and knowledge management with the knowledge future of the organisation is not clear because of the fragmented communication process, ineffective infrastructure and the non-alignment of formal communities of practice. However, individuals do meet privately to share knowledge and then also only focuses on issues pertaining to their respective departments where they work.

Is the strategic intent of knowledge management aligned with all functions throughout the organisation? Discuss.		
POSTIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> • No comments 	<ul style="list-style-type: none"> • Knowledge silos prevent the alignment of innovation • No infrastructure to capture/communicate/align strategic intent with group/individual • No meaningful innovation forum exist • Knowledge is captured within departments and not diffused throughout the organisation 	<ul style="list-style-type: none"> • No creative input or support is given by leadership or top management • Innovation is not encapsulated within the strategic intent

Table 4.15: Theme eight: Strategic intent and knowledge management

Table 4.15 indicates that the strategic intent of knowledge management is not aligned with all functions throughout the organisation due to knowledge silos where knowledge is locked into that exist, no infrastructure to capture/communicate/align strategic intent with group/individual, the absence of a meaningful innovation forum. Leadership fail to provide creative input.

What do you believe the strategic function of innovation is in your organisation? Discuss.		
POSTIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> Information Technology is there to support business and vice versa Information Technology dictates technology for the whole group Small Business Units look at immediate Information Technology needs but Group Information Technology looks at future needs 	<ul style="list-style-type: none"> One way communication with Information Technology department – Information Technology informs other departments what to do No research initiatives are facilitated by leadership Information Technology is not internally aligned and thus fragmented 	<ul style="list-style-type: none"> Information Technology does not fully investigate departmental needs Information Technology does not support innovation Leadership should encourage Information Technology to support new innovations Communication policies and data sharing are misaligned and sharing of important information does not occur.

Table 4.16: Theme nine: Strategic Objectives

From Table 4.16 it can be derived that the long-term function of Information Technology in the organisation could be more positive when Information Technology change its communication practice to a two-way communication orientation and research the actual need of the end-user instead of maintaining a misaligned dominating stance. However, Information Technology is regarded to be there to support the organisation and vice versa. While group Information Technology departments dictate which technology is deemed necessary for the entire group.

What are your overall impressions of the current innovation situation within your organisation? Discuss.		
POSITIVE	NEGATIVE	RELATED ISSUES
<ul style="list-style-type: none"> We learn from one another through team exchanges - creativity and innovation is not formally encouraged Innovation could be used strategically for the development of new opportunities Communities of practice exist informally 	<ul style="list-style-type: none"> Information Technology establishes a power base Innovation champions do not communicate with each other, consequently there is no knowledge sharing Communication is fragmented as communities of practice does not formally exist and this could challenge and motivate staff to be more proactive regarding innovation and creativity 	<ul style="list-style-type: none"> Management is autocratic –does not ask for suggestions, does not trust nor provide autonomy to knowledge workers Innovation champions display an egocentric attitude No-one recognises the innovation champions Management does not endeavour to develop creative intelligence e.g. training of knowledge workers

Table 4.17: Theme ten: Comprehensive innovation impressions.

Table 4.17 indicates that the overall impressions of innovation in the organisation are that Information Technology has a strong power base with innovation champions not communicating throughout the organisation and consequently there is no knowledge sharing due to a fragmented communication process. An autocratic management style, little trust in knowledge workers and the selfish attitude of innovation champions are primary reasons. The perception exist that innovation champions are in it for themselves, they are not productive

and they are not known to the organisation. However the perception does exist that there is an organisational learning process in place where role players learn from one another and also that creativity and innovation could be used strategically in the organisation.

Perusal of Tables 4.8 to 4.17 above reveal that in general the group discussion could not support the knowledge forum which had been established by the organisation, because they did not have time and there was little or no managerial support. They felt that their performance was based on superficial quick-fix solutions rather than long lasting meaningful solutions and that it reflected badly upon themselves, but it was a position, which they were forced into by management. Furthermore, employees did not know who were the appointed innovation champions and many were of the opinion that these champions jealously guarded their projects thus actively preventing the sharing of knowledge, which is so important for a learning organisation and the establishment of communities of practice.

Step 3 *Elaboration:*

From the data it can be derived that:

- Organisational culture should be healthy or positive for collaboration to occur
- All levels of leadership should be aware of the creativity process to encourage knowledge workers
- Knowledge work cannot be produced as if it occurs on a production line
- Recognition for knowledge inputs should be given, and
- Innovation champions and the projects that they are managing should be marketed in the total organisation in order to engender a sense of worth and faith in the project.

Step 4 *Interpretation:*

A full interpretation of the findings will be presented in Chapter 5.

4.2.6 Phase 5: Non-Directive Interviews

The non-directive interviews produced the following insights, which were based on two respective themes:

Theme 1: Leadership, innovation and creativity in the knowledge-based organisation:

- Leadership is not concerned about innovation and leadership does not promote a culture of innovation,
- The organisation does not harness individual creativity,
- The organisation is completely production orientated,
- Leadership is not aligned with the strategic intent and therefore no clear intent and focus on establishing communities of practice exist. Therefore knowledge workers create their own informal communities of practice or knowledge networks,
- There is a vast gap between knowledge management and leadership in practice,
- Creativity is not promoted or rewarded,
- There is no learning process because reproduction of the same content with little new innovation takes place. Little innovation awareness is present and new combinations are not created due to a lack of socialisation in the organisation, and
- There is no new knowledge creation taking place, as innovation is regarded as exclusive and therefore not diffused throughout the organisation,
- The research participants revealed that there was a need to intentionally foster innovation and creative potential through formalised procedures,
- The development of a collaboration based knowledge management infrastructure was needed for the alignment of new innovations,
- A learning organisation was needed through the formal establishment of innovation champions and the installation of formal communities of practice,
- Dialectic tension and perpetual challenging were seen as to very important criteria for the development of creativity and innovation,
- Communities of practice were deemed essential elements to drive creative leadership,
- The socialisation of information through informal dialogue was essential to achieve knowledge creation momentum,
- Information technology communication strategy poses fragmentation, hence the creation of communication barriers (internally and externally),
- Communities of practice contribute new meanings and innovation suggestions which develops knowledge productivity and offers support to other communities of interest,
- Communities of practice support sustain and develop self-management and self-transcending in knowledge workers in gaining an evolved creative intelligence and stimulates the fusion of innovative solutions.

Theme 2: Characteristics required for creative leadership:

- Leadership should be team orientated and allow for the socialisation of information
- Communities of practice must be formally established and synchronised with the leadership process
- Leadership should be responsible for effective communication and allow for autonomy and freedom for knowledge workers to express creative thoughts.
- Leadership should encourage organisational learning through communities of practice

4.2.7 Phase 6: Characteristics required for creative leadership

4.2.7.1 Results from regression analysis

In order to describe and explain the characteristics required for creative leadership, the innovative awareness scores obtained from the *Baseline Management Behaviour Questionnaire* (Kriek, 1990) and the scores obtained for the five dimensions as defined by the *Torrance Test of Creative Thinking* (Torrance, 1984) were combined with the scores obtained for the twelve themes that the *Collaboration Leadership Quotient Questionnaire* (Stokes & Logan, 2004) measures as well as the *Innovation Climate Diagnostic* (Davila et al., 2004). These variables were contrasted against managerial effectiveness and productivity in order to identify the drivers of these factors.

Using a three-step linear regression model building process, productivity was first modelled against managerial effectiveness, innovative awareness and total creativity. The results, as presented in Table 4.16, identified managerial effectiveness as the primary driver of productivity, with a Standardised Beta of 0.486. Secondary drivers are innovative awareness (0.254) and creativity (0.248).

Coefficients ^{a,b}					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Managerial effectiveness:	.530	.046	.486	11.619	.000
Innovative awareness:	.281	.042	.254	6.737	.000
Total creativity:	.010	.002	.248	6.473	.000

a. Dependent Variable: Productivity
 b. Linear Regression through the Origin

Table 4.18: Regression coefficient: Managerial effectiveness and five dimensions of creativity

A second model where managerial effectiveness was modelled against the five dimensions of creativity and innovative awareness identified innovative awareness (0.457), fluency (0.352) and elaboration (0.183) as primary drivers of managerial effectiveness. See Table 4.17 for results.

Coefficients^{a,b}					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Innovative awareness:	.464	.033	.457	14.071	.000
Fluency:	.012	.001	.352	9.080	.000
Elaboration:	.007	.001	.183	5.563	.000

c. Dependent Variable: Managerial effectiveness
d. Linear Regression through the Origin

Table 4.19: Regression coefficient: Managerial effectiveness and the twelve leadership collaboration themes

The third regression analysis modelled managerial effectiveness against the twelve themes measured by the Collaboration Leadership Quotient Questionnaire. The result identified two-way communication (0.932) as the primary driver of managerial effectiveness.

Coefficients^{a,b}					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
TWO WAY COMMUNICATION	.842	.038	.932	22.032	.000

e. Dependent Variable: Productivity
f. Linear Regression through the Origin

Table 4.20: Regression analysis of managerial effectiveness and twelve themes identified by Stokes and Logan

The results can be presented by means of Figure 4.14. The relationship among the variables identified by the data analysis process are indicated in an open systems model to illustrate the relationship that provides the best solution to optimise creativity and innovation in the work place. The qualitative results (see phase 5 theme 2) indicated that communities of practice and the appreciation of creativity and innovation for knowledge worker productivity are essential characteristics needed for a new leadership paradigm in the knowledge economy.

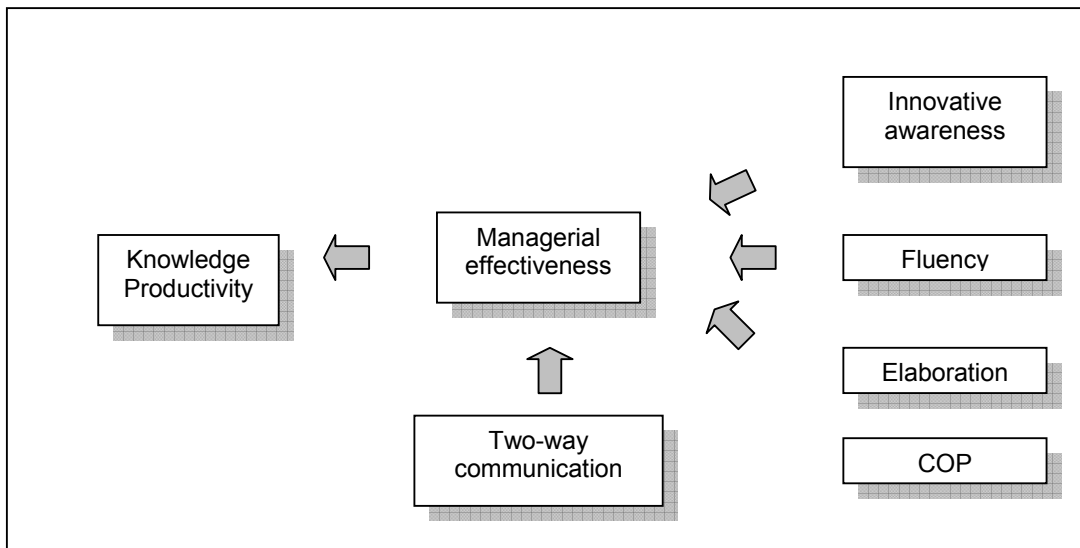


Figure 4.14: The creative leadership characteristics model

4.3 CONCLUSION

The results from the analysis of the data gathered was presented in this chapter. It was found that the intervention did have a significant statistical effect on the development of creative ability among the research participants submitted to the research project. However, to a lesser extent, it also influenced innovative awareness. Secondly, it was found that the relationship between creativity and managerial effectiveness is statistically more significant than the relationship between creativity and knowledge productivity. Innovative awareness also revealed a statically more significant correlation with managerial effectiveness than with knowledge productivity. Thirdly, with regard to research participants' perception about leadership in the workplace, the results indicate that research participants were more in agreement towards statements relating to their own skills and functioning within the organisation. Aspects relating to the organisation as facilitator of knowledge workers appeared to receive uncertain responses where knowledge workers neither agreed nor disagreed. The majority of responses concerning leadership and culture received neutral responses. This could be due to the fact that knowledge workers do not have the freedom to express themselves within their current knowledge environments. This suggests a duality between the knowledge workers and the organisation. The results furthermore revealed that there are diverse levels of individual, group and organisational readiness for collaborative leadership.

Fourthly, the perception towards innovation culture and climate in general reveals that participants in the group discussions could not support the notion of knowledge management

was practiced effectively and innovatively within organisations, because leadership predominantly focussed on productivity and insignificant managerial support was perceived. The majority of participants experienced that their performance was based on superficial immediate solutions rather than strategic meaningful solutions and reflected negatively upon their knowledge and innovative performance. Furthermore knowledge workers were unaware who the appointed innovation champions were and what the role of leadership was in leveraging knowledge productivity. Knowledge workers perceived that leadership guarded ownership of knowledge by depicting role definition as support for mandate establishment, thus actively preventing the sharing of knowledge, which is important for establishing a learning organisation and formal communities of practice.

Finally the research data concerning the *Innovation Climate Survey* (Davila *et al.*, 2004) revealed that the research participants mainly gave neutral responses and perceived their organisations not to be optimally harnessing creativity and tend to not appreciate the strategic importance of innovation. A statistical modelling of variables revealed that knowledge productivity is driven primarily by managerial effectiveness, which in turn is leveraged by innovative awareness, fluency, elaboration and two-way communication. These key elements produced evidence of the most important characteristics for creative leadership within the scope of this exploration. The next chapter presents the interpretation of the results.

CHAPTER 5

INTERPRETATION OF DATA

“The futures-creative leader not only imagines the preferred future but works to create it.” (Nanus, 1990:p13)

5.1 INTRODUCTION

Business environments within the knowledge economy are being challenged to develop new capabilities to support creativity and the progression of innovative processes, which are essentially embodied within communities of practice (Kanter, 1990:7; Leonard & Swapp, 2004b; Wenger & Snyder, 2000:139). This core capability presupposes new leadership conditions that offer committed support to protect and extend intellectual capital to sustain future creative intelligence. New leadership rubrics are required which promotes knowledge worker productivity through continuous innovation and economises the harvesting of future knowledge value propositions (Garvey & Williamson, 2002:81; Housel & Bell, 2001:101; Kanter, 1997; Lundvall, 1990). Within this new knowledge landscape, organisations of the future will be required to encompass a unique approach for the advancement of knowledge productivity. Leadership is now compelled to engage deeper into the science of creativity to encourage new forms of competition, which requires a clear vision of the character of leadership in the postmodern era (Amabile & Kramer, 2007). According to Jackson *et al.* (2003:4) an organisation’s resources and capabilities are a consequence of its leadership capabilities and ultimately, human capital has become the most valuable asset for competitive advantage as it is the most difficult resource to imitate.

In this chapter, the researcher endeavours to explore and describe the data gathered in the five phases of the research and to explain the characteristics requisite for creative leadership. The data is described in the context of the economy of knowledge, which is identified as the exploitation and manipulation of knowledge in all its infinite possibilities and components. This framework contextualises a holistic integrated approach that operates within the wider knowledge production framework, to enable the creation of new strategies and business models. These are promoted to generate significant value in the global landscape. The outcomes of the four research objectives will be critically discussed and finally, an exploration of creative leadership is proffered to demonstrate currency and scientific applicability.

5.2 ANALYSIS OF THE FINDINGS IN RELATION TO THE RESEARCH OBJECTIVES

The findings of the research as derived from chapter four are discussed below, based on the quantitative information collected with the *Torrance Test of Creative Thinking* (Torrance, 1984), the *Baseline Management Behaviour Questionnaire* (Kriek, 1990), the *Collaborative Leadership Quotient instrument* (Stokes & Logan, 2004) and the *Innovation Climate Survey* (Davila et al., 2004). The qualitative information was gathered by means of semi-structured and non-directive interviews with knowledge workers. A critical integrative discussion will be presented to include the various constructs explored and to offer reflexivity pertaining to the complexity of the data produced.

5.2.1 Research Objective One: To determine the relationship among individual creativity, innovative awareness, knowledge productivity and managerial effectiveness of knowledge workers within the context of the economising of knowledge.

The ability to manage knowledge is increasingly more imperative in the discontinuous knowledge economy. Knowledge productivity through the creation and diffusion of new innovation-driven knowledge sustains knowledge competitiveness. According to Dalkir (2005:3) creativity and innovation is regarded as the most valuable commodity that is embedded within the knowledge worker to drive high-technology products and services. Innovation awareness translates into the tacit knowledge of highly mobile human capital. Knowledge is increasingly viewed as the new intellectual asset and possesses paradoxical characteristics that are radically different from those of other valuable commodities. As knowledge is abundant, the transferral of knowledge requires knowledge leadership and managerial effectiveness, which is deliberate and systematic requiring collaboration through communities of practice to add value through learning and innovative knowledge solutions.

The research established a positive relationship between the constructs of individual creativity, innovative awareness and knowledge productivity and managerial effectiveness, which was confirmed by hypothesis testing as can be perused in Tables 4.1 to 4.6. The data revealed that the relationship among the variables produced statistical support, which predicates that innovative awareness; fluency and

elaboration are the primary drivers of managerial effectiveness. The most significant relationship was found between innovative awareness and managerial effectiveness, followed by creative ability and knowledge productivity. Furthermore, managerial effectiveness was shown to be the primary initiator of knowledge productivity with innovative awareness and creativity as the secondary drivers. There is an inter-relationship between these constructs as knowledge productivity is the logical consequence of managerial effectiveness, which in turn is determined by innovative awareness, fluency and elaboration.

Phase One of the research design endeavored to evaluate whether explicit knowledge productivity could be enhanced, collected and processed through systematic exchanges to contribute towards strategic competitive advantage. Explicit knowledge is disseminated among knowledge workers who employ creative thought through communication networks to facilitate new modes of knowledge conversion. New knowledge seemed to be created and then converted into tacit knowledge during the internalisation process, which suggests that the interventions essentially developed the research participant's ability to generate higher levels of creative ideas, which simultaneously enhanced the level of knowledge productivity. A shared narrative is proffered by Powell and Snellman (2004:199), Takeuchi and Nonaka (2004:48), Tobin (1998:3) and Von Krogh (2000:5) describing the importance of knowledge socialisation and storytelling which provides an aid to re-membering shared knowledge and consequently advances novelty in thinking.

The non-directive interviews presented data in Phase 5, which indicated that the interventions enhanced self-management and self-transcending through team exchanges which according to Von Krogh (2000:229) advance the capacity to generate knowledge and can lead to the exponential advancement in creative problem solving capacity. Garvey and Williamson (2002:50) postulate that during knowledge learning processes, knowledge workers identify with diverse knowledge themes and build inspiring knowledge networks through communities of practice to develop self-organisation, creativity and open dialogue. This in turn develops individual responsibility, open information exchanges among knowledge workers, and is observable in Figure 4.2 depicting access and sharing of information as developmental features. The provision of knowledge sharing opportunities during the intervention phases facilitated communication and can be noted in Figure 4.1. Although most responses were neutral in this instance communication frameworks seem to have provided the necessary dialectic tension required to facilitate new

prospects for explicit economic interests to develop and consequently they were expanded upon. These results were statistically assessed using the quantitative data in Phases 2 and 3 where the data concerning the construct communication revealed that effective communication networks enhance trust and relationship building. This is further notable in Figures 4.5 and 4.8, which confirm that the formation of communities of practice indeed seems to be an essential element for the enrichment of knowledge productivity. The data in Table 4.6 contributes to the notion that knowledge creation is a self-actualisation process and according to various authors (Ahmed, 1998:30; Amabile, 1998:76; Folan, 1999:45; Garvey & Williamson, 2002:81; Nonaka & Teece, 2001:18; Wenger, 2003:76; Von Krogh, 2000:18), knowledge workers can be enabled to reach beyond personal boundaries through significant knowledge socialisation to promote creative-transcendence. This tendency is particularly evident in Figure 4.11, which depicts the ability of knowledge workers to discover new problem solving perspectives as endorsed by authors Reiter-Palmon and Illies (2004:55).

According to several authors (Cheng, 2005:609; Dalkir, 2005; Majaro, 1988:27; Raven & Stephenson, 2001:17; Read, 1996:232; Rowe, 2004:114), creative intelligence is fundamental to the enhancement of efficient knowledge exchanges since tacit knowledge can only be shared through circuitous experience, which requires knowledge workers to continuously exchange information. The interventions support the notion that creative intelligence during the socialisation process intensifies dialectic tension driving knowledge workers to interact with perceived support and shared mental routines. Various authors (Bryan *et al.*, 2007:1; Geijssel *et al.*, 1999:310; Tidd *et al.*, 2001:28; Takeuchi & Nonaka, 2004:48) suggest that knowledge workers can surpass their knowledge confines during the externalisation of knowledge phase by committing to the group and using the challenges presented by interventions to expand knowledge capability. The fusion of aspirations and ideas seemed to become integrated within the sample's mental and creative awareness. Arrow (1994:2), Lam (2000:245) and Johnson, Lorenz and Lundvall (2002:245), agree that during the internalisation stage, knowledge workers realise that new knowledge generated through externalisation could assist in transcending limitations and provide the opportunity to reflect upon newly acquired knowledge contexts within particular research environments. This is further highlighted by Nonaka (1991:96) who suggests that the timeously sharing of knowledge expands the knowledge base and increases knowledge productivity (see Tables 4.1-4.6).

Knowledge socialisation is contingent on learning which leverages increased knowledge productivity according to Easterby-Smith *et al.* (2000:785). Duguid (2005:110) suggests furthermore that by improving innovative knowledge accessing to facilitate the changing of the current knowledge environment exploits the economic application in the economy of knowledge. This is critical to establish communities of *practice* with a common knowledge intent to obtain a competitive lead. According to Davenport and Prusack (2006:78) the fluid blending of framed skills and knowledge applications provide knowledge workers with an agenda to evaluate and integrate new implicit and tacit knowledge, which resides within the knowledge worker and the community of practice. The research findings noted in Phases 1 to 5 indicated that self-management developed through informal knowledge governance and promoted sharing structures. Shared leadership is facilitated through communities of practice (as also noted in Figure 4.5) and furthermore provides direction to implement and achieve knowledge goals (see Figure 4.9). It seems apparent from the data that leadership initiatives, developed organically within the communities of practice, as noted in Figure 4.11, and subsequently generated knowledge that supported specific productive inquiry. Accordingly, the prescribed interventions seemed to provide access to internal and external information (as noted in Figure 4.2) through the collective contribution of knowledge workers through the exposure to learning (see also Figure 4.3). New knowledge forms and domain practices seemed to stimulate self-ascendancy and consequently developed an organic leadership style among the research participants. These were established on agreed principles, which were developed by knowledge workers through the resurgence of consensus within the respective communities of *practice* (see Figure 4.7). However, this leadership development dynamic seems in contrast with the leadership imposed by current knowledge-intensive organisations as noted in Phases 2 and 3. Authors Reiter-Palmon and Illies (2004:58) and Taylor-Bianco and Schermerhorn (2006:461) underscore this assumption suggesting that knowledge workers pose the capacity to promote self-leadership and thereby facilitate ownership of knowledge within the new economy.

Creative initiatives shift the knowledge worker's experience from a formalised structured perspective to a self-directed approach, which is in contrast to the traditional culture of the current organisation (Figure 4.10). According to Hamel (2000:31), organisations do not always provide extraordinary leadership in support of knowledge workers. During the interview stages, communities of practice were organically established to enhance learning capability and knowledge acquisition and

ultimately creative performance, which was reinforced through high-trust and supportive relationships among participants. Examples of such high trust and supportive relationships are evident from Figures 4.1 and 4.3.

Although the majority of responses in this instance were neutral, the qualitative research indicated that there is a general assumption regarding accountability for supporting and accepting responsibility for affording an effective and productive knowledge base (see Figure 4.11). Within this context, and also confirmed by the data in Figures 4.1 and 4.5 the research participants seemed to assume the responsibility to support and collaborate across multiple levels respectively and the proviso provided during the research phase enhanced the ability to communicate and thus enabled exponential knowledge exchanges. The qualitative data revealed that the social nature of learning and the benefits of providing opportunities to collaborate and learn collectively occurred (see Figure 4.3). Knowledge workers were continuously designing and recreating knowledge-conducive environments through social interaction, reproducing spirals of knowledge, which seemed to fuel the respective learning initiatives within the groups. This in turn could have established a culture of knowledge sharing and trust as noticed in Figure 4.8. Various authors (Alavi, Kayworth & Leidner, 2005:191–207; Garvey & Williamson, 2000:53; Jackson *et al.*, 2003:373; Senge, 1990:292; Stankowsky, 2005:6; Wenger *et al.*, 2002:15), suggest that identity and affiliation among knowledge workers promote knowledge sharing communities and thereby promotes the accumulation of intellectual capital. This perceived organisational innovativeness establishes multiple interchanges and exchanges of new ideas and is propelled by self-leadership in search of potential synergies. This correlates with the findings of Alfred and Garvey (2000:270), which promotes the findings of various researchers (Robbins, 2003:11; Rothwell, 1977:191; Rowe, 2004:51, Slater & Narver, 1995:63; Snowden, 2000:24) who agree that self-leadership is essential for efficient knowledge management and consequently enhances knowledge productivity.

According to Saint-Onge and Wallace (2003:90); Stokes and Logan (2004:225) and Von Krogh (2000:229) knowledge exchanges create intangible assets through the collaboration process and knowledge transfer (see Figure 4.11) where alignment with leadership intent is the vehicle applied in the process to establish a unique set of inter-group dynamics which drives knowledge productivity within the particular knowledge environment. The centrality of the knowledge leader referred to in Figure 4.12 as interface and nodal point for knowledge conversion and collaboration could

indicate that a unique social organism develops as a collective characteristic of knowledge socialisation. This event became apparent during the application of the research intervention and seems evident from Figure 4.10 and Tables 4.6 and 4.7.

In Figure 4.1 the internal and external communication practices revealed significant prospects, which concur with authors (Stokes & Logan, 2004:222; Saint-Onge & Wallace, 2003:123-128; Tidd *et al.*, 2001:228). These seem to serve as an integrating mechanism that sustains the innovation process to establish interconnected relationships, which are contained within the current knowledge realities and particular domains. These are formulated within the organisational strategic intent and becomes apparent in Figures 4.7 and 4.10 and Table 4.15. The data signifies that social processes lead to social innovations and the collective acceptance of the shared knowledge which concurs with several authors (Borghini, 2005:22; Breu & Hemmingway, 2002:147; Housel & Bell, 2001:113; Saint-Onge & Wallace, 2003:120) who collectively agree that social exchanges among knowledge workers is the key driver for generating future innovation value which in turn offers opportunities for increased knowledge productivity.

The quantitative research (Phase 1) indicated a significant statistical relationship between individual creativity and innovative awareness, knowledge productivity and managerial effectiveness. From a postmodern perspective, (Kanter, 1986:11-12; 1990:7; Rose, 2002; Sackney *et al.*, 1999:57) suggest that leadership is not static but determined within the organisation itself and characterised by the forming attributes of the present moment. The researcher postulates that effective leadership of the future will be designed to present perpetual challenges to the knowledge worker within the new economic constructs. The most successful organisations of the future will need to manifest evidence of adaptive creativity and innovative intelligence. According to Amabile (1998:76), Glor (1997:41) and Woodman *et al.* (1993:293) this leadership process (as noted in Figure 4.11) could draw from the collective creative potential of knowledge workers.

The quantitative research (Phases 2 and 3) indicated that the socialisation process of tacit knowledge into explicit application could cause distrust among knowledge workers, who experience management efforts as a method of manipulating individual intellectual property. The research shows that there could have been dialectic tension among the individual knowledge workers' goals and that of the organisation (see Table 4.7). The results are indicative of the inability of management to establish an

organisational knowledge platform for the mutually beneficial knowledge contract between knowledge workers and the organisation. This situation is characteristic of modern day knowledge management practices as also suggested by Clarke (2001:190) and Keough and Tobin (2001:12) that leadership should establish a compelling vision that inspires collaboration and knowledge creation (Alavi *et al.*, 2005:211). It should present strategic conversations as an explicit part of an organisational strategic intent (Dalkir, 2005:212). Stokes and Logan (2004:222) and Zucchermaglio and Talamo (2003:259) postulate that by capturing the imagination of knowledge workers, knowledge productivity can be enhanced. This furthermore contributes towards motivational levels, which in turn aligns the personal vision of knowledge workers. This is evident in Figure 4.6. The researcher is of the notion that when creative knowledge networks are based on the collective viewpoints of knowledge workers, they maximise the productive knowledge involvement of leadership, which advances strategic intent (as seen in Figure 4.10). The qualitative data furthermore shows that a new leadership paradigm is required to encourage formal involvement, participation and commitment as a fundamental characteristic to ensure systematic competencies is essential to advance knowledge productivity. Several authors (Dalkir, 2005:81; Garvey & Williamson, 2002:73; Mansell, 2002:317; Wiig, 2002:224) postulate in this regard that innovation-based organisations in the knowledge economy are characterised by self-motivation and self-managed knowledge workers that inspire in turn knowledge productivity, however, the qualitative interviews indicated that leadership does not always provide these crucial building blocks (see Phases 4 and 5).

The personalisation of knowledge recognises the tacit nature of knowledge and the importance of social learning to drive the exploitation of knowledge for the generation of future innovations (Isaksen & Kaufman, 1990:20; Kao, 1996). Carrillo (2002:379) and Malhorne and Yohe (2002:19) suggest that the supremacy of knowledge productivity is vested in the ability of the knowledge worker to improve knowledge access within a cohesive context to be made centrally available concomitantly throughout the organisation - as also concurred by Steyn (2008:317). According to Hall and Mairesse (2005:19) knowledge productivity is furthermore stimulated by innovation and collaborative exchanges. In contrast, the research revealed that this does not always occur naturally and cannot be instilled autocratically, but should rather emanate from all levels within the organisation as noted in Table 4.7, Phase 5 and Themes 1 and 2. It is therefore not based on command and control (as noted in Table 4.7), as is the case in hierarchical organisations where knowledge is normally

controlled through an exclusion process. The researcher suggests that leadership should direct innovative and creativity competencies to renew knowledge-based activities by inviting and acknowledging participative dialogue. The research indicated (as noted in Phases 1 to 3) that knowledge production is inclusive of all stakeholders and should be supported by leadership to build trust and efficient communication networks (see regard Figure 4.8). Knowledge capacity increases through communication (see Figure 4.1) and knowledge distribution is furthermore empowered and elevates the value of knowledge productivity through *maximum involvement* of human capital, which again leverages increased access to information (as also seen in Figures 4.2 and 4.9). Knowledge workers revealed that access to new information was relevant and essential and that multi-level communication is required and should be actively encouraged as also suggested by Andriopoulos and Lowe (2000:734) and Sydänmaanlakka (2002:194) who postulate that effective communication is essential to negotiate and transfer knowledge solutions. According to Martins and Martins (2002:59) and Politis (2003:55-66) integrity and trust in leadership influences the knowledge productivity process and develops a genuine spirit of enquiry and consequently effects managerial effectiveness (Politis, 2001a:354).

According to Selen (2000:350) effective knowledge sharing requires a culture, which encourages collaboration and advances the ability to communicate and share information regarding crucial knowledge resources. The sharing of knowledge is critical to improve a competitive advantage and promote collective learning, which enables the continuous capacity to create efficient networks for knowledge building and storing. The essential source of knowledge production lies within the cumulative articulations among knowledge workers through the coexistence of creativity and innovative efficiencies, which reinforces the intimate relationship with the dynamically evolving environmental forces (Isaksen, Lauer, Ekvall & Britz, 2001:171).

Wenger and Snyder (2000:139) suggest that knowledge productivity is further developed when knowledge workers identify and actively exploit novel themes, which stimulate creative thought. Creativity contributes towards enhancing knowledge productive skills and ignites new knowledge networks searching for enhanced strategic applications to develop self-organisation through creative dialogue.

The findings revealed that communities of practice promote knowledge productivity and require social exchanges, which enhance knowledge competencies in the

particular domains of knowledge sharing. Knowledge workers appear to arrange for managerial support unrepentantly as they refuse to wait for management to make immediate decisions. The interesting fact is that knowledge workers apparently develop self-guidance through social learning and may depend on self-governed networks for explicit information to be harnessed. (see Figure 4.3).

The qualitative research derived from the non-directive interviews furthermore indicated that creative initiatives shift knowledge workers' experience to self-governing - which is in contrast to the governance of the current organisation. The organisation tends to not provide for extraordinary leadership, which could support knowledge workers. Communities of practice were organically established to enable team support but it was found to also enhance collaboration, learning, capability acquisition, strategic coherence and ultimately creative performance (Hamel, 2000:31). Communities reinforce collaborative experience based on high-trust knowledge based relationships as became apparent in Figures 4.1 and 4.3.

The research data furthermore suggests that leadership's involvement with knowledge manufacturing strategies assists knowledge workers in achieving business goals (Figures 4.9 and 4.10). The commitment of knowledge workers to achieve business goals is an important factor, which contributes directly to knowledge productivity (Garvey & Williamson, 2002:128; Hamel, 2000:31). However, the research shows that these goals are not communicated clearly and directly within contemporary organisations. This could be the result of leadership, which does not always recognise the importance of knowledge sharing, but still practices knowledge ownership. The disengagement of leadership stifles knowledge growth, while leadership support leads to the formulation of new knowledge-based objectives that would potentially not have been formulated if the socialisation among knowledge workers did not occur. Leadership is not merely a progression of aspirations, but should be regarded as a core value that optimises accomplishment in business knowledge development.

According to Taylor-Bianco and Schermerhorn (2006:458) self-leadership enables qualitative and quantitative knowledge improvement, which in turn encourages increased knowledge productivity (Table 4.7). Steyn (2008:317) suggests that the above assumptions position the knowledge concomitance process favourably, and intends to introduce the evolvement of a new vision for leadership. This new vision should accredit the importance of learning and innovation in aspiration of the

requirements of the knowledge-based organisation within the discontinuous future economy (Figure 4.5 and Phase 5: Theme 1). The knowledge process is essentially advanced through self-regulated communities of practice and is evident in the data extracted from Figure 4.5 and Phase 5: Theme 1. During the interventions it transpired that the research participants who deployed communities of practice advanced their creative and innovative capabilities exponentially in comparison to the other groups. According to various authors (Graetz, 2000:551-562; Nonaka & Takeuchi, 1995:61; Taylor-Bianco & Schermerhorn, 2006:457-470; Wiig, 2002:224) knowledge productivity is essentially enhanced when leadership and managerial input are synchronised to provide support for the facilitators of knowledge as well as to establish an architectural framework for the innovative recreation of knowledge libraries.

The qualitative data from the focus groups and non-directive interviews (as noted in Phases 4 and 5) ascertained that individual creativity and innovation capability seems not to be regarded as important management priorities and participation in the decision-making process does not always include the expertise of knowledge workers. The quantitative data (according to Table 4.7) indicated that leadership does not openly encourage future innovations and seems to have a closed attitude regarding internal strategic innovative partnerships. The current leadership tends to expect knowledge workers to be totally devoted to the development of organisational intellectual property but leadership seems to put little emphasis on the acknowledgement and autonomy of knowledge workers and does not seem to instil confidence in formalising communities of practice. The research data further indicates the absence of a creative culture that limits (see Tables 4.10 and 4.11) the accrual of collective creativity, but suggests that managerial effectiveness and knowledge productivity are driven by these procedures. Data in Figures 4.10 and 4.11 agrees that leadership is instrumental in establishing organisational knowledge frameworks but does not seem to occur in current knowledge-based organisations.

A shared narrative among several authors (Andriopoulos & Lowe, 2000:734; Borghini, 2005:19-33; Jackson *et al.*, 2003:118; Sydänmaanlakka, 2002:194) indicate that leadership deploys self-regulation and mutual responsibility of all functional elements within the knowledge organisation and expects knowledge workers to apply knowledge for diverse purposes. This is crucial to assemble dispersed resources to establish new knowledge competencies. Knowledge workers seemed to be experiencing difficulty in coping with innovation as work overload is portrayed by the

lack of time and insufficient support for innovation and creativity (this is also noted in Tables 4.7 and 4.12 to 4.14). The intrinsic need of the knowledge worker to be included and recognised is visible in the data represented in Table 4.7. This responsibility seems not to be realised by contemporary leadership who does not afford the economy of support needed within the changing economic landscape. Bollinger and Smith (2001:8) and Bichard (2000:41) agree that within changing organisational forms and work design approaches, effective sustainable leadership is needed to respond to these new operational methodologies and structures, which are required and implied in the evolution of the knowledge economy.

According to Hernes (1999:90) contemporary organisations need to restructure communication and draw on the creative potentials of knowledge workers by integrating learning systems through multiple channels. Creating an understanding of knowledge performance measures and instils a climate of trust and commitment to achieve optimal knowledge productivity and are crucial elements to drive knowledge productivity. The quantitative dimension of this research indicates that the constricted focus of leadership limits the expansion of the organisational knowledge base and external information discovery seems therefore not to be valued by the organisation (as depicted in Table 4.7). New information is not always acted upon and is consequently lost by the organisation (Figure 4.4). The data revealed that the ability to share and learn seems to be disregarded and could result in an obstruction of knowledge productivity which is apparent in Figure 4.3. The willingness of knowledge workers to learn and share information is evident, however continuous learning is not always encouraged by the organisation. The internal focus of management may still be on traditional production, which decreases organisational responsiveness to manipulate creative solutions to drive new innovations. Therefore, the strategic innovation capacity could be suppressed (visible in the qualitative data presented in Phases 4 and 5). Leadership seems to be unaware of the exponential value of individual creative potential and its inherent positive relationship with future innovation to sustain competitive advantage.

Due to the extensive non-alignment of management, particular scenarios during the research revealed that knowledge workers developed their own leadership roles and managerial techniques to enhance the knowledge creation process (Phases 2 and 3). However, it was found that the interventions promoted a concerted effort to manipulate group functioning into shared contexts, which seemed to transform the current organisational reality (Table 4.7) and advanced knowledge productivity

extensively. This is also visible in Tables 4.5 and 4.6, which show that a strong sense of allegiance seems to exist among knowledge workers but support is not exclusively provided by current leadership. This suggests that third generation knowledge management contexts are required to achieve transformation for organisational functioning to become more conducive to applying collective knowledge-productive solutions as suggested by Steyn (2006:119).

The conclusions obtained from the non-directive interviews (see Phase 5) underpin the general findings of the research: the absence of a knowledge management culture that supports creativity and innovative practices (Figures 4.11 and 4.12). The socialisation of knowledge in the organisational context is unproductive as illustrated by the apparent lack of a learning organisation, which does not reward knowledge productivity nor recognise creativity and a perception of information exclusivity exists. Table 4.7 articulates the dialectic tension between knowledge workers and leadership. The need for an innovative approach resides in the avocation of knowledge productivity, which promotes a culture for knowledge sharing but requires the focal assistance of a new leadership paradigm.

The qualitative data indicates that creative exchanges present advantages when harnessed within the organisation (as articulated in Phases 4 and 5) to increase speed and accelerate innovation capability development for effective knowledge management. Ironically, these technology driven changes seem not to be accommodating the need for knowledge workers to construct meaningful relationships (Table 4.9). It became apparent that information technology should be regarded as an enabler to support the knowledge creation process. As external value creation networks subsume the internal knowledge value chain, the ability to pool knowledge resources across boundaries becomes critical (see Tables 4.7 and 4.17) and leadership is expected to support this essential process of knowledge creation. Knowledge workers seem to enhance the readiness to expand on new market conditions and opportunities through informal communities of practice by managing the transition of the strategic knowledge agenda. Garvey and Williamson (2002:51) postulate that contemporary leadership should be supportive of the generation and innovation of new solutions to maintain a strategic advantage in an ever-changing economy.

According to Amabile (1998:80) and Housel and Bell (2001:109) the emerging knowledge era presents challenges to organisations to establish value creation

networks essential to support the individual creative strengths of knowledge workers. These strengths are drawn together to disseminate collective integrated solutions as cited by Johannessen *et al.* (1999:120). During the intervention process communities of practice seemed to develop organically and established a powerful strategic resource, which provides conceptual frameworks to amplify strategic capabilities. These communal learning frameworks provide opportunities to leverage new knowledge assets (Figure 4.5). Saint-Onge and Wallace (2003: 69), Senge (1992:192) and Tidd *et al.* (2001:28-30) concur that in a strategic context communities of practice provide increased knowledge production and consequently increases collective learning (also evident from Figure 4.3).

Based on the theoretical constructs the qualitative data corresponds with the findings of Amabile (1998:82) and Scott and Bruce (1994:582) that interaction during the interventions led to advanced creativity and innovation awareness and increased exponential idea generation. This is also highlighted in Tables 4.3 and 4.4. Intervention groups One and Two provided statistical support for the notion that the dimensions of creativity significantly increased the respective capabilities of knowledge fluency, originality and elaboration. Furthermore, an autonomous organisational culture promotes creativity and innovation through strategic leadership (as noted in Figure 4.12). Borghini's (2005:27) distributed cognition concurs with the complexity of the creative processes and innovation regarding the knowledge organisation and proposes a systemic perspective promoting a strategic path model for individual creativity and innovation. This advocates that individual innovative behaviour can be influenced and developed through individual and group creativity development (Isaksen & Dorval, 1994:20). Concerning organisational innovative competency, the research findings draw particular attention to the nature of the collective creative processes and emphasise the sense making progression. This corresponds with the cultural and cognitive features described by various authors (Amabile, 1998:76-87; Cheng, 2005:605; Crawford, 2005:10; Malhotra, 2003:4; Martins & Martins, 2002:62; Snowden, 2001:34) who suggest that the cultural environment is important as it provides the leadership support required by knowledge workers to nurture creative thought and innovative awareness (Amabile & Kramer, 2007).

The quantitative and qualitative research (according to Table 4.6 and Phase 4) is synonymous with the findings of Hall and Mairesse (2005:5) concerning knowledge productivity and managerial effectiveness as critical areas in the knowledge –

intensive organisation however they stress the crucial dependence upon innovation-based leadership. During the intervention phase, training and development were provided to the research participants for purposes of the creation and development of innovation capital to test for increased knowledge productivity through the enhancement of the dimensions of creativity and innovation awareness during team exchanges. The results revealed that when communities of practice are formally established and innovative awareness is encouraged through dominant discourse; knowledge productivity could be significantly enhanced (Table 4.6). During the intervention development phase it became apparent that perpetual knowledge exchanges among knowledge workers enhanced the quantity and quality of knowledge sharing. Johannessen *et al.* (1999:117) suggest that the characteristics of knowledge leadership for innovation enablement is dependent upon the environment and the situational context and that access to diverse information is a primary factor for effective knowledge leadership. Clawson (1996:6) and Wald and Castleberry (2000:20) add that the organisational climate provides a foundation that re-distributes strategic innovations to all stakeholders. The research data revealed that this theoretical construct relates to environmental factors of socialisation, which (according to Figures 4.1 and 4.5 and Table 4.7) impacted positively on individual and team creativity and also innovation awareness. According to Crawford (2005:15) and Handzic and Chaimungkalanont (2004:57) the creation of competitive knowledge is a people-based process and the socialisation of knowledge concerns leadership and knowledge workers through a co-ordinating process which utilise and combine diverse knowledge domains.

The alignment of the strategic intent of knowledge management with all organisational functions as indicated in the concomitance model of Steyn (2006:118) cannot occur if the management of knowledge is characterised by compartmentalisation. Table 4.12 illustrates that knowledge loss occurs when knowledge is captured but kept for ownership purposes and not shared and exchanged through effective communication. Figures 4.1 and 4.4 and Tables 4.7 and 4.10 depict the urgency for a leadership rubric that continuously provide opportunities for creative and innovative exchanges to facilitate organisational alignment. According to Garvey and Williamson (2002:19) and Kotnour (2000:393), the management of knowledge productivity has become a well-accepted notion in contemporary knowledge management, but managing creativity appears still to be a contradictory issue. Table 4.7 particularly draws the attention to the fact that current leadership does not always appreciate the importance of creativity exchanges and

that innovation should be managed and encouraged on all levels concomitantly. Shelley and Perry-Smoth (2000:3), state that the environment for creative ideation is critical to sustain competitive advantage.

The knowledge concomitance model introduces a new corporate curriculum presenting a systems framework for future knowledge workers. Flowing from the results obtained (see Phases 4 and 5) the proposed model of Steyn (2008:317) indicates that effective knowledge management and the dissemination and storage of valuable organisational knowledge are influenced by culture, structure and leadership. Skyrme (2000:19) adds an interesting perspective on the development of leadership by providing a collective vision based on the availability of knowledge resources for the establishment of new knowledge platforms to meet future competitive challenges.

The research results of this study revealed that culture and leadership are essential ingredients for successful knowledge exchanges to leverage managerial expertise through innovation awareness to increase knowledge productivity. In Table 4.17, the levers for effective knowledge sharing suggest facilitation associations with new opportunities through team building and the development of new innovations, driven by knowledge workers within communities of practice. Figure 4.3 correlates with the research results obtained; which indicate that individual and group learning occurs through creative knowledge exchanges. This is the foundational capability required within the current knowledge organisation for learning to become established as a paramount praxis. In future knowledge management this will contribute towards the harnessing of creativity and innovation by dedicated leadership in search of achieving organisational strategic alignment. However, leadership was identified as the nodal point for the delivery of organisational competence and the advancement of collective creative potential. This is apparent in Figure 4.3 indicating that learning is highly valued by knowledge workers, and expected to be driven by leadership. The data furthermore indicated that they possess the capability to build new knowledge structures either independently or with the support of communities of practice. However, organisations do not support learning efficiently as depicted in Figure 4.3. This indicates the current leadership does not always recognise learning as imperative for strategic competency building. Knowledge sharing does not transpire, as management is productivity driven which in turn stifles the advancement of a collective knowledge contribution process.

Although a large amount of respondents delivered neutral responses in the collaborative *leadership instrument*, the data furthermore corresponds to the research of Amidon (2003:42) who proposes that the capability of organisations to create and implement new ideas has a direct impact on current innovative ability. Dalkir (2005:51) suggests that dialogue establishes a forum wherein knowledge workers share common cognitive ground and is visible from Figure 4.10. This could indicate that knowledge workers perceive the collective strategic intent as critical to the knowledge creation process and also engage with stakeholders proactively. It appears that support from external stakeholders is more easily obtainable than supportive allegiances within contemporary organisations and that inadequate communication and knowledge flows occur. The researcher ascertains from the data that knowledge articulation is crucial to perform and establish new creative architectural syntaxes. These are not always visibly communicated within contemporary knowledge organisations and creative leadership is evidently required to synchronise and develop new concomitant methodologies. The qualitative data furthermore indicated that a knowledge management infrastructure is proposed to facilitate the future organisational vision. The data represented in Tables 4.7 and 4.8 indicates that the current leadership and organisational culture does strongly support innovation because knowledge is viewed as a departmental asset and not shared with other departments, this could create silos and compartmentalisation, which could advance knowledge ownership. Departments duplicate knowledge work because fragmented communication processes tend to prohibit knowledge sharing and the absence of recognition for intellectual content and the non-alignment with the organisations vision often limits effective knowledge dissemination. The data furthermore revealed that the strategic vision of knowledge workers (Figures 4.6 and 4.12) is related to important factors regarding strategic knowledge value. They consequently suggest new methods to enhance leadership's ability to manage knowledge productivity more efficiently. These factors are the important issues relating to power, ownership and the possession of knowledge, which inhibits sharing of crucial knowledge expertise. The lack of organisational learning and the fact that insufficient time is allocated for innovative ideation indicates that current management is too productivity driven.

The importance of a new leadership paradigm for future organisations operating within the knowledge society has become a critical management issue in knowledge management praxis (Houghton & Neck, 2002:672). According to Bennet and Bennet (2003:13), Dalkir (2005:301) and Powell and Snellman (2004:215) an organisation's

strategic knowledge value is vested in the strategic manipulation of its tangible but more specifically its intangible assets to create future wealth. Innovative leadership is the fundamentally important construct to unlock the potential of knowledge workers and is viewed as an important driving force in the new knowledge economy.

Cheng (2005:620) and Kezar (2005:53) state that managerial effectiveness from a postmodern perspective refers to the extent to which management propels input to achieve increased intangible outputs, however, it is within the combination of new leadership principles that management transforms knowledge to become more fluent and readily accessible. The proposed new approach to management for contemporary organisations, however, suggests autonomy and learning as drivers, which translate into knowledge productivity. This notion furthermore coincides with Brewster *et al.* (2000:89) and Garvey and Williamson (2002:19). A value-adding contribution is made to knowledge productivity when leaders recognise and bestow autonomy on knowledge workers to operate independently. The concept of managerial effectiveness is a central theme of this exploration; and the relationship with leadership concludes the empirical imperative of this study in the paradigm of the knowledge economy. Hughes *et al.* (1999:194) postulate that traditional management operates with authority and control and Fulmer and Vicere (1995:4) agree that it currently seems evident that a new paradigm of leadership is needed to transcend all past perceptions and practices. According to Dalkir (2005:300) and Drucker (2005:38), knowledge management can only succeed if it taps into the value of knowledge workers and develops new knowledge management skills for the enablement of multi-disciplinary information discourse. This includes both tacit and explicit knowledge with the objective of adding new value to the organisation to strengthen its knowledge positioning.

From the data, it seems apparent that knowledge managers still appear to *practice* the philosophy that knowledge workers should be controlled. According to Selen (2000:346), the manipulation of knowledge workers into thinking and acting to specific controlled patterns and rules which decrease the innovative awareness as is also evident from Table 4.6 and also Figure. 4.7. This could indicate that knowledge workers accept knowledge roles spontaneously and leadership principles such as participative management, empowerment and transparent decision-making. They are generally efficient knowledge workers but encouragement from management could be lacking to produce enhanced knowledge productivity. The researcher is of the notion that “mechanistic thinking” may not seem to add value in the knowledge

landscape, as it tends to be restrictive. Dierkes (2001:98) and Tidd *et al.* (2001:126) articulate that leadership should empower human capital rather than motivate. The new leadership paradigm suggested by the researcher, introduces a new corporate cultural curriculum, which is conducive to creative thought development. Support for this notion is evident in the qualitative results obtained in Phases 4 and 5, which indicates that the inherent talents of knowledge workers, once developed, could promote creative and knowledge productive work. The research data revealed that current organisations should promote creativity as its primary human capital objective to leverage innovation value to attain organisational objectives to achieve overall strategic intent (see Table 4.13 and Figure 4.9). It further indicates that the importance of competitive intelligence, innovation and knowledge management is required to build an ineffective knowledge infrastructure. This should promote the enhancement of innovative knowledge solutions, and encourage multiple creative exchanges to drive discontinuous innovation (Davila *et al.*, 2004:82).

The correlation ratios produced in Phase One indicate that a relationship exists between knowledge productivity and managerial effectiveness. This draws a parallel with the qualitative research (in Phases 4 and 5), which revealed that managerial effectiveness is perceived as a function of personal effectiveness and not leadership capability regarding the individual knowledge worker. According to Brewster *et al.* (2000:89), Hughes *et al.* (1999:122) and Saint-Onge and Wallace (2003:211) leadership encompasses the navigation of the elements of management and relates to the direction and the ratio of organisational output to input which confirms the assumption that management could be primarily productivity driven. This observable fact is also depicted in Tables 4.1 to 4.6. Knowledge output refers to the application of knowledge productivity, which in the knowledge economy is regarded as the crucial element of sustainable advantage. According to Inkpen (1996:123) and Kezar and Eckel (2002a:295) knowledge management urgently requires new metrics for relevance a propos leadership in the dynamic economy of knowledge.

Torrance (1984) supports the qualitative and quantitative findings of this study, which suggests that innovative awareness enhances the relevance of the five dimensions of creativity to leverage knowledge productivity. Table 4.6 indicates that the interventions developed creativity exponentially, particularly where communities of practice were formally endorsed. The mere existence of creativity as a future managerial factorial effectiveness, questions the future leadership imperative. Williams (2001:63) suggests that creativity and innovation are the crucial elements

needed to path the future for unlocking the potentials of human capital. The researcher argues in this regard that time is an important production factor for purposes of generating radical innovations. A forum for creativity should be recognised by leadership to facilitate and enable future value propositions to be developed. It is therefore suggested that creative leadership is paramount to the translation of new methods and procedures enabling a conversion of managerial effectiveness into usable intellectual property. According to Dalkir (2005:104) and Deschamps (2005:35), a new leadership paradigm is needed to exploit the potential of knowledge resource utilisation and the production of creative alternatives to replace the traditional mindset and establish new potential opportunity platforms.

Statistical data suggests that an organisation's knowledge productivity (Garvey & Williamson, 2002:44) is directly linked to innovation competencies through strategically driven competitive properties, which facilitates the ability to drive future opportunities (Tables 4.12 and 4.13). According to O'Connor and Ayers (2005:23-31) metrics of the knowledge economy contrasts with contemporary managerial effectiveness. These are limited and inhibit the critical learning needed to create competitive advantage and a climate for the development of innovations. This is also perusable in Tables 4.7 and 4.11 and indicates that the proportion of solutions that can be regarded as innovative and creative is occasionally low. Knowledge is apparently not diffused throughout organisations and silos exist among business units. Most innovation decisions therefore never reach the final stage of implementation. According to Borghini (2005:28), Brewster *et al.* (2000:90), Holsapple and Joshi (2004:240) and Kelley (2002:82) knowledge leadership is responsible for the manipulation and restructuring of knowledge management for the enhancement of knowledge productivity through developing organisational innovation as uni-dimensional instrumentation. O'Connor and Ayers (2005:24) express the importance of innovation and creativity for the enhancement of knowledge productivity for the provision of new knowledge frameworks. The implementation of new knowledge solutions (Tables 4.11 and 4.15) indicated that an efficient infrastructure to capture, communicate and align knowledge value does not seem to exist. According to Evans and Wurster (1997:78) and Kelly (2000:92), these knowledge frameworks are crucial for the enhancement of knowledge productivity and are also often captured through different technological networks within the organisational knowledge setting.

The data in Tables 4.6 and 4.18 to 4.20 revealed that innovative awareness is the primary driver of managerial effectiveness, which in turn leverages knowledge productivity. However, the data extracted from the *semi-structured interview schedule* revealed that creative leadership is required to drive an autonomous culture conducive to creative exchanges (Phase 5: Theme 1 and noticeably observable in Table 4.7). The ideal culture needs to include autonomy and freedom of the knowledge worker to facilitate the socialisation of critical information. The quantitative and qualitative research data indicate that organisational culture is increasingly important as a platform for gaining a strategic competitive advantage in the knowledge economy. Martins and Martins (2002:58-65) suggest that organisational culture is the crucial element to build efficient knowledge repositories. Furthermore, according to Denison (2001:17), Senge *et al.*, (1999:6), Sternberg (2000), West and Farr (2002:7) and Zakaria *et al.* (2004:23) change in organisational strategy and technology is dependent on leadership for the promotion of knowledge productivity as it intensifies organisational competitiveness. Creativity and innovation, which are ignited by communities of practice, are thus essential constructs to manage this cultural change process. The data from the non-directive interview schedules indicated that organisational culture frequently identifies and absorbs dialectic tension, which in turn may uphold the organisational infrastructure to become innovation-driven culture, central to the establishment of new innovation-based processes. The culture within post-industrial organisations is largely knowledge-based and depends on creativity, innovation, discovery and inventiveness (Tables 4.6 and 4.7).

To unlock the imaginative talents of knowledge workers and to develop these critical dimensions of creative thought, it is imperative to establish a milieu for continuous knowledge exchanges. The data indicates that creative leadership is needed to promote learning through an institutional framework in which creativity and innovation are accepted as basic cultural norms. Without a comprehensive organisational approach, which includes all human capital, leadership apparently continues to support knowledge exclusivity as seen in Table 4.12. This shows that knowledge hoarding instead of diffused learning seems to occur often in contemporary knowledge-trading organisations (also noted in Figure 4.3). This indicates that knowledge extensions are regarded as important, but could be neglected in current knowledge-based organisations. The qualitative data furthermore revealed that communities of practice are cardinal to innovation capability development due to the increased pace of market changes (Phase 5). Effective leadership is required to

surmount the difficulty experienced in retaining highly skilled knowledge workers to become the new generators of knowledge through creative and innovative process enablement.

The research data builds the case for developing communities of practice as knowledge workers performed important actions for the progression of knowledge instrumentation which according to Housel & Bell (2001:62) is imperative for establishing a knowledge platform (Figure 4.5). The data reveals that knowledge workers fashioned their own knowledge repositories through the avoidance of isolation and by promoting innovative exchanges. Creative idea generation processes were developed through their own collectively formed leadership-driven culture, which was established during the intervention stages. This produced increased speed to deliver new solutions and provided solutions to participate more proactively in value creation networks (Phase 5). The research findings furthermore indicated that communities of practice should be developed through knowledge productive exchanges. Table 4.13 revealed that communities of practice engaged competitive intelligence with resources and provided new opportunities for knowledge workers to actively advance their creative abilities. Wenger (2003:79) agrees that communities of practice are central to the efficient economising of knowledge to sustain future competitive advantage.

In summary, the challenges faced by future knowledge practitioners pivots a new context for knowledge praxis to illustrate the course of action that should be taken by leadership in the new knowledge economy. The variety of perspectives based on the quantitative results obtained from the research provided the knowledge management field with alternative views and suggestions to improve the creative performance of individuals, and ultimately the collective organisation. The concomitance model adds a conceptual framework, which provides applications for knowledge-based solutions for future organisational competitive advantage.

Knowledge productivity challenges managerial effectiveness by engaging in creative and innovative solutions and promotes the urgency of creative leadership. This in turn promotes change through successful learning platforms and efficient co-operative communication strategies to achieve more ecologically sustainable knowledge management praxis.

The findings revealed that the knowledge component of business activities delivers increased knowledge productivity and is an explicit concern of knowledge management praxis and is reflected in the knowledge strategies and policies. To become an effective repository for the stimulation of creativity and innovation awareness, managerial effectiveness needs to leverage the collective knowledge creation on all levels of the organisations to establish a direct connection between intellectual assets, both explicit and tacit information is essential to promote knowledge-trading.

According to Garvey and Williamson (2002:47), the concept of knowledge productivity involves signalling, absorbing and processing relevant information to develop new knowledge competencies to improve innovative futures. This involves a complex learning experience, which produces new competitive capabilities, as the skills required is inextricably linked to the individual and collective creative and innovative talents of knowledge workers. Knowledge intensive organisations can consciously develop these valuable capabilities, as the knowledge worker is the keeper of tacit knowledge. The second objective that will be critically integrated, questions whether individual and collective creative and innovation awareness can be developed and enhanced through interventions.

5.2.2 Research Objective Two: To investigate whether individual creativity and innovative ability can be developed and enhanced through training interventions

Creativity and innovation has become the compatibility to reinvent knowledge-trading organisations as the frequent reuse of existing knowledge does not establish competitive positioning. March (1991:75) and Orlikowski (2002:250) postulate that creativity and innovation are considered to be the key factors for achieving economisation of new knowledge as the creative talents of knowledge workers manufactures continuous new intelligence for the discovery of innovative solutions. These shared mental models consisting of organisational knowledge, drives new core competencies through communities of practice to stimulate the accentuation and cross-fertilisation for contextual tacit forms of innovation capacity.

The results of the research indicated that individual creative ability can be developed through interventions and had a positive impact on the treatment groups and also proved a positive relationship with the improvement of the creativity dimensions,

especially fluency and elaboration (Tables 4.1 to 4.6). Contrary to the above findings, the innovative awareness scores indicated that a natural improvement over time occurred and that the interventions did not directly develop the construct of innovative awareness in the control group, as opposed to the two treatment groups. The improvement in innovative awareness in the control group suggests that other factors such as media, information technology exposure and social factors may have contributed to this interesting statistical revelation as noted in Tables 4.4 and 4.5 respectively.

Payne (1990:116) and Woodman *et al.* (1993:293) agree that individual creativity in the knowledge management context may be understood as a function of previous conditions, skills and cognitive styles. The personal and collective element within the context of the individual knowledge worker initiates creative thinking. Borghini (2005:20) argues that leadership within the knowledge driven organisation is responsible for the development of new innovations. The respective categories of creativity are explained as the person, the product, the process and the environment wherein creativity is operationalised into knowledge related work. According to Amabile and Conti (1999:630) and Cheng (2005:605), the manufacturing of innovation is the final outcome and manifests in future value solutions. Garvey and Williamson (2002:100) and Nonaka (1996:17) are of the opinion that creatogenic features are essential to enhance and release the creative potential of knowledge workers. Drucker (2007:18) is of the same opinion that creative potential in knowledge workers need to be developed continuously.

Creatographic features concerns the ability to visualise creative solutions and for future decision-making. The data in Tables 4.7 to 4.9 revealed that the commitment of leadership in contemporary organisations provide the logistics which is not always developed. Knowledge workers are expected to utilise creative competencies within the contemporary knowledge organisation but are inhibited by cognition with regards to the mission and vision of the future organisational strategic intent (Figure. 4.6). It becomes apparent that knowledge sharing is not diffused through learning initiatives, which should ultimately establish alignment, fundamental to collective knowledge-creating solutions. Amabile (1998:77) and Twiss (1995:81) propose that decision-making should be guided through creative solutions, as innovations are not manifested through formal positions of authority and power but rather through the socialisation of knowledge facilitation assisted by communities of practice as also postulated by McDermott and O'Dell (2001:85).

This research initiative endeavoured to establish scenarios for experiential discovery and exploration during the interventions administered to the research participants. The intent was the creation of innovation value-add through intervention processes, which were performed to develop the collective potentials of knowledge workers in a complex social system where knowledge management practices are encouraged. Researchers (DiLiello & Houghton, 2004:324; Woodman *et al.*, 1993:293) are in accord with the assumption that knowledge workers produce knowledge-intensive equity that is inter-linked with creativity and represents the core capability to develop original knowledge-intelligent solutions. In this context, the defining feature of organisational creativity is the process of new ideation. According to the regression analysis (see Tables 4.18 to 4.20) proved to be vital for the enablement of future competitive positioning and the optimisation of the respective dimensions of creativity to further knowledge management praxis. This is also proffered by Politis (2003:62) who suggests that organisational creativity leverages competitive capabilities and drives knowledge productivity. The research findings revealed that the knowledge workers and communities of practice who were involved in the intervention phases shared knowledge collaboratively. The transformation of knowledge emerged through the unique organisational scenarios that were purposefully included to encourage the formalisation of communities of practice. The research data revealed that the knowledge communities were established as the essential motivating force for new frameworks to advance organisational future competencies (see Table 4.6 and Phase 5: Theme 1).

Folan (1999:44), Nonaka (1991:96-104) and Saint-Onge and Wallace (2003:67) postulate that convergent thinking is directly linked to innovation and cultural processes and that organisational structural readiness enables a pragmatic method for the implementation and the application of creative ideation. Divergent thinking leads to the generation of new ideas and develops the exploring and deploying of non-traditional creative thinking and promotes speculation of new possible value propositions. It is suggested that the interventions developed divergent thinking significantly (as noted in Table 4.4) revealing also that the total score for creativity dimensions increased significantly during the interventions. Furthermore, innovative awareness is convergent and operational in nature and seems to have developed organically in the control group.

Visual inspection of the data within Phase One revealed that creative ability and innovative awareness based on the analysis of the three sets of scores could have

been developed through the intervention activities (noted in Tables 4.4 to 4.6). Significant differences were determined in the analysis process, which confirmed that the interventions increased knowledge productivity, which is evident in the data. The results furthermore confirmed that the average post-test scores on creative ability were significantly higher than the pre-test scores for the two intervention groups whilst the control group also showed significant differences. There was no improvement in the innovation awareness amongst the control group, which suggests that convergent and divergent processes are important associations with creative and innovative cognitive abilities.

According to Garvey (1999:41), Garvey and Williamson (2002:113) and Takeuchi and Nonaka (2004:141) creativity can be nurtured through training and development and specifically through dominant discourse. This could significantly advance the creativity displayed in the potential among knowledge workers as seen in the data presented in Tables 4.4 to 4.6. Several authors (Amabile & Conti, 1999:630; DiLiello & Houghton, 2004:320; Siau & Messersmith, 2003:65; Tardif & Sternberg, 2000:18) postulate that creative thinking requires frameworks and leadership support for creative value-added contributions and appropriate stimulation is given to advance innovation awareness. However, this is in contrast with the technical and practical application of innovation strategies within current organisations as the statistical data suggests, indicating that leadership does not always stimulate creative thought (Johnson, 1996:11; McKelvey, 2001:181; Majaro, 1988:52). Innovation awareness is not enhanced simultaneously as with the increase in creative capacity and this phenomena could be explored through further research.

Garvey and Williamson (2002:102) postulate that knowledge productivity is driven by corporate creativity where an innovation-driven culture is promoted, in contrast to a managerial-focused culture where creative thought is not valued. The research findings in Phases 4 and 5 revealed that a supportive environment for creativity underscores knowledge workers as the most valuable asset of the knowledge organisation entering the new knowledge era. Rowe (2004:80–85) suggests that to meet the accelerated pace of change in this discontinuous knowledge era, organisations are forced to introduce and leverage creativity and innovation driven by communities to increase capabilities with greater speed and agility. This is also noted in Tables 4.7 and 4.8. Furthermore, communities are directed to provide support and improve infrastructure to thereby maximise productive knowledge value. This is depicted in Figure 4.5 indicating the crucial need for effective formalised communities

of practice. Garvey and Alred (2001:519), Housel and Bell (2001: 45) and Saint-Onge and Wallace (2003:61) established a shared narrative explaining that competitive advantage originates from the individual knowledge worker to provide for knowledge creation and activate exchanges to be transported into communities of practice and, ultimately, propels the organisation to develop teams which are the key components for advancing future knowledge management.

Rowe (2004:43-48) suggests that during creative interventions knowledge workers become totally immersed in high levels of problem solving and this involvement could generate increased echelons of novel ideas as is evident from the data produced in Phase One. These groups of research participants delivered a knowledge output, which can be directly linked to the training, and development provided by the interventions and offered cultural elements, which support creativity and innovation. Throughout the interventions the research participants explored wide vistas of knowledge sharing and released imagination to grasp diverse situations in its entirety and were open to new possibilities and innovative solutions (noted in Phase 5: Theme 1). The qualitative interviews revealed that the communities of practice were an organic navigating force that empowered autonomous decision-making processes. Knowledge workers had the courage of their own convictions and were willing to risk failure despite resistance.

According to Anderson and West (1998:235), Martins and Martins (2002:60) and Rowe (2004:73) flexibility and reflexivity enhance creative problem solving and suggest that climate and culture are important factors when accessing knowledge productivity (Figures 4.2 and 4.12). This indicates that tacit knowledge is primarily perceived and translated into usable explicit knowledge when challenged, which in turn are the crucial building blocks for team problem solving potential (Wenger, 2003:82). The data of this study is congruent with the research of Rowe (2004:51) that heuristic thinking is essential for creative problem solving and is not a direct consequence of dialogue but rather involves knowledge searching, experimentation and the reappraisal of available information to modify and probe for new solutions (see Table 4.7). Rowe (2004:44) furthermore suggests that if knowledge based organisations expect to survive in today's competitive environment they will increasingly rely on the creative potentials of knowledge workers to assist with realising change. The research data revealed that the creative interventions exponentially developed the creative potentials of participants collectively and provides data, which suggest a positive effect on creative intelligence. This is

observable from Tables 4.4 to 4.6 indicating that knowledge workers developed innovative awareness but especially creative capability through perpetual challenging and creative exchanges. According to Bessant and Caffyn (1997:7-28) it is important to note that the prospective requirements for creative potential includes a creative climate and culture which is continuously sustained by supportive leadership initiatives.

Amabile *et al.* (1996:1154), Flood (1999:20), Malhotra (2003:13) and Twiss, (1995:81) advocate that individual creativity can be harnessed and deployed for strategic application (as also noted in Tables 4.1 to 4.6). The data is in agreement that organisations in the new knowledge economy should harness creativity as the basis for a new competitive advantage. In Phase 5: Theme 1 the data indicated that knowledge organisations are still not able to realise and harness this crucial potential source. The researcher is of the notion that current processes and measures of knowledge productivity are still mainly derived from traditional tangible functions. This notion concurs with the research of Handzic and Chaimungkalanont (2004:57) who emphasise the importance of a new paradigm for future leadership that harnesses innovation and creativity as paramount for exponential knowledge creation. The resultant mismatch between past and new economic rationales does not include creative thought as a competitive advantage and hence it could become a barrier to the development of a learning organisation (seen in Figure 4.3). Therefore, the researcher suggests that insufficient time and energy is devoted by leadership to the translation and implementation of individual and team ideation for the design of future organisational innovations. According to Treffinger (2003:18) creativity can also be stifled in organisations when excess pressure is placed on accumulation and implementation of idea generation as well as the continuous requirement for immediate innovation implementation.

The research data revealed that creative discourse among knowledge workers (Figures 4.10 and 4.11) challenge the community of practice to continue innovation-based expansions that are managed through collective facilitation and guided by self-leadership. These tensions also need to be merged and funnelled through a relationship process between the community of practice and the organisation. The data indicated that issues affecting community members' ability to perform needs to be resolved through a collective process supported by leadership for the facilitation of new knowledge solutions. The research data furthermore revealed that communities of practice challenge leadership regarding the much-needed innovation-based

culture and questions the current culture configuration. This is indicated in Figure 4.5 and in Table 4.14, which reveals that communities of practice provide capabilities for organisations to enter into value creation networks that drive competitiveness. Various authors (Read, 1996:223; Selen, 2000:348; Raven & Stephenson, 2001:18; Scholl *et al.*, 2004:22) propose that the value provided by communities of practice is essential for competitive positioning in the knowledge economy and identify particular knowledge strategies to encompass comprehensive commitment in leveraging knowledge value. This notion embraces a new way of thinking to challenge the fundamental beliefs of contemporary knowledge management.

Crawford (2005:6) and Viitala (2004:531) note that competitive pressures have increased and force organisations to harness individual creativity dimensions to become more proactive as innovation-based leaders. The primary driver is essentially creative conditioning, which occurs when leadership responds to the future without prescribing solutions but allowing creative and innovative ideas to be generated by stretching lateral cognitive potential. Amabile (1998:76-87), Andriopoulos and Lowe (2000:736) and Cheng (2005:605-622) suggest that innovation implementation is inherently uncertain and innovative technologies are required to assist knowledge-trading organisations to continuously re-invent themselves (Figure 4.11 and Table 4.8). This indicates that dialectic tension between operational functions and knowledge workers apparently perpetuates the search for new opportunities regarding the reduction of risk through the search for new knowledge solutions. According to Bessant and Caffyn (1997:28), Drucker (1995:54), Senge (1992:138) and Tidd *et al.* (2001:22) innovation is nurtured through leadership initiatives which actively co-ordinates all innovative functions and potential knowledge risk through meaningful knowledge exchanges.

The research established that although the interventions seemed to develop individual creativity and innovative awareness it is also subjected to environmental factors as noted in Figure 4.3. This indicates that communication and culture could also directly affect individual innovative awareness. It is uncertain whether the intervention alone had an impact on innovative awareness, as the relationship between innovative awareness and managerial effectiveness is statistically more significant than the relationship between creativity and knowledge productivity as noted in Tables 4.1 to 4.6. This notion is recommended for further research. Innovation drives creativity through the application of high-level cognitive processes to arrive at new concepts characterised by novelty, originality, usefulness and new

knowledge value (Amabile, 1998:80). Nonaka (1991:100), Nonaka and Teece (2001), Saint-Onge (2005:70) and Siau (2000:251) note that innovation is extracted from the organisations knowledge-base and transform tacit and explicit knowledge from the internal and external environments and applies the collective skills available from knowledge workers. This is supported by the knowledge infrastructure which facilitates the generation of new ideas as the data shows (Phases 4 and 5) that sufficient support for creativity and innovation is not provided due to time constraints and the non-sharing of information resulting in ineffective communication (see also Table 4.11). Wenger (2000:225) postulates that when no encouragement for the expansion of new ideas occurs, innovations are not implemented due to contributing factors such as autocratic management lack of training and the absence of organisational encouragement. The data furthermore revealed that although current knowledge managers present themselves as being receptive to creative and innovative suggestions from knowledge workers, they maintain an autocratic position. They seem not to be familiar with the supportive role required for the development of innovation and creativity. This duality in opinion could be due to the non-aligned of information repositories and ineffective communication flow processes, which is also evident in Phases 4 and 5 and Table 4.7. The data extracted from Table 4.7, emphasises the orderly and disorderly organisational dynamics which according to Stacey (2000:221) is equated with the challenge for successful adaptation within complex knowledge environments.

The qualitative research indicated that tension is required in the knowledge organisation as it provides a focus and impetus to accelerate cognitive involvement (noted in Phases 4 and 5). This notion indicates the relevance for nurturing and the development of competitive advantage as postulated by Watkins and Golembiewski, (1995:89). Vittala (2004:528) suggests that when an innovation strategy generates significant tension, it is essential for leadership to leverage competitive solutions as it presents the optimal climate for achieving competitive advantage. The non-directive interviews indicated that leadership is required to assist knowledge workers in understanding the construction of innovation strategies. This evidently necessitates an environment of trust to realise new knowledge solutions through continuous interactions (Figure 4.8). The value creation contributions and experiences of knowledge workers are indispensable cognitions, which could drive organisational competitiveness. Zollo and Winters (2002:343) concur that communities of practice are deemed cardinal in the new economical context of postmodern knowledge management. According to Johannessen *et al.* (1999:125), a complementary

relationship is based on a supportive attitude and mutual trust, which leverages creative ideas into effective implementation (also evident in Figures 4.3 and 4.8). It was furthermore revealed that for knowledge workers to function collaboratively in the new economy and to achieve common objectives for mutually accountable results, significantly important leadership principles, which support creative thought, are required. Table 4.7 shows that although knowledge workers are composed from different departments with diverse structural functionalities, knowledge workers benefit from the collective ideas reflected via multi-functional compositions. This provides a synergy of creative potential capable of releasing the required creative tension (Figure 4.6) that can consequently translate innovations into organisational future vision, which is imperative to sustain strategic knowledge advantage.

Communities of practice have the potential to align organisational structures to introduce cross-functional exchanges, which are essential to facilitate effective communication among business units (Saint-Onge, 2005:70). The prominent role of knowledge workers is to master the ability to respond more efficiently to future demands as the results indicated in Figures 4.5 and 4.11. This provides data regarding how communication can accelerate the knowledge creation process through the formation of the exponential knowledge produced by formal communities of practice. The researcher postulates that only when the value of communities of practice are realised, will contemporary organisations become more effective in dealing with the rapidly evolving marketplace which can also be observed from the data (see Tables 4.15 and 4.16). This indicates that communities of practice increase knowledge exchanges and enhance knowledge sharing. According to Adams and Freeman (2000:38), Allee (1997), Alfred and Garvey (2000:261), Garvin (1993a:80), Hansen (2002:232) and Iverson and McPhee (2002:259) the organisational architecture that encompasses new knowledge values, systems and processes, consequently become more flexible when knowledge is shared to contribute towards a knowledge repository for innovative re-use. Figure 4.10 underpins this notion and reveals that the entrenched views of current knowledge organisations requires new innovative structures to inherently develop the meta-capabilities required for knowledge sharing and continuous organisational learning.

The data produced in this study indicated that communities of practice represent the new imperative for organisations to support the development of communities of knowledge workers to thereby manage the changes involved in the economic transition and to include the new organisational curriculum (visible from Figure 4.5

and Table 4.13). This notion suggests that future leadership should actively establish formal communities of practice to transform organisations at a fundamental level. This can be achieved through cross-functional pursuits and organisation-wide initiatives as also noted in Phase 5. The qualitative data revealed that by embedding communities of practice as an integral part of the organisational fabric, knowledge workers can contribute optimally to achieve prolonged competitive success. The research furthermore indicated that the knowledge architecture of knowledge-driven organisations requires a paradigm shift as knowledge workers introduce self-governing to enhance competitiveness and subsequently learning (as noted in Figure 4.3). This indicates that innovation capability is ultimately increased when knowledge performance becomes a collective task shared by the entire organisation. Analysis of Figures 4.10 to 4.12 and Tables 4.8 to 4.11 shows that knowledge workers need navigation and continuous creative discourse to improve collective innovation awareness and thereby enhance the organisation's knowledge competitiveness.

The quantitative research indicated that knowledge workers have an instinctive desire to pool resources (see Table 4.7). This necessitates direct access to all members for the establishment of informal networks and thereby initiates access to diverse information. Figure 4.2 confirms that leadership should commit to formal communities of practice also noted in Figures 4.5 and 4.7, which indicated that learning enhancement occurs essentially through the generation of new capabilities. The sharing of information and promotion of knowledge specialisation depends primarily on the input made by communities of practice and the openness of knowledge workers (McElroy, 2003a; Wenger, 2003:76). The data furthermore revealed that during the process of creating new knowledge assets, knowledge workers leverage real business opportunities, which are imperative for the ultimate expansion and continuation of the future organisation (see Figures 4.5, 4.6 and 4.8).

The data revealed that implicit innovation expertise is translated into valuable organisational knowledge and the tacit-explicit spectrum of knowledge is shared between individuals and groups to diffuse information, which in turn becomes manifested knowledge solutions that produce new innovations as noted in Figure 4.11 and Tables 4.5, 4.6 and 4.11. This indicates that tactical objectives are essentially coordinated within communities of practice. However, individual knowledge workers do not always have the resources available to achieve these tactical objectives. Takeuchi and Nonaka (2004:21) agree that innovation drives the socialisation of knowledge from an inferred approach towards organisational

strategy. The qualitative data indicated that creativity and innovation through organisational learning and its relation drive the knowledge transformation process to leadership initiatives. The qualitative data in Phase 5 and particularly in Table 4.18 established that fluency and elaboration are the primary drivers of managerial effectiveness, which subsequently could increase knowledge productivity.

The researcher is of the notion that creative leadership could be instrumental in creating future value propositions by building effective collaboration and utilise knowledge resources and information to drive strategic innovation as specifically noted in Figure 4.12 and Tables 4.7 and 4.8. This notion indicates the seemingly dualistic landscape between leadership who places insignificant emphasis on managing innovative interactions while knowledge workers need the freedom and autonomy to network ideas amidst free association. Dalkir (2005:20) and Nonaka (1996:76) propose that the knowledge worker in the future will become the pivot in driving the knowledge spiral assisted by information technology for new knowledge solutions to manifest the tangible asset into the intangible. These findings regarding Information Technology indicate that its main function is derived from the application of knowledge to economise the transportation and distribution of specific knowledge combinations for sustainable competitive advantage. The researcher suggests that leadership in the new knowledge economy should optimise human capital through creative and innovation-based technological management and training as noted in Tables 4.10 to 4.12. The later illustrates that knowledge workers expand creative and innovative initiatives when encouraged within a conducive climate and culture. However, the organisation does not always formally support idea generation, which are not frequently channelled to all functions within the organisation. According to Dierkes (2001:65), Hansen (2002:232), Harrington (1981:121), Hansen, Nohria and Tierney (1999:106) and Hemre (2005:50) all functions of the organisation needs to be aligned and synthesised for new knowledge creation to thereby transcend the boundaries of traditional management. This introduces postmodern perspectives to enable consequent knowledge-creation cycles, which should coexist within knowledge management praxis.

The research findings indicate the importance of communities of practice as essential for accelerating the rate of new knowledge creation for multiple strategic contexts. This is in accord with the data in Figure 4.5 and Table 4.8, which shows that minimal leadership encouragement exists and strategic innovation intent is therefore not communicated to knowledge workers. Leadership seems not to always openly

support creative thought nor innovation exchanges. This is also evident from the attitude of current leadership. Knowledge workers yearn for leadership to fulfil a fostering role by navigating innovation and embedding a culture of creative thought. Knowledge workers possess an elevated sense of purpose, which is also evident in Table 4.7. This element pertaining to knowledge socialisation is developed through committed innovative business practice, which ultimately increases organisational capabilities exponentially (Dalkir, 2005:53). According to the data presented in Figure 4.6, idea generation provided a structure where knowledge workers could establish a repository to facilitate access to the organisation's explicit knowledge through networking within communities of practice. Knowledge workers shared interest in supporting opportunities to increase performance. Lang (2001:34), Lesser and Storck (2001:831), Kürtz and Snowden (2003:462) agree that communities drive the achievement of strategic goals to realise maximum benefit through the excellence in performance that could potentially increase the collective creative capabilities generated through innovative projects.

The qualitative data (see Phase 5) furthermore indicated that an important need exists for leadership to transfer knowledge beyond organisational boundaries and to assimilate the creation of new knowledge through diverse team interaction, thereby creating a process of dynamic interaction for the mobilisation of new innovation. This is evident in Figures 4.2 and 4.5, which support the leadership imperative and the formalisation of communities of practice for the enhancement of knowledge productivity. Individual creativity and innovation awareness are enhanced when supported by a culture, which respects and acknowledges innovation (see Table 4.6). The research findings of Martins and Martins (2002:62) is in accordance with data produced in Phase One and suggests that when organisational culture promotes creativity and innovation it emphasises and rewards the importance of individual creative talent. This furthermore perpetuates the notion that organisational culture is imperative for the development of organisational creativity and innovation (Lam, 2000:245).

Borghini (2005:27), Crawford (2005:10) and Malhotra (2003:4) agree that innovation highlights the sense making process within the respective cultural domains and thereby underpins creative ideation as also demonstrated in Tables 4.8 to 4.10. According to Graetz (2000:560), Garvey and Williamson (2002:112) and Lang (2001:35) the process of creativity cannot be controlled and managed mechanically as knowledge workers cannot be bound to rules and procedures (Rowe, 2004:41).

The creative potential of knowledge workers needs to be nurtured and acknowledged. Future leadership needs to be open to change and respond to new ideas, which are accumulated through knowledge worker interaction. These ideas are activated from past and present experiences to deliver openness to new interpretations and entirely new futures. During socialization reference is frequently made to conditions of radical unpredictability and improvisation (noted in Figures 4.7 to 4.10). This notion is furthermore confirmed in Tables 4.15 to 4.17 indicating that creativity and innovation are important to support knowledge socialisation, which is relevant to increasing all five dimensions of creativity. Knowledge workers achieved a balanced consideration of all possible business perspectives and knowledge domains in the decision making process as also perceived in Figure 4.5 and Table 4.7, emphasising the importance of concomitance. The research participants seemed to integrate conflicting views through dialectic argumentation, observable in Phase 5: Theme 1, allowing for multiple perspectives in understanding to materialise through continuous inter-subjective communication. Flyvberg *et al.* (2003:49) postulates that innovative knowledge exchanges encourages constructive and reflexive dialogue, which consequently manages the process of learning and sharing. Selen (2000:346), Senge (1992:72) and Tobin (1998:2) suggest that collective narratives increase the knowledge acquisition, which in turn increases knowledge competitiveness.

Raelin (2001:20) agrees with the findings of this study that learning practices are exemplified through dialogue and reflection and can become threatening as noted in Figure 4.3 and Table 4.12. This indicates that unless organisations establish an environment, which supports knowledge learning and provides for intellectual and emotional support, knowledge expansion can be severely proliferated. The research participants are synonymous with knowledge generators and according to Skyrme (2001b:92), the utilisation of continuous innovative discourse often results in increasing the knowledge base which furthermore amplifies associative thought paradigms that are not mutually exclusive (as noted in Figures 4.3 to 4.10 and Table 4.12). The above notion resonates with the findings of Flyvberg *et al.* (2003:112) who suggest that learning is a process of allowing for simultaneous and holistic integration of multiple perspectives. This involves the analysis and re-assembling of dialectic knowing through the recasting and re-framing of conventional methods of understanding. New previously ignored innovations may occur which should ultimately sustain competitive advantage and drive exponential organisational learning. The research interventions allowed knowledge workers to search collectively for new opportunities to promote co-operative action as specifically noted in Phases 4

and 5. By considering present conditions and deliberating future value propositions opportunities were offered to deliver multiple perspectives based upon meta-frameworks which consequently became embedded within the knowledge socialisation process. Prencipe and Tell (2001:1373) agree that the ideal learning organisation contrasts with the *cult of immediacy*, which may hinder reflexive praxis and could result in the reproduction of the past.

Johannessen *et al.* (1999:117) suggest that an autonomous culture is imperative to enable knowledge leadership to drive innovation enablement and deem it important to investigate environmental factors, which impact on the socialisation of organisational creativity and innovation as also perceived in Figures 4.6 and 4.7. Building a shared vision is problematic and therefore the power of visioning cannot be unlocked optimally as leadership does not always provide effective sharing of strategic intent. Knowledge workers are cognisant of the fact that the organisational vision is crucial for sustaining its competitive position. The views of Crawford (2005:15) and Handzic and Chaimungkalanont (2004:57) corresponds with the research data (as noted in Tables 4.15 and 4.16) indicating that the creation of particular conditions for effective knowledge management and its optimal enablement is driven by culture, organisational structure and leadership (see Figure 4.11). The levers for effective knowledge sharing are connecting, teaming and new knowledge worker policies, which are accommodating and not productivity driven as evident in the qualitative data extracted in Phase 5. Knowledge skills and individual learning are the foundational competencies required within the knowledge organisation but needs to be perpetuated through innovation. According to Chalofsky (2005:54) and D'Aveni (1998:183) individual innovation and creativity is continuously harnessed within organisational knowledge management practice where creative leadership primarily drives strategic alignment.

Amidon's (2003:42) innovation framework analyses the capability of organisations to create and implement new ideas, evaluates factors resulting in creative outcomes, and suggests that a culture conducive to innovation increases knowledge productivity. This is evident in the data produced in Tables 4.5 and 4.6, which indicate that innovative awareness enhances idea generation assisted by knowledge management initiatives. According to Hughes *et al.* (1999:38) knowledge management is based on organisational complexity, establishing order and consistency by drawing on formal plans and monitoring knowledge results. Leadership, in contrast, is about transforming change within the construct of

managerial effectiveness. This in turn establishes a new direction by developing a vision of the future and aligning human capital through communication. This notion is observable in Figure 4.1 and indicates that inspiration leads to knowledge concomitance required as an output of the postmodern economic era. Brewster *et al.* (2000:30) and Steyn (2008:317) add to this argument by postulating that knowledge managers use the authority inherent to their designated formal positions to obtain compliance from organisational members (Phase 5: Theme 1). The data obtained in Table 4.7 shows furthermore that leadership has the ability to influence the organisation towards the achievement of innovative goals. This in turn provides creative challenges to generate future visions, which inspire the contemporary organisation to achieve global competitiveness. From a postmodernist perspective an interesting shared narrative is offered by Gephart (1996:95) and Gordon (2000:52) stating that effective leadership is shaped by individual and group constructions and deconstructions within contemporary organisational realities, but is also required to adapt to the new knowledge economical realities. This accords with the research of Fulmer and Vicere (1995:4) and Sackney *et al.* (1999:36) showing that current organisations need new leadership rubrics to redesign future knowledge management praxis.

The results from Phases 4 and 5 align with Crawford's (2005:6) investigation concerning the effects of leadership regarding knowledge management and investigate the crucial role of transformational leadership initiatives. The research data implicates that the relationship between creativity, innovation and leadership is contrasted with traditional leadership, which is not deemed adequate for effective knowledge management as its emphasis is on power hoarding rather than power sharing as observed by Bennis (1999:18). However, the social nature reflected in the research suggests that knowledge management is characterised by knowledge exchanges between knowledge workers as the crucial source of optimising innovation and which is primarily creativity leveraged through communities of practice. This is also demonstrated by Figures 4.3 and 4.5 indicating that the organisational repository is critical to increase value from these new intangible knowledge assets. The paradox resides in the fact that knowledge workers often need to exploit tacit knowledge, as they require the knowledge to innovate and ultimately create future value propositions to sustain competitive advantage.

Communication is an important construct, which according to the results in Figure 4.1 was identified as a major obstacle for efficient knowledge management practise. The

regression analysis furthermore indicates that organisational communication practices are not effective as insufficient attention is given to internal knowledge creation and the marketing of new opportunities and innovation initiatives. According to Cowan and Foray (2000:221), Frid (2000:67), Housel and Bell (2001:45), Jarvis (2001:17) and Thieraut (1999:89) innovative successes seem not to be openly promoted by current leadership as no autonomy or development of innovation champions nor creativity initiatives are provided. During the course of the research phases it seemed that social processes and exchanges lead to social innovations and that the collective acceptance of shared knowledge is key for the generation of new knowledge value (Phase 5: Theme 1 and in Tables 4.8 to 4.11).

The research indicated that strategic knowledge is captured in dynamic processes through which organisations interact with knowledge workers and the larger business environment (see Table 4.7). Organisations should not be perceived as information processing machines, as the present condition portrays, but should rather promote knowledge through the continuous action and interaction of knowledge workers with diverse stakeholders. The social, cultural, and historical contexts are instrumental for knowledge workers to provide novel knowledge constructs in search of creative solutions. This is also confirmed by Von Krogh (2000:8) who emphasises that knowledge workers need knowledge socialisation to increase the authenticity of knowledge creation. During the interactive research paradigm all knowledge worker groups were not given the opportunity to formally share new innovations and creative ideas within diverse contexts. It is interesting to note that groups re-organised themselves into communities and utilised the collective expertise and skills to gain competitive advantage (see data in Phase 5) which indicates the importance of formal communities of practice. According to Cheng (2005:606), multiple levels of cognitive thinking contribute towards the five dimensions of creativity, which facilitate the redistribution of creative knowledge applications remarkably. Davila *et al.* (2004:88) agrees that when balancing creative innovations, value networks are essential to establish innovation platforms as perceived in Table 4.16. When knowledge workers initiate formal knowledge networks creative problem solving occurs more effectively and spontaneously as innovative products and enhanced service delivery levels are surpassed. This illustrates the importance for knowledge workers to continuously share knowledge in a creative environment, which does not force knowledge productivity.

The interventions aimed to establish an open forum where research participants could experiment within a diverse creative problem solving landscape by stimulating innovative challenges. DiLiello and Houghton (2004:321) suggest that creative problem solving plays a key role in maintaining the organisations competitive advantage and assists organisational members to effectively address unique and unstructured challenges to problems in the search for new futures and novel opportunities. This is confirmed by Housel and Bell (2001:51) who identifies the importance of knowledge networks in sustaining knowledge competence and perpetuating the search for innovative knowledge solutions. Amabile (1998:76) proposes an interpretative framework for creativity in organisations, based on the relevance of individual creativity contributions, which collectively enable new collaborations to establish a competitive facility for creative ideation. According to DiLiello and Houghton (2004:319) the organisational environment needs to facilitate new creative opportunities supported by creative leadership to direct and foster a climate for continuous knowledge creation. The data (see Tables 4.14 and 4.16) revealed that constraints exist which prohibits organisational creativity and innovative resource availability.

As innovation is not encouraged by leadership (see Figure 4.7) the duality that exists between knowledge workers and leadership concerning strategic knowledge issues is confirmed. Payne (1990:101) suggests that a forum for creative ideation and innovative knowledge implementation should be supported by dedicated leadership. According to Housel and Bell (2001:142) and Twiss (1995:15) individual creativity within organisations involves a particular leadership style, which initiates a cultural environmental platform to synthesise all organisational functions. This concurs with Davila *et al.* (2004:18), DiLiello and Houghton (2004:320), Stankowsky (2005:74) and Sydänmaanlakka (2002:82) who suggest that an intelligent organisation deploys knowledge leadership to facilitate new innovative solutions. This multi-level approach provides a forum for integration and concomitance as proposed by Steyn (2006:118) which furthermore suggests a foundation for reflecting on how the creative process could impact and contribute to the organisational strategic outcomes as is observed in Phase 5.

The research data suggests that individual and organisational creativity is inextricably linked to the efficient search for competitive knowledge solutions. Davila *et al.* (2004:19) highlight the importance of the simultaneous development of these cultural constructs to achieve competitive advantage, as knowledge repositories are crucial

for success. The research of Andriopoulos and Lowe (2000:739) correspond with the data presented in the qualitative interviews referring to creative ideas and knowledge as prime business assets. Knowledge workers are the owners of the knowledge required to drive and exploit economic uncertainty. This is confirmed by Handzic and Chaimungkalanont (2004:57) who found that knowledge workers are essential for continuous knowledge competitiveness in the new economic dispensation. The comparison of perpetual challenging according to Andriopoulos and Lowe (2000:739), Amabile (1998:76), Tsui (2003:18) and West (2001:460) established an organisational creativity theory that revealed that knowledge workers need componential frameworks of creativity for adventuring with diverse scenario development and experimentation for the generation of new creative processes. This is noted in Table 4.17 and Phase 5.

The researcher postulates that the key to success to bridging third to fourth generation knowledge-driven organizations is the development of an intelligent organisation, which creates core competencies and distinctive products and services to generate superior results through the optimum utilisation of creativity and innovation networks. This requirement can also be noted in Phase 5: Theme 1. According to Andriopoulos and Lowe (2000:740) creative organisations need to be highly skilled at creating, acquiring and transferring knowledge and also at modifying behaviour to reflect new knowledge and insight. The emphasis in the third knowledge era of knowledge management praxis is embedded within the importance of shared knowledge contexts. Participation in this context allows for knowledge workers to assimilate, disseminate, describe and organise shared knowledge to capture future knowledge applications to enable immediate knowledge access. Knowledge content needs to be abstracted from context; to facilitate meta-data required for the creation of new future value propositions through knowledge taxonomies as confirmed by Snowden (2001:5). The data in Phase 5 further revealed that no knowledge valuation methodologies were implemented to assess the above. This construct could be proffered for further investigation.

The qualitative research revealed that individual creativity and innovation are essential components for knowledge workers to effectively network (Figure 4.1 and Table 4.18). This emphasises the importance to create a link between organisational knowledge to facilitate the dissemination of new knowledge combinations and provide enhanced idea generation for the implementation of future economic value. This can be achieved through the creative process that needs to become embedded

in the organisational architectural memory as perceived in Phase 5 and Tables 4.7 to 4.14. New repositories of knowledge should be shared and crystallised into new organisational mental models, culture and values. The research results revealed furthermore that strategic conversations through informal and formal teams enabled more effective sense making (Phases 4 and 5) depicting that accumulative knowledge processes directly impact on creative performance which is also noticeable in Table 4.6. According to Housel and Bell (2001:47), Snowden (2001:3), Stankowsky (2005:203) and West (2001:460) the creative process establishes the link between organisational knowledge, culture and sustainability facilitated by interfaces of knowledge innovations extracted from knowledge architectures to present diverse conclusions - which in turn translates into valuable future innovations which is evident from the data extracted from Phase 5: Theme1. This provides evidence of data that diverse meanings generated represent new innovative solutions and could assist organisations in interpreting their respective knowledge identities and to measure organisational innovation ability to harvest and capitalise on collective creativity competency.

One may also reason that personality traits such as persistence, curiosity, interest in complexity, preference for autonomy and high energy levels, self confidence, and an impression of the self as particularly creative can play a vital role in the development of creativity levels of knowledge workers as noted in the qualitative data found in Phase 5. Rowe (2004:81) and Sternberg (1999:51) agree that personality trait are important but needs to be researched further as it could be a critical precursor to understanding creativity in the workplace. The findings of DiLiello and Houghton (2004:323) indicate that creativity can be enhanced through an explicit focus on strategic objectives, which necessitate the innovative implementation of future solutions. Knowledge productivity is a consequence of efficient management, which again is a product of innovation awareness, elaboration and fluency. These factors unfold in an organisational climate that facilitates creativity and innovation (Tables 4.18 to 4.20). According to Garvey and Williamson (2002:119), a high level of knowledge productivity indicates a positive relationship with competitive levels of creative ideation.

According to Crawford (2005:6), Stokes and Logan (2004:164) and Wald and Castleberry (2000:18) the absence of a coherent leadership model relates to the urgent need for development in the third generation knowledge economy. The assumption has led the researcher to critically evaluate available sources and

incorporate this aspect into this exploratory quest. A new leadership paradigm is required to strategically navigate the knowledge-based organisation into the fourth era of knowledge management where the benefits of a knowledge-driven organisation can be harvested (Geijsel *et al.*, 1999:309). The researcher suggests that creativity and innovation, driven leadership could become the prominent catalysts for achieving this competitive advantage.

Stokes and Logan (2004:261) and Sydänmaanlakka (2002:82) suggest that creative leadership is needed to enable organisations to attain this new leadership role, which supports organisational culture and climate to unlock individual and team creativity and strategic innovation. The research findings also suggest that an appreciation for diversity is an essential ingredient for knowledge leadership (Figures 4.11 and 4.12). Leadership in the postmodern era will be characterized by a high frequency of innovation exchange in networked organisations. This is observable in Table 4.7, showing that strategic innovation is substantially increased when a supportive culture and climate are presented to knowledge workers to unlock individual and team creativity for the enhancement of strategic innovative initiatives. According to Stokes and Logan (2004:36), it is only through concomitance and collaboration of all functional organisational elements that future sustainable success can be obtained and leveraged for continuous sustainable innovation. Stokes and Logan (2004:121), Sydänmaanlakka (2002:140) as well as Takeuchi and Nonaka (2004:243) postulate that the co-ordination of formal communities of practice is essential for successful harnessing of creative value. Twiss (1995:245) also agrees that different knowledge situations should be identified for the development of internal and external linkages during the accumulation of diverse knowledge, which is deposited into the organisational memory.

The findings of this study (depicted in Figure 4.1 and Table 4.8) furthermore revealed that networks of knowledge relations develop within strategic knowledge intersections and improve the flow of information. This indicates the imperative role of creative exchanges within the knowledge accumulation process. Transformational leadership is paramount to make available the necessary knowledge resources. Figure 4.2, Table 4.8 and Phases 4 and 5; indicate that the major factors, which are essential for increasing idea generation, are a supportive culture autonomous leadership initiatives and innovation driven strategies. Geijsel *et al.* (1999:310) identified the importance of supportive leadership for the effective delivery of knowledge supremacy. According to Allee (1997:3), Alvesson (1993:997), Bryan *et*

al. (2007:1), Drucker (2005:10) and Tidd *et al.* (2001:28) a shared narrative describes the ability to accumulate knowledge and this hinges on the collective skill of knowledge workers to navigate the direction of knowledge creation supported by leadership. This contributes to the organisational memory, which develops through knowledge concomitance. The latter is particularly conspicuous in Figure 6.1, indicating that knowledge workers require creative leadership to bestow autonomy and to share the ownership of knowledge to perpetually challenge the enhancement of collective creative capacity.

The criteria for creative and innovative leadership received indifferent responses from the research participants and it became clear in Tables 4.12 to 4.14 that the establishment of formal communities of practice are regarded as an extremely valuable institution required to unlock creativity and innovation within knowledge based organisations. The interventions administered to treatment Group Two included the introduction and facilitation of communities of practice to serve as formal vehicles for collaboration and the data concerning this construct produced positive responses. It can therefore be deduced that sufficient knowledge of and the enforcement of communities of practice as knowledge-processing facilitator imbed create an optimal working environment. In this new environment the role and function of the community of practice is valued for its contribution towards innovative solutions and the achievement of organisational strategic intent.

The visioning process is hampered by the perceived absence of a shared value system regarding creative and innovative initiatives or solutions as observed by the qualitative data extracted from Phase 5. The knowledge organisation's operations are perceived to not be clearly envisioned by knowledge workers (Figure 4.6). This indicated that knowledge workers are not always passionate about knowledge accumulation and the search for new innovations as the vision seems to lack the capacity to engage and promote group functioning. This could be attributed to organisational alignment, which is perceived to be not effective as is confirmed in Figure 4.1. Knowledge concomitance seems not to exist within current organisations as learning and knowledge sharing does not occur, and does not contribute to the proliferation of new innovative competencies.

The recognising of the value of self-governed structures such as autonomy and agility of knowledge workers to perform independently (as noted in Figures 4.4 and 4.10 and Table 4.7) may be a significant challenge to future organisations. Traditional

leadership is based on command and control and requires adaptation as the value of communities for enabling a knowledge platform becomes clearer. Culture seems to affect the organisation's ability to realise future strategies and the collective mindset seems to become imposed by the controlled organisational culture (see Table 4.8), which determines how knowledge workers react to current knowledge strategies, which appreciates creativity and innovation. Communities of practice are required to be highly motivated and aligned with strategic imperatives to significantly contribute to organisational performance. According to Wenger (2000:225), they should collectively utilise innovative capabilities to perpetuate knowledge creation as confirmed in Figures 4.3 and 4.8 Tables 4.9 to 4.11. This shows that when a clear organisational vision is communicated to knowledge stakeholders, dissemination and knowledge creation is enhanced (Wenger, 2000:236). Creative leadership is emphasised as a prerequisite for future knowledge management and advances structured communities of practice for continuous knowledge productive enquiry.

Hall and Mairesse (2005:5) postulate that managerial effectiveness and knowledge productivity depend on new innovations to expand relationships and establish networks to improve knowledge profitability as the major source of economic rent. The research data revealed a direct relationship between knowledge productivity and the dimensions of creativity, which in turn sustains new knowledge competitiveness. According to Dalkir (2005:51) knowledge productivity is influenced by external factors such as market demand and this may impact profoundly on the return on knowledge investment. The researcher's main criticism of contemporary theoretical models concerning leadership is that creative leadership and the establishment of functional communities of practice seems to be excluded from current knowledge management praxis.

In summary the findings derived from the non-directive interview schedule support the general conclusion of the research with specific reference to the absence of a knowledge management culture that supports creativity and innovative practices. The socialisation of knowledge seemed to be ineffective as illustrated by the lack of an established learning organisation (also noted in Figures 4.3 and 4.4 and Table 4.9). This underscores the notion that learning is an essential construct for knowledge-driven organisations to sustain competitive advantage. According to Drummond (2003:58) and Saint-Onge & Wallace, (1999:27), communities of practice and informal networks need to be rewarded and recognised for the development of innovative behaviour.

The findings produced data suggesting that the intervention measures that were administered had a positive effect on the development of creative competencies and to a lesser extent on innovation awareness. The relationship between creativity and managerial effectiveness is more statistically significant than the relationship between creativity and knowledge productivity. Innovative awareness also showed a stronger correlation with managerial effectiveness than with knowledge productivity. Creativity can be enhanced through interventions while innovation awareness seems to develop organically.

5.2.3 Research Objective Three: To determine the relationship between organisational culture and climate and the enablement leadership within knowledge management praxis

Garvey and Williamson (2002:49) postulate that in the current knowledge evolution, knowledge is increasingly applied to produce new solutions, which necessitates more efficient leadership praxis to deliver continued creative intelligence. The capacity to develop and innovatively implement a culture, which produces new knowledge solutions, is validated primarily through the knowledge worker.

The findings regarding the *Innovation Climate Diagnostic* revealed a wide spectrum of interesting and conflictual data, which will be discussed and integrated. Perceptions towards the utilisation of creative potential and innovation in the workplace suggest that the individual knowledge worker's contribution is considered to be more self-imposed as the organisation does not provide formal structures for knowledge exchanges (as noted in Figures 4.4 and 4.12). However, organisational systems could be hampering factors, which obstruct effective collaboration (Phase 5). Procedures and control mechanisms inhibit the process of knowledge sharing and knowledge exchanges as these formal structures are based on traditional managerial values, which stifle innovative exploration. The data indicated that a business environment, which promotes the nurturing of creative potentials, should facilitate two-way communication and provide channels for access to novel information. This is paramount for establishing an innovative advantage in knowledge-based organisations (Housel & Bell, 2001:125; Huyseman & DeWit, 2002:102).

The twelve dimensions of collaborative leadership were evaluated and serve as an analytical tool for designing successful future leadership models. The following constructs were evaluated: two-way communication, ease of access of information,

continuous learning, alignment, community of practice, vision, leadership, trust, goals, strategies, tactical objectives, and implementation and directs creative leadership towards realising the future potential of the knowledge concomitance model. According to Steyn (2008:317), the crucial divide between management and knowledge workers should be addressed in further research, as this could be cardinal to the development of improved future knowledge praxis. Two-way communication, continuous learning, vision, and leadership were more statistically favourable than the other themes tested and are confirmed in Figure 4.1. This reveals that a sustaining culture enabling open communication and shared thought does not currently exist and points to the inability of current knowledge organisations to operate within the innovation-driven construct expected of the knowledge era (Borghini, 2005:20; Garvey & Williamson, 2002:187; Kezar, 2001:100).

The findings therefore suggest that a duality exists between the individual knowledge worker and the organisational leadership construct. The results revealed that there are different levels of individual, group and organisational readiness for the social intelligence and constructions of co-operative knowledge harvesting processes and the ontological perspectives for inter-subjective future propositions. This suggests that leadership in contemporary organisations are not harnessing individual or group creative talent and does not appreciate the strategic value of the collective creative potentials of knowledge workers. Contemporary organisations are not inclined or geared towards the operationalisation and implementation of innovation. The results in Phases 4 and 5 revealed that leadership does not acknowledge or encourage creativity as a valued talent, nor evaluate the dimensions to propose strategies for the collective development of creativity. The current culture and leadership behaviour is not conducive to the establishment of an optimal climate and associated value systems. The crucial elements constituting creative leadership is vastly absent. This is essential observed in Tables 4.7 to 4.11, which emphasise the fact that organisational culture is for the expansion, and alignment of managerial systems within the new knowledge enabled paradigm to diffuse controlled knowledge ownership (Ambrosini and Browman, 2001:811).

Knowledge workers are either influenced or disaffected by the pressures of knowledge productivity as the current managerial emphasis seems to be on production and quantity, rather than the quality of knowledge creation (Figures 4.11 and 4.12). Management tends to be unaware of the tacit requirements of knowledge work (as shown in Figure 4.10) and production based methods are apparently

applied to evaluate the cognitive processes. This indicates that knowledge workers and management are not always interacting or communicating in a productive manner. Creative and innovative input is imperative according to Farmer *et al.* (2003:618) to redesign knowledge work and make its tacit qualities explicit and thereby increase the knowledge competency value-add.

Phases 4 and 5 produced data for a discussion that emphasised the importance of gaining support for a knowledge forum to be formalised. The data revealed that insignificant managerial support existed as research participants generally felt that their performance was based on superficial operational criteria instead of knowledge management metrics. Furthermore, knowledge workers did not know exactly who the appointed innovation managers were and felt that they were excluded in the process of communication. Innovation champions seemed to guard their projects as seen in Phase 5: Themes 1 and 2, thus actively preventing the sharing of knowledge. Figure 4.3, produces data that knowledge ownership creates a barrier to organisational learning, which according to Kanter (1997:62) is an important condition to eliminate when establishing formal communities of practice.

According to Denning (2000b:2), Ettlie (2000:34), Liebowitz (1999a:37) and Stokes and Logan (2004:24) leadership should drive future organisational networking practices that are contextualised within the vision of continuous learning, to provide in turn access to information for creative exchanges. The data revealed that these exchanges are based on innovative discussions, which occur among knowledge workers and expand shared cognitive contexts. Politis (2001a:354), Politis (2001b:449) and Taylor-Bianco and Schermerhorn (2006:457) are in accordance with the data in Table 4.7 and explain that knowledge-networking practices are established as either bureaucratic networks that primarily seek to codify implicit knowledge or knowledge sharing networks. These are retained in the acquired knowledge repository searching for new applications based on experiences, and should enhance innovative knowledge exchanges.

The data reveals that self-management develops through informal group structures, which produced shared leadership initiatives to execute the knowledge facilitation process. The organically formulated communities of practice provide direction in restructuring organisational future aspirations (Phase 5: Theme 1 and Tables 4.14 to 4.16). Knowledge workers establish their own communities of experts for the generation and expansion of new knowledge, even in situations where organisations

do not provide this facility. The self-generated leadership dynamic seemed to facilitate and generate new knowledge that supports the strategic intent of the productive inquiry and thereby provided access to new innovations such as knowledge solutions for the reengineering of information technology processes (Figure 4.9 and Table 4.2). The research data depicts that participant's manipulate knowledge objectively and create innovative syntax to simultaneously craft new forms of content (see Figure 4.10). These practices also delivered unexpected knowledge domains within the acceptable knowledge praxis as these knowledge domains prescribe future innovative solutions as a distinctive criteria based on standards developed by consensus within the respective knowledge communities (Figure 4.4). Knowledge workers establish respective infrastructures to facilitate new knowledge propositions generated from knowledge exchanges to sustain future knowledge competencies. Wenger (2003:77) and Snyder (1999:472) are in accordance with these notions but emphasise the importance of open channels of communication.

There is a general indication regarding the data that communities of practice appear to accept responsibility for providing effective and productive knowledge-sharing and are actively involved in knowledge innovation. Within this context, it is presumed that knowledge workers presuppose the ownership of learning through interaction and benefited by providing opportunities to produce economical knowledge standards and solutions. Figure 4.3 shows in this regard that productive knowledge sharing praxis increases learning and delivers just-in-time knowledge solutions for the bartering of intangible knowledge rent.

The research revealed that communities of practice are coherent and deliver strategic imperatives, which significantly contribute to knowledge performance through the utilisation of new innovative capabilities. In this regard, Tables 4.15 to 4.17 indicate that formal communities of practice enhance the diffusion of knowledge solutions. These capabilities appear to have been purposefully generated through aggregated learning (Figure 4.3 and Table 4.9). Communities of practice have become important vehicles for the achievement of knowledge building environments of commercial success as postulated by Choo (1988:63) and Mohanty and Deshmuck (1999:319). By belonging to a community of networks, diverse knowledge repositories can be diffused to expand the knowledge resource planning of the current organisation. Figure 4.5 and Tables 4.11 and 4.12 indicate that effective leadership within informal communities of practice appear to strive for the obtainment

of innovative solutions that are essentially situated inherently within knowledge workers who represent the creative repositories. The diverse experiences of knowledge worker's obtained during the intervention phases relate to diverse organisational requirements for economising knowledge. The interventions could facilitate and direct innovative future solutions via knowledge exchanges between diverse communities of practice (see Phase 5: Theme 1) and produced data that promotes communities driven by the production of creative ideation.

The results revealed that organisational culture and climate sustain the enablement of continuous searching for knowledge solutions. Tables 4.8 and 4.9 indicate that through individual and group creativity as imperatives for the advancement of knowledge productivity, knowledge workers leverage high levels of information in formal communities of practice for the enhancement of knowledge socialising and added value to new knowledge competencies. Borghini (2005:20), Mohanty and Deshmuck (1999:311), Neef (2005:114) and Robinson (2005:155) agree that the specific role of organisational culture is to facilitate information flows and to evolve knowledge management towards the learning organisation as the results obtained from this study also indicate. Future leadership should continuously provide creative input for the establishment of a culture that should be supportive and effectively align knowledge management in achieving strategic intent. According to Figure 4.4 the data indicate that this important alignment cannot occur when the organisation is characterised by compartmentalisation and knowledge is sourced and reserved instead of shared and made available to all knowledge stakeholders.

Table 4.7 combined with the qualitative data (Phases 4 and 5) reveal that the nature of the current innovative climate in knowledge-driven organisations do not always support or encourage creativity. A synopsis of the findings produce the following insights: leadership tends to fail to encourage internal innovation due to its closed attitude where external alliances and strategic partnerships are concerned. Leadership's knowledge of customer needs seems inferior to that of the competition. Leadership expects knowledge workers to be totally devoted to the development of the organisation and places insignificant emphasis on the development of knowledge workers in navigating them towards innovative interactions (Tables 4.8 to 4.13).

Leadership is apparently perceived as a closed organisational process focusing mostly inwardly and consequently neglecting future customer needs, which results in the organisation not being responsive to environmental factors since innovation

capacity is primarily suppressed. This can be specifically observed in Table 4.10 showing that current leadership tends to be primarily focussed on short-term interventions, which are not aligned to the achievement of future value propositions, which essentially contribute to strategic knowledge competitiveness. Formal organisational communication practices are not always received nor promulgated to promote internal innovation. Innovative successes are not publicised nor discussed as leadership apparently provides insignificant strategic guidance and does not always entrust authority for innovators to investigate new opportunities. Garvey and Williamson (2002:75) agree that this is a general assumption prohibiting strategic innovation within contemporary knowledge organisations. Knowledge workers are frequently characterised as not being self-motivated nor driven by creativity and innovation as management seemingly seeks short-term profits, which could undermine knowledge productivity.

Tables 4.7 and 4.17 furthermore indicate that information technology is underestimated for its potential role for the leveraging of innovation solutions. This functional role is currently posed as a controlling mechanism rather than an enabler. This inhibits the diffusion of knowledge exchanges for the procuring of future innovations. In addition, the budget for innovation is perceived to be less than that of the competition, which should be made available for innovative development as evident in Figure 4.6. This indicates that financial resources are applied procedurally instead of involving the knowledge community concomitantly to harness further innovations. The organisational climate does not facilitate creativity and innovation as critical for outcomes-based innovation as the environment does not optimise knowledge efficiency and knowledge effectiveness in the work place is not always achieved. The integration of technology with work processes and funding thereto is needed which could lead to increased levels of creativity and innovation. Figures 4.4 to 4.6 revealed that organisational climate influences the organisations ability to assist creative leadership to establishing successful future knowledge strategies. The results revealed that Information Technology should support all departments to gain information flow and sufficient protraction for creativity and innovation. The data suggests that Information Technology is an important facility, which should be provided to knowledge workers for the sharing of information and the expansion of new ideas to accelerate learning. This can be noted in Figure 4.11 and Table 4.7, which explain that Information Technology is crucial to sustain strategic knowledge competitiveness. If correctly applied information technology has the potential to serve as an innovative just-in-time knowledge-sharing platform.

The strategic function of Information Technology as introduced by Sveiby and Simmons, (2002:430), Tsai (2001:998) and Wenger (2003:80) should be optimised by realigning the communication process with communities of practice to solicit innovative inputs from all stakeholders. Although Information Technology is seen to support the organisation, the need of Information Technology should be integrated as the immediate role and strategic function as enabler. Furthermore, it is perceived that innovation champions do not seem to communicate efficiently to core audiences. This is evident in Figure 4.5 and reveals that the communication process is unproductive and untrustworthy as can be also observed from Tables 4.9 to 4.11. This furthermore indicates that a fragmented internal knowledge sharing communication process exists. This could be the result of the inability of current leadership and management to share knowledge and allow knowledge workers the autonomy for innovative knowledge dissemination.

The researcher is of the notion that the Information Technology communication poses fragmented communication. This could result in ineffective external interactions among knowledge workers and knowledge sharing is not optimally achieved. It seems from the data that the actions of knowledge workers within their communities of practice are confined and controlled in the current knowledge milieu. This can be attributed primarily to an autocratic management style, diminutive trust in and among knowledge workers regarding leadership and the non-appointment of innovation champions (see Phase 5: Theme 1 and Table 4.15). Tardif and Sternberg (2000:105) propose that organisational learning can only take place when knowledge workers experience communal learning, creativity, and innovation to be utilised optimally strategically within the organisation.

Leadership integrates Information Technology as this function is delegated to manage information systems and should not function in isolation. It should support the continuous learning environment, which in turn actively promotes and develops creative ideas through divergent thinking skills to ensure implementation. Knowledge workers accept responsibility for decisions made and are more obliging to act in leadership roles to achieve organisational expansion through self-leadership (Phases 4 and 5). Current leadership seems not to appreciate the importance and exponential wealth creation of innovative knowledge solutions transpiring from the creative potential and talents of knowledge workers.

Based on the information collected from the focus groups the following conclusions can be drawn as particularly evident in Phases 4 and 5. An important assumption pertains to the knowledge culture, which was evaluated for the support of innovation and creative thought. Creativity and innovation was viewed as a departmental asset and knowledge seemed not to be shared. This consequently establishes barriers to organisational learning and prohibits the propensity for innovative competency to be promoted. Duplication apparently takes place due to fragmented communication processes, which does not always recognise the value of creativity, and under utilises the strategic importance of innovative projects. This can be observed in Tables 4.7 and 4.9 indicating that unproductive time and effort is apparently negated in the knowledge creation process as the organisational silo effects have a direct influence on knowledge sharing. Departmental procedures prohibit knowledge socialising to occur organically as management still seems to practice traditional power hoarding regarding the ownership of knowledge. This notion corresponds with the research of Geijsel *et al.* (1999:309) and Martins (2000:47).

Various authors (Senge, 1992; Stacey, 1995:477; Sullivan, 2002:59; Sveiby, 2001b:344; Uzumeri & Nembhard, 1998:515; Viitala, 2004:528), agree that a learning organisation cannot be established when the organisation has fragmented communication (as is also evident in Figure 4.3). Leadership should therefore promote innovation, emphasise knowledge production, include creative awareness and appreciation of creative thought, and encourage the use of imagination to defuse organisational communication. The current autocratic management style is not conducive for encouraging creative exchanges and lacks optimal support for knowledge workers as suggested by Von Krogh (2000:18). However the research participants were of the opinion that leadership and management were secluded, lacking fostering capabilities and are at times non-supportive during working process and that the necessary strategic information is not communicated. Several authors (Rowley, 2003:438; Senge, 1992:22; Siau, 2000:248) agree that leadership does not acknowledge the creative and innovative suggestions offered by knowledge workers. This is also evident in Figure 4.17 where no formal innovation platform was established, which resulted in knowledge productivity not being optimally applied.

The qualitative data (as observed in Tables 4.7 and 4.10) revealed that leadership is apparently not familiar with the supportive role required to promote innovation and creativity due to non-alignment with organisational information and communication flow processes. Borghini (2005:22) and Scott and Bruce (1994:583) suggest that

creative ideation is essential for the development of new functional solutions for virtual knowledge enterprises and do not promote innovative propositions through efficient knowledge (Phase 5: Theme 1). These diverse creative ideas are not capitalised upon sufficiently and they are therefore not channelled to the correct support management functions, which results in non-efficient innovative implementation. No formal forum for creative development is customised to suit the collective organisational needs and barriers seem to obscure the implementation of new innovations. These barriers could be due to the autocratic management style, where creativity is perceived as a secondary issue and leadership is unfamiliar with the strategic importance of creativity and innovation potentiality (Phases 4 and 5).

According to Pavitt (1991:48), Sloane (2003:6), Stacey (2000:55) and Teece (1998b:289) the proportion of knowledge output that can be regarded as competent and creative and can be taken into implementation is non-yielding as traditional controls (evident in Figures 4.7 and 4.10) are seemingly maintained and a high productivity-driven focus ensures that innovative ideas are not always implemented. Management does not always allow for sufficient time for creative ideation to be developed in organisations and no synergy between departments exists. This could also be linked to high staff-turnover. This suggests that when knowledge workers are not recognised and given the autonomy to make decisions regarding their specialist knowledge domains, they seek new knowledge cultures to achieve an optimal environment that accommodates supportive knowledge creation and the freedom to express creative thought.

The *Innovation Climate Diagnostic* (Davila *et al.*, 2004) revealed that the need for creative leadership in strategic knowledge management is imperative to transform the future workplace and human capital initiatives (Figure 4.10 and 4.11 and Tables 4.8 to 4.10 and 4.17). Current knowledge managers seem to be restricted by internal legislation, regulations, and the lack of communication (Figure 4.1 and Table 4.15). The results show that current organisations do not always deploy efficient communication structures nor accommodate the urgency of knowledge generation and innovative thought. The non-alignment of reward systems seems to create barriers to establishing a forum for innovation driven solutions. According to Tidd *et al.* (2001:71) and Schönström, (2005:17) current organisational culture appears to promote conformity and does not formally encourage and develop creative talent as contemporary leadership is still not appreciating the new paradigm of thought

promoted by Kezar (2005:50) where creativity and innovation is valued and encouraged by a creative leadership culture.

The research data reveals that the fragmented communication process experienced by the research participants was the result of non-integration of competitive intelligence, innovation and supportive knowledge management. This resulted in an obstacle to achieve innovation competence in current knowledge management strategies within contemporary knowledge organisations. This is also evident in Table 4.9, which apparently indicates that ineffective knowledge infrastructures exist in contemporary knowledge driven organisations, which could prohibit optimal learning and knowledge sharing to continuously transpire. Formal communities of practice (as observed in Figure 4.5) cannot always be established efficiently without participative innovation dialogue. Results in Tables 4.17 and 4.18 indicate that strategic intent is not clearly diffused throughout the organisation and knowledge workers are not informed of how leadership intends to navigate knowledge productivity based on the current knowledge dispensation. Wald and Castleberry (2000:18), Zuccheromaglio and Talamo (2003:259) postulate that knowledge socialisation processes are curbed through fragmented communication and the current knowledge situation in contemporary organisations are concerned mainly with short term high productivity driven outputs.

The findings of this study illuminated the need for a changing future role of leadership in establishing communities of practice which evolve from a command and control perspective to produce a partnering culture focused on actively engaging the knowledge worker through creative and innovative knowledge exchanges. Stewardship and an appreciation of knowledge worker contributions should elicit exponential commitment and ownership from leadership. New leadership capabilities are urgently needed to replace traditional leadership practice. The knowledge organisation of the future is becoming more networked and needs formally appointed communities of practice, which share control and maintain coherence with all stakeholders in optimising performance competencies. The key managerial contribution should then be to establish a forum for creativity and innovation in an organisational context of interdependence. According to Swart and Kinie (2003:120), Williams (2001:65), Wiig (2003:8) and Zollo and Winters, (2002:340) knowledge communities of practice throughout organisations collectively network to create new knowledge repositories to integrate significant changes in the knowledge economy fuelled by increasing societal and market demands. These repositories of networked

knowledge are imperative to navigate the complexities for sustaining the economy of knowledge strategically.

Current knowledge-intensive organisations still seem to be unable to execute a balanced knowledge sharing process pertaining to the development of new innovations. These are periodically generated by knowledge workers and are important for sustaining competitive advantage. This became evident in Phase 5: Theme 1. Due to the current leadership propensity to withhold knowledge based on ownership rather than establishing a participative knowledge trading mechanism where knowledge and innovations can be shared concomitantly. Whilst the present leadership philosophy seemingly favours centralisation, knowledge workers seem to become isolated from the action and rendered powerless in the decision-making process, as high valued innovative ideation is not formally practiced.

Leadership seems not to be aware nor distinguish competent innovative expectations that could be leveraged through new innovative products and ventures (Figure 4.3 and Table 4.15). The researcher suggests that this present position is still currently maintained and not always questioned by contemporary knowledge strategists and that traditional management suppresses rather than encourages creative and innovative contributions. The research data revealed that the absence of innovative expectations could be a result of the traditional management orientation that is still being maintained in contemporary organisations. This is confirmed by Kezar (2005:56) and Sveiby and Simmons (2002:420) who found that traditional managerial methodologies have become outdated and do not add value to the particular knowledge expertise which is regarded as a prerequisite for obtaining a sustainable knowledge advantage. This is in accordance with authors Housel and Bell (2001:101) who suggest that future challenges in the knowledge economy cannot be addressed solely with present knowledge management solutions.

The fact that leadership is apparently unaware of the potential source of individual creativity and its inherent positive relationship with future innovation and competitive advantage is evident in Figure 4.6 and Table 4.17. This could be a direct result of leadership's unassuming attitude towards the value of creativity and innovation. Management does not explicitly focus on creativity, innovation, and the apparent lack of support is detrimental to utilise innovation-driven communities of practice and supports the notion that inappropriate strategic focus on creative and innovative development frameworks still exists. This becomes particularly apparent in Figures

4.5 to 4.7, which could be due to the productivity driven milieu in current knowledge organisations who do not seem to appreciate the exponential knowledge value distilled through socialisation imbibed within communities of practice. Project failures are not consistently reviewed nor analysed for lessons learnt and the data in Table 4.8 illustrates furthermore that communication is an essential prerequisite for effective knowledge delivery. The organisational knowledge learning process is thereby seemingly neglected. These factors could be attributed to the short-term focus on profitability, which is clearly not aligned with the strategic vision to produce new future value propositions.

A climate and culture, which nurtures creativity, has been identified as a fundamental factor in the establishment of efficient organisational learning and the development of future knowledge management processes. This is evident in the data presented in Figure 4.3 and Table 4.7, showing that organisational climate is cardinal for the achievement of a strategic innovation competency framework required to achieve optimal knowledge leadership. According to several authors (Adams & Freeman, 2000:38; Ahmed, 1998:30; Alfred & Garvey, 2000:261; Argyris, 1989:5; Arthur & Parker, 2002:15; Howells, 2005:18) a new leadership paradigm is needed which accommodates the critical importance of creativity in achieving successful implementation of competitive strategy and the realisation of sustainable future vision. In the knowledge economy an innovative organisation is regarded as the optimal system for the support and tutelage of continuous learning, which is fundamental to future success (Argote, McEvily & Reagans 2003:576; Argyris 1989:7; Barnett 2000b:17).

Results from the qualitative research suggest that leadership should consider initiating proactive innovation strategies. This became apparent from Tables 4.10 and 4.11, which indicate that when instituting new operational frameworks for the achievement of innovative competitive advantage implementation should occur instantaneously. Traditional management is not appropriate to meet the organisational demands in the rapidly expanding knowledge economy. According to the data in Figure 4.1 and Tables 4.7 and 4.9 communication is portrayed as inefficient as the organisation hampers the ability of knowledge workers to achieve innovations. This could be due to the traditional hierarchical culture, which prevents the organisation from attracting and retaining the quality of knowledge workers that are essential for success and growth expansion.

Argote *et al.* (2003:573), Hamel and Prahalad (1991:81) and Harrington (1990:143) suggest that although customers are more demanding, contemporary organisations become more coherent in meeting their future needs. The findings of this study show that the infrastructure for knowledge creation is still based on traditional management, which does not appreciate the development of creativity and innovation to drive customer's future needs. The data (see Table 4.8) revealed that leadership is not utilising autonomy to empower knowledge workers to assume leadership roles and accept authority and responsibility. This is closely linked to new knowledge creation and ultimately strategic innovative contributions. The self-leadership style which the research participants organically adopted (Phase 5: Theme 1) drives the operational process into transformation and develops a strong sense of self-awareness.

These inherent strengths facilitate effective knowledge contributions and proffer opportunities for continuous learning such as instilling formal communities of practice and the establishment of knowledge repositories. These are consequently made available for the sharing of expertise knowledge combinations. This becomes apparent in the data produced in Figure 4.3. Appropriate training and development should be made readily accessible as the data in Table 4.6 reveals. A collaborative culture change is not a subsequent outcome of training and development, but requires a well-strategised human resource policy and a mindset that appreciates the value of innovation awareness. This is apparent in data produced in Figure 4.6 and Table 4.7 which illustrate the importance of a supportive culture for learning to result in sustainable competitive knowledge competencies, as promoted by several authors (Garvey & Williamson, (2002:112); Howells, (2005:18); Von Hippel, (1994:52).

The research data revealed that leadership does not always demonstrate trust (as evident in Figure 4.8) indicating that knowledge workers require visible actions and support which continually empowers human capital to become more innovative. DiLiello and Houghton (2004:319) and Johannessen *et al.* (1999:116) suggest that knowledge workers should be trained in creativity and innovation and motivated to transform the old management mindset. According to Kelly (2000:94), Ortenblad (2002:89), Paulus (2000:238) and Peña (2002:471) a new leadership imperative is required to effectively manage change processes that will result in a democratic and empowering work environment.

According to Hammer and Champy (1993:5) and Jorgensen (2004:91), organisational knowledge creation is a continuous process that should continuously be revised and re-engineered. Judge *et al.* (1997:72), Kaha (1983:84) and postulate that knowledge creation is a self-transcending process, where knowledge workers re-invent organisational competencies during the socialisation process since tacit knowledge can only be shared through direct experience.

The results in Phases 1 and 2 reveal that during the socialisation phase of the intervention process knowledge workers interacted with diverse stakeholders igniting the externalisation phase through committing to specific strategic objectives. This is also evident from Figure 4.9. The fusion of the knowledge workers' intentions and ideas became integrated within the community of practice and aligned with the groups knowledge frameworks to facilitate externalisation of knowledge. Johnson (1996:9) and Kelly (2000:92) agree that during this knowledge combination phase, knowledge workers generate new solutions through externalisation. This process propels the internalisation phase where knowledge workers seemed to practice self-reflection to acquire new knowledge for sustaining a creative environment. At this point knowledge could be utilised to gain self-transcendence and manifest creative thought into new operationalised innovations Koskinen (2003:67).

The above discussion and subsequent data suggest that a learning organisation is essentially based on self-reflexivity and knowledge dissemination which adds to the development of creative intelligence. Breu and Hemmingway (2002:149) and Cheng (2005:610) postulate that continuous learning and knowledge exchanges are foundational for information sharing to occur effectively. The fragmented communication experienced by the research participants (observable in Figure 4.1) however, could be the result of current leadership not integrating the value of innovation, which Kezar (2005:50) emphasises as the most important attribute of contextual postmodern leadership. The data of the research confirms that as contemporary organisations are highly output driven promoting the importance of production, nurturing and creative thought is not appreciated.

Kezar (2003:137) explains that current management does not to provide the resources and time needed for the promotion of innovative products and ventures. Table 4.8 produced data confirming that the current leadership within contemporary knowledge organisations are unable to establish an optimal learning organisation, as leadership does not purposefully promote a culture for the development and sharing

of creative ideation. These valuable creative ideas are lost to new competitive opportunities and knowledge organisations do not benefit from these critical future value propositions. Deschamps (2005:31) agrees with this assumption but adds that communities of practice are still not formally recognised as an integral structure in which knowledge workers can freely participate through formal and informal group discussions to exchange knowledge management issues and search together for solutions to new challenges. According to Saint-Onge (2005:63) and Tsai (2001:996), the primary focus of communities of *practice* should be learning and finding solutions to existing problems, and simultaneously creating a common understanding to improve current knowledge practice, and ultimately contribute to new competitive organisational knowledge capabilities.

Although modern organisations represent a complex constitution of business networks, communities of learning should strive to continually enhance innovation praxis. Alred and Garvey (2000:261) and Cooper (2000:245) suggest that creativity fora are essential to support the achievement of future competitive advantage. They postulate that the driving force in the future knowledge landscape will be knowledge workers who are motivated and compelled to make a collective effort to improve innovative knowledge management practice. This is also confirmed by the research of Kezar (2001:85) indicating that future organisations will be compelled to leverage the creative talents of knowledge workers, which according to Garvey and Williamson (2002:85) is paramount to achieving future sustainable knowledge competitiveness.

The qualitative data revealed that communities of practice have a passion to deepen the understanding of knowledge discovery. This is evident from Figure 4.5 and Table 4.17, which indicate that knowledge workers contributed optimally towards competitive positioning by interacting with diverse stakeholders. According to Wenger *et al.* (2002:4) communities of practice should purposefully establish a forum for the sharing of knowledge to embrace the innovation driven principles of knowledge management. This provides an opportunity for knowledge workers to engage in knowledge sharing and collectively learn. Forums should furthermore be viewed as a tool to evaluate the accomplishments of creative and innovative presentations to improve future performance.

Innovative solutions were situated within experience of knowledge workers and becomes operationalised only within the context of knowledge exchanges. Optimal strategic value is apparently not achieved: Figure 4.12 and Table 4.7 indicate the

importance of an integrated managerial approach, which is urgently needed to synchronise strategic knowledge activities. This is consistent with the research of various authors (Amit & Schoemaker, 1993:35; Anand, Manz & Glick, 1998:799; Anderson, Greeno, Reder, & Simon, 2000:11; Baird & Henderson, 2001:138) which advances the notion that tactical operations are required to leverage the innovative opportunities before competitive forces exploited these opportunities. The qualitative interviews (Tables 4.12 and 4.17) indicated that management decisions are generally undemocratic without sufficient input from knowledge workers. This demonstrates leadership's inability to involve knowledge workers to obtain a clear vision of the role of innovation in achieving organisational objectives. The procedural planning orientation is characteristic of the current organisational culture, which does not appreciate the autonomous knowledge worker supported by innovation-driven communities of practice.

Based on the above discussion of the findings a conclusion could be drawn that the organisational structure currently facilitates a controlling rather than transformational leadership style and poor communication practices, which stifle creativity and innovation still exist. Insufficient integration of technology with work processes and rigid planning could be products of an outdated management style which is primarily productivity driven and therefore does not promote unstructured creative ideation (Phases 4 and 5). Management has a low tolerance for uncertainty and flexibility. The results indicate that innovative knowledge workers are not encouraged to experiment and express creative ideas. Leadership fails to generate confidence in knowledge workers or provide direction for future innovations (Tables 4.1 and 4.17). Together with the appropriation and formulation of future value propositions, one may conclude that the current management style impacts on the effective utilisation of creativity and innovative traits owned by knowledge workers who require a new leadership style to be able to function optimally.

The data indicated that decision-making processes are elaborate and formal and do not encourage innovative input, whilst leadership's knowledge of innovation is regarded as inferior to that of the competition. Table 4.11 indicated that insignificant innovation occurs in contemporary knowledge organisations as most decisions are still based on old managerial concepts and thus insignificant new creative ideas are accumulated. Customers, experts and diverse stakeholders are not directly associated with the innovation process and this can contribute to the loss of creative ideas. Organisational responsiveness is thus hampered by the current management

orientation (as noted in Tables 4.16 and 4.18) with an internal control and command orientation, which concurs with Anderson *et al.* (2000:14).

Nonaka (1996:19) notes that the key to knowledge productivity is commitment and support through trust and constructive learning to optimally engage continually in the search for creative solutions. O'Reilly (1989:20) and Popper and Lipshitz (2000:141) suggest that culture, organisational structure and leadership are the major facilitators for effective knowledge sharing and that creative skills and individual learning are the competencies required to advance the harnessing of individual creativity. The research data reveals (Tables 4.9 and 4.17) that efficient knowledge frameworks do not exist to promote learning and communication and that the issue of power and possession of knowledge prohibits efficient knowledge sharing. The concomitance model of Steyn (2006:118) promotes the notion that the entire organisation feeds dialogue through a forum facilitated by creative leadership. When knowledge workers share a common cognitive ground, the articulation of creative architectural syntaxes can be effectively communicated and time is economised between the transfer and application through knowledge concomitance, which is ultimately achieved through the application of the new corporate curriculum (see Figure 6.1).

The ideal culture will promote knowledge socialisation to capture rich landscapes of imagination through expansive, flexible learning frameworks for the transferring of knowledge skills. This new knowledge culture embraces change and develops climates to enable new ideation, which can be translated into innovative action. Through continuous open-dialogue and critical knowledge productive learning, new vistas of opportunities can be fostered.

Rowe (2004:61) explains that knowledge workers need support to develop their creative intelligence to thereby have the courage of conviction to pursue innovative goals even under adverse conditions. The internal environment that currently exists in knowledge-based organisations highlights management's constricted approach towards the building of innovation alliances and strategic partnerships with knowledge workers. This should be a critical resource to encourage a proactive stance in taking the organisation to uncharted territory. Current management seeks to control knowledge flows and focuses on rationing resources with insufficient strategic investment into radical innovation, which is crucial to sustain competitive advantage (Table 4.7). The key findings of the research are that all levels of leadership should be aware of the value of creativity and innovative competencies.

Leadership should encourage knowledge workers to seek for elaborative solutions and generate maximum ideation, as knowledge work is not a product of a production-orientated process but leads to the search for future solutions.

The new envisaged paradigm for culture and climate promotes learning, innovation and creativity as central features in the complex knowledge environment. The organisation that provides opportunities for organisational learning to prosper offers the greatest potential to lead competitive advantage. The imperative is to construct strategic innovative capabilities to equip knowledge traders to adapt, react and respond timeously with innovative solutions.

The research according to Phase 5: Theme 1 revealed that leadership did not support creativity and innovative projects, mainly as their primary focus is on performance and any creativity-inspired change is viewed as disruptive (Table 4.7). Snyder (1999:471) agrees that the establishment of a compelling vision that inspires autonomy, flexibility and reflexivity is important and according to Garvey and Williamson (2002:75), it should be an explicit part of future cultural strategic focus capturing the imagination of knowledge workers and thereby motivating and assisting in aligning personal visions thus adding value to the organisations innovation base. Organisational vision needs to be based on the collective viewpoint and needs to include the viewpoints of all knowledge workers Von Krogh (2000:5). According to Figure 4.5 current knowledge management appears to be focused on controlling organisational activities and does not generate maximum innovative contributions from all stakeholders. Leadership does therefore not seem to be encouraging creative association to increase the crucial knowledge variables namely: involvement, participation, commitment and consensus (see Tables 4.16 and 4.17). These are fundamental characteristics, which ensure passionate commitment to influence the innovative vision of knowledge-based organisations.

Knowledge Intelligent organisations entering the knowledge economy are characterised by self-motivation and self-managed knowledge workers as suggested by authors (Apostolou & Mentzas, 2003:360; Ardichvili, Page & Wentling, 2003:65; Herzberg, Mausner & Snyderman, 2003:82; O'Reilly, 1989:19) who postulate that intelligent knowledge distribution occurs when knowledge workers are motivated, clearly focussed and supported in the knowledge creation process (as also evident in Phase 5). Subsequently, knowledge workers cannot willingly align with the vision of the organisation due to the current inefficient communication and due to the non-

existence of formal communities of practice, which provide the knowledge support required for the continuous renewal of knowledge competencies.

Garvey and Williamson (2002:112) propose that the real value of creativity and innovation is often perceived within a reductionist perspective and is packaged within the minds of individual knowledge workers. Social learning translates real cognitive and creative experiences into an organisational repository, which in turn is manipulated by the community of practice to achieve future strategic objectives (Zollo and Winters, 2002:349). The contemporary organisation has not yet managed to inspire a culture, which ensures optimal collegial input and shared decision-making processes for the promotion of a sustainable value creating relationship. The building processes which demand trust, loyalty and respect to leverage innovation is derived from all stakeholders throughout the organisation. This appears apparent in Figures 4.6 and 4.8 illustrating that the ideal creative leadership style proposed for the future organisation instils an appreciation of the unique and exceptional potential of individual knowledge workers and that the knowledge management process is not command nor control orientated. The researcher proposes that this leadership style should expand upon new knowledge, by combining specialists with diverse backgrounds and experiences to thereby establish diverse opinions and perspectives, which may produce new innovative breakthroughs. According to Snyderman, Herzberg, Mausner and Snyderman (2003:247) emotional intelligence is a critical competency and serves effective communication and diversity management which in turn are important vehicles for purposes of building trust as evident in Figure 4.8.

In summary, the data obtained from the *Innovation Climate Survey* (Davila *et al.*, 2004) produced mainly neutral responses and revealed that the current organisational culture should be more conducive to encouraging innovation for effective knowledge sharing to occur. A comprehensive representation of creative leadership should be conspicuous and actively involved to mandate the support of knowledge workers to unlock creative capability. This is also evident in Phase 5 which indicates that increased knowledge sharing results from immediate access to information and the provision of knowledge repositories. Competitive knowledge work cannot be produced mechanically and seems to not occur on a production line. Recognition for knowledge inputs should be given more frequently by leadership who should provide access to diverse communication channels. It is important that leadership realise that innovation champions should be appointed within the forum

for creativity and innovation, enhancement and the projects they manage should be marketed to the entire organisation (Davenport, DeLong & Beers, 1998:48-51; Desouza and Awazu, 2004:11; Martins, 1989). This is depicted in Table 4.7, which indicates that when a knowledge repository is made available to knowledge workers, new knowledge combinations are compounded and could result in exponential knowledge expansion.

The data suggests that communities of practice in an organisational strategic knowledge context could contribute towards establishing a sense of purpose as knowledge workers become committed to collectively solving problems within the current business practice. This indicates that by increasing the capabilities of individual knowledge workers within respective communities of practice, the primary focus is concentrated on knowledge-driven innovation and idea generation. This corresponds with the research by Aleinikov (2002:61) and Amabile *et al.* (1996:1160), which indicate that formal communities of practice encapsulate knowledge workers within a repository that facilitates access to explicit knowledge. The new corporate curriculum supports innovation-focused opportunities for knowledge workers to increase their collective capabilities for optimal performance and ultimately, the achievement of strategic intent that manifests maximum benefit for increased creative capabilities. Communities of innovation experts should be aligned with the organisations strategic purpose to contribute significantly to the achievement of continuous competitive advantage. This crucial advantage translates into knowledge-enabled leadership embedded in formal communities of practice as the new competency-leveraging agent. From perusing, the results obtained in Phases 4 and 5 it became evident that communities of practice delivers a knowledge support mechanism, which facilitates future knowledge sustainability.

Leadership should realise the critical importance to create a cultural context that is supportive for idea generation and creative knowledge application (Amabile & Kramer, 2007). For human capital to effectively contribute towards new knowledge solutions there must be a working environment that initiates and nurtures the process of creativity and facilitates innovation implementation.

5.2.4 Research Objective Four: To investigate the characteristics required for creative leadership for sustaining the economy of knowledge

Knowledge management praxis also includes managerial control and steering of information and relates particularly to the processes and procedures required to consolidate knowledge production frameworks. Leadership, however, establishes a philosophy based on the mutuality of knowledge endeavour and promotes participative contributions to build inter-organisational global partnerships (Garvey & Williamson 2002:49). Knowledge workers are initiating a new navigational direction to prevail over management. This transition from the modern productivity-driven revolution to a knowledge sharing revolution may indicate the termination of the past management epoch. Knowledge productivity encourages innovation and creativity and develops a learning culture. The true value of innovative improvements and invention are vested in the leadership component to deliver new capabilities to produce valuable intangible assets.

An integrated explanation and description of the required characteristics for creative leadership is firstly based on the regression analysis, and secondly, on the data generated from the qualitative responses. A systems approach was deployed to discuss the challenge of creative leadership within the new economic paradigm. This approach entailed an exploration of methods to improve communication and management constructs to make sense of the increased complexity experienced within contemporary knowledge-based organisations. In identifying the crucial variables for future knowledge creation, dissemination and implementation, new frameworks have become crucial for knowledge building facilitated by the learning organisation. These diverse variables have emerged and relate to the dynamic nature within knowledge management. The research results of the previous phases served as a reflective mechanism and facilitated the proposed knowledge economy for current and future decision-making. The proposed designation of creative leadership identified specific features relating to its application in the postmodern industrial setting and was emphasised during the process of knowledge building and model construction. The challenges of transforming knowledge repositories became apparent to enable an intelligent schema of knowledge creation and improved competitiveness.

To describe and explain the characteristics required for creative leadership, the innovative awareness scores obtained from the *Baseline Management Behaviour*

Questionnaire (Kriek, 1990) and the scores obtained for the five dimensions as defined by the *Torrance Test of Creative Thinking* (Torrance, 1984) were combined with the scores obtained for the twelve themes that the *Collaboration Leadership Quotient Questionnaire* (Stokes & Logan, 2004) measures as well as the *Innovation Climate Diagnostic* (Davila et al., 2004). These variables were contrasted against managerial effectiveness and knowledge productivity to identify the drivers of these factors.

The following results are indicated to offer a critical discussion pertaining to the investigation of the characteristics required by creative leadership for sustaining the economy of knowledge. Using a three-step linear regression model building process, knowledge productivity was firstly modelled against managerial effectiveness, innovative awareness and total creativity. The results, as presented in Table 4.16, identified managerial effectiveness as the primary driver of knowledge productivity, with a Standardised Beta of 0.486 as well as secondary drivers: Innovative awareness (0.254) and creativity (0.248), respectively.

A second model was designed wherein managerial effectiveness was modelled against the five dimensions of creativity and innovative awareness, which identified that innovative awareness (0.457); fluency (0.352) and elaboration (0.183) are the primary drivers of managerial effectiveness (see Tables 4.18 to 4.20).

The third regression analysis modelled managerial effectiveness against the twelve themes measured by the *Collaboration Leadership Quotient Questionnaire*. The result identified two-way communication (0.932) as the primary driver of managerial effectiveness.

The results of the regression analysis are presented below in Figure 5.1. The relationship among the variables identified by the data analysis process are indicated in an open systems model which illustrates this relationship and provides a scientific schema to both describe solutions and to optimise creativity and innovation within communities of practice in the contemporary work place.

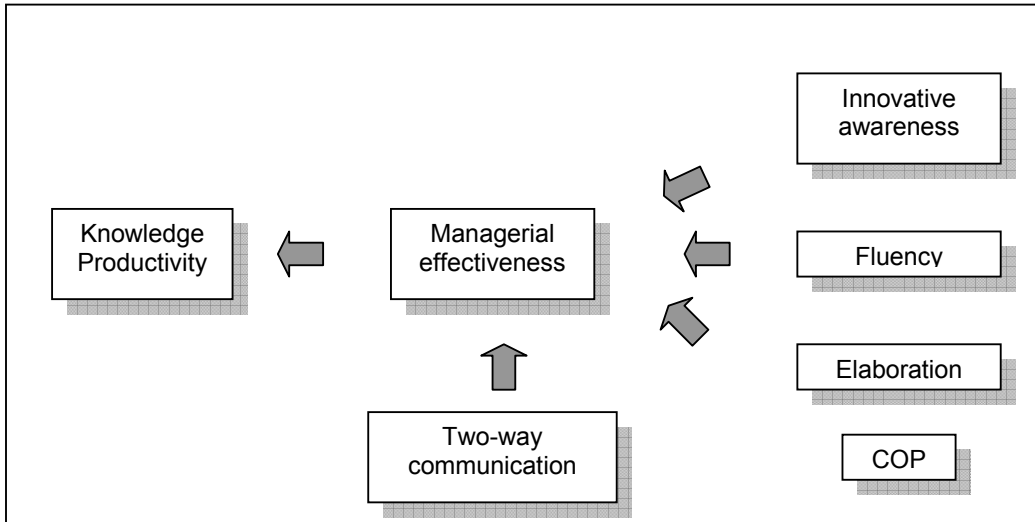


Figure 5.1 Creative Leadership: The findings of the research highlighted the characteristics required for creative leadership to economise knowledge.

The modelling of the variables reveals that knowledge productivity is primarily driven by managerial effectiveness, which in turn is driven by innovative awareness, fluency, elaboration and two-way communication. These are considered the most important characteristics of leadership as identified by the qualitative dimension of the research. Managerial effectiveness within the constraints of this research project, serves as a catalyst for pursuing knowledge productivity in the knowledge - based organisation. The qualitative data (Phase 5: Theme 2) revealed that formal communities of practice, two-way communication and the development of a culture conducive to creative thought and innovative awareness are the crucial elements for initiating creative leadership.

The regression analysis showed that fluency and elaboration are the most statistically significant dimensions and the two creativity dimensions pertaining to creative leadership. According to Glor (1998:300) fluency is the ability to produce a vast quantity of ideas based on newness and uniqueness as the primary criteria. It furthermore suggests that the act is creative with the proviso that the respondent reaches the solution in a sudden closure. This necessarily implies a degree of novelty applied by the respondent according to Amabile (1998:76). The idea is particularly centred on the function of solving organisational problems pertaining to the decision making process. Originality is closely linked to fluency and Osborne (1992:47) proposes that as increased knowledge productivity is derived from original thinking which should be supported by leadership, which promotes a culture, which appreciates openness to influence-commitment to the success of others, and a

willingness to acknowledge innovative contributions. Torrance (1984:153) describes originality as creative potential versus conformity searching for new ways of investigating organisational problems that are expected to disturb or change the *status quo* (Amabile, 1998:76).

According to Sternberg (1999:67) elaboration is the assumption that knowledge workers identify the solution to the problem through careful participative observation and re-collective reflexivity. This is confirmed by Trott (2002:76) who explains that new solutions become available through knowledge exchanges to release broader insights into the diverse organisational environment. This systematic process integrates diverse information, which ultimately adds value to the organisation's full embodiment of inventions, designs and scientific theories. Majaro (1988:88) postulates that elaborative processes emphasise the capacity to think by analogy, as this is fundamental to finding alternative and novel responses and solutions. This concurs with the findings of Amabile (1998:78), Borghini (2005:21-23) and Cheng, (2005:605), which indicates the importance of a culture and leadership facilitation process to encourage continuous creative ideation to counter act the current notion of productivity-driven managerial approaches.

Raelin (2001:11) and Torrance (1984:153) provide an exposition of the assumption of reflection, which integrates the creativity constructs of fluency and elaboration with resistance to premature closure. Garvey and Williamson (2002:89) and Wenger (2003:91) furthermore promote communities of inquiry, which primarily provides a basis for renewed innovative action. This highlights an extremely important aspect of creativity which is closely linked to knowledge socialisation and integrates the five dimensions of creativity which according to Rowe (2004) and Siau (1996:212) integrate ideas that are generated through the suspension of judgement to enable intuitive solutions which centre around diverse knowledge landscapes to prevent premature rejection. Creative leadership as postulated by Kezar (2001:85) is imperative to suspend judgement and allow time for creative ideas to become refined to add valuable competitive solutions to the organisation and, furthermore increase the quality and quantity of creative output. According to Adams and Freeman (2000:38), Ahmed (1998:30), Amabile (1998:76) and Majaro (1988:110), the community of practice navigated by leadership determines which ideas should be implemented and where suspended judgement should be applied coherently to obtain optimal competitive knowledge trading.

The researcher suggests that creative leadership should encourage efficient communication and knowledge dialogue among knowledge workers as the basis for the co-creation of knowledge (Tables 4.8 and 4.16). Stacey (2003:17) and Van Wyk (1998) explain that the flow of communicative interaction is crucial for the demonstration and re-contextualisation of new information to ignite the process of dialectic debate, which should be an important characteristic of effective knowledge management practice. Creative dialoguing refers to the receptivity of ideas of other knowledge workers, as is the most essential means to express concerns and ideas on a timely basis to deliver input into the knowledge creation and decision-making process (Figures 4.1 to 4.3). According to Austin (2000:50), Awazu and Desouza (2004:1016) and Kezar (2001:85) an important knowledge management principle is to ensure that two-way communication is facilitated effectively.

All relevant stakeholders should have the opportunity to liaise with formal communities of practice and jointly create opportunities to solve complex problems through a shared forum of critical and creative thinking. This provides a forum for knowledge concomitance to express openly and to freely discuss new innovative ideas. April (2002:445). Love, Fong & Irani, (2005:168), explains that communication is integral to learning and knowledge sharing as knowledge is not cumulative but complex, dialectic and reflexive in nature. The data in Figure 4.1 indicates that two-way communication is critical for the development of creative leadership to communiqué the organisation's vision, goals, strategies, tactical objectives, action plans and thereby proffer frameworks for the dissemination of future opportunities (see Figure 4.12). Conversely, the knowledge vision is facilitated through the knowledge socialisation process imbedded within communities of practice to achieve new knowledge strategies and innovative tactical objectives.

The data in Figures 4.11 and 4.12 shows the statistical significance for effective communication strategies to be implemented to necessitate optimal knowledge socialisation. This is confirmed by Selen (2000:350) who postulates that knowledge networks essentially leverage future knowledge competencies to ensure collaborative participation and collates effective communication networks. This is apparent in the data of Phase 5 and is postulated by Kezar (2001:85). According to April (2002:452), Barnett (2000a:15) and Bessant *et al.* (1996:59) leadership should craft innovation visibility and pro-actively and be agreeable to demonstrate open communication to support authentic dialogue accumulated through knowledge workers for strategic reflection and thereby ignite the knowledge concomitance as proposed by Steyn

(2008:319). The quantitative data (Table 4.6) reveals that leadership should imbed a new *modus operandi*, which appreciates the value of creative and innovative capabilities. According to various authors (Alee, 1997:20; Dyer & Nobeoka, 2000:345; Genefke & Mc Donald 2001:8; Stacey, 2003:26) future leadership should develop continuous learning processes for the expansion of innovative competencies. It should furthermore provide time and resources to renew relevant skills and knowledge repositories for immediacy of creative transfer.

The regression analysis produced data that suggests that value-creating networks can assist leadership in transforming the fundamental rules of management and imbed the potential to transform the value of creative and innovative strategies into real knowledge rent. These networks drive the internal creative capabilities to infuse the organisation with efficiency as promulgated by Dalkir (2005:75) who promotes knowledge productivity to develop new knowledge infrastructures facilitated by communities of practice. Table 4.9 also indicates the multiple relationships engendered by these creative and innovative networks, which provide a platform for the expansion of new collaborative infrastructures to maintain a competitive advantage. This notion is fundamental for future knowledge creation to progress towards a model for organisational knowledge concomitance (Steyn, 2008:317).

The research furthermore revealed that information technology enables networks within organisations to leverage new knowledge creation and to drive collective knowing to advance knowledge sharing: Table 4.16 depicts the important role of information technology in packaging knowledge for future knowledge application. Various authors (Duguid, 2005:110; Hansen, 2002:232; Hemre, 2005:50; Khalil, 1996:32; Peron & Peron, 2003:50; Politis, 2003:58) agree that communities of practice drive this important capability to realise future innovations, which are the core competencies that drive future value and embody the ability to learn and collaborate. Figure 4.5 provides further implication that communities of practice function as an essential platform that fosters learning and functions as a multiple perspective framework to facilitate collective reflection. This reflection enables organisations to liberate future challenges and exploit infinite opportunities.

Management is concerned with the legitimacy of standards and procedures (Beck, 1992:11; Brewster *et al.*, 2000:93). The appropriateness of task completion is production orientated. Leadership according to the postmodern narrative is determined to liberate the knowledge worker to within the respective organisation

organically matures the particular organisational biology, primarily founded on the collective vision navigated by mutual strategic intent and shaped by the total effort caused by constructions and deconstructions of organisational reality.

The research data regarding the characteristics of creative leadership spawns a dialectic debate as it is congruent with the views of Grossmann (1984:201) and Sackney *et al.* (1999:44) describing the idealised institutional identity as not losing its primacy of freedom through regulation, but rather by affirming individual value through the presence and exchanges and community. The community of practice relies on dialogue, discourse, and the sharing of vested interests, thereby establishing inter-subjectivity, founded upon negation. The postmodern organisation derives its dynamism from the creative impulse provided by knowledge workers and this process ultimately translates into mutual knowledge and renewed self-definition.

The quantitative data on most of the constructs evaluated, indicated that the research participants had a negative perception towards organisational participation and particularly leadership. The responses indicate the seeming inability of contemporary organisations to strategically position innovation and to operate collaboratively (see Figure 4.13). The themes, which received decisive negative responses and which directly relate to leadership behaviour, were strategy formulation (see Phase 5), tactical objectives, alignment, goals, implementation and sense of community, trust and ease of access to information. The data revealed that contemporary knowledge-based organisations are characterised by an entrenched and seemingly, unresponsive organisational culture, which does not appreciate the individual knowledge and potential of creative individuals nor the importance of innovation awareness (as apparent from Table 4.7). Lesser and Storck (2001:831) and Liyanage and Poon (2003:579), is in direct contrast with postmodern leadership theory (Liyanage and Poon) and suggests that a cultural shift in future knowledge management practice is imperative to sustain the transient imperative of economising of knowledge for wealth creation.

An analysis of the characteristics of creative leadership apparently reveals that the specific factors that are hampering innovation in organisations are inadequate communication infrastructures. Figure 4.13 indicates that immediate participative inter-subjective communication practices such as the non-installation of formal communities of practice and the knowledge-ownership approach to urgent knowledge combinations impacts negatively on efficient knowledge communication.

Several authors (Kelly, 2000:96; Millar, 1996:54; Kaha, 1983:84; Kezar, 2001:85; May, 2007:19) agree that the unavailability of sufficient information to knowledge workers and to customers often result in inadequate communication practices. This impairs the resonant communication infrastructure, which is crucial to the development of the intelligent knowledge-based organisation. According to Bass and Avolio (1994:215), the post-modern knowledge proxy relates to the assumption that knowledge decisions are encased in contradictory fluidity. This inevitably perpetuates engagement and requires creative discourse to balance the evidence of elaboration and suspension of judgement to instil both an appreciation and apprehension for purposes of a collective and encouraging communication process regarding new knowledge visions.

According to Kotnour (2000:393) and Pavitt (1991:50), leadership serves primarily for the encouragement of learning as the foundational organisational factor impacting on knowledge workers to leverage innovative decision-making. Saint Onge (2005:63) suggests that the establishment of a learning climate (as is apparent in the data presented in Figure 4.3), can provide the future organisation with the necessary creativity and innovation base to utilise future opportunities. These are primarily identified through interactive discourse. Postmodern discourse establishes a narrative, which challenges current leadership realities in offering an unwavering commitment to reflexivity to champion innovation awareness and provide a mandate for individual freedom and expression of thought. Creative thought is fundamentally imaginative and future leadership should encourage the privilege of creative ideation to nurture positive and beneficial knowledge relationships within the organisation collectively.

The non-directive interviews revealed that creative leadership is urgently needed to facilitate communities of practice through conscious support for formal organisational learning (Bass & Avolio, 1994:23; Clawson, 1996:6; Viitala, 2004:532). Figure 4.3 indicates that the creation of a mechanism for diffusing knowledge throughout the organisation generates exponential knowledge to increase and facilitate new flows of knowledge. These exchanges drive commercial success based on the collective interaction of internal and external knowledge alliances as proposed by Garvey and Williamson (2002:51). Collectively defined goals are driven by the community of practice and correspond with Beck (1992:10) describing that postmodern leadership uses knowledge as a competitive asset to include entire networks of diverse stakeholders. Tables 4.7 and 4.9 produced results revealing that organisations in the

global environment require connectivity to enable alignment to respective strategic innovation initiatives for the collective forecasting of future opportunities. Inter-organisational networks develop knowledge sharing and trust relationships (see Figures 4.8 to 4.11), accordingly to develop standardisation, which is imperative for effective innovation implementation processes. Leadership initiates knowledge asset creation through which information evolves into tacit assets and the knowledge worker's implicit expertise translates into valuable organisational knowledge. The tacit-explicit spectrum of knowledge, shared among knowledge workers and organisations, diffuses information, manifests knowledge, and produces the strategic innovative advantage (Table 4.5 and 4.6). Takeuchi and Nonaka (2004:56) concur that leadership is essential to access new innovation to drive and optimise the socialisation of knowledge facilitated by communities of *practice*.

In the new knowledge landscape (Morrison, 1992:21), creative leadership is opportunity driven and manipulates knowledge resources to optimally achieve accelerated knowledge productivity by driving strategic intent and optimising human capital through creative and innovation-based initiatives. The knowledge worker is the active facilitator of the knowledge spiral propelled by innovative information technology. Multiple knowledge layers develop as a result of knowledge socialisation, which in turn enables internal and external networks for the development of knowledge platforms to serve as libraries for new knowledge solutions. All functions of the organisation need to be aligned and synthesised to create knowledge concomitance for the achievement of knowledge strategy to achieve the intended value propositions.

Creative leadership in the new economy facilitates organisational communities of experts to ensure that a progressive infrastructure exists to transact with continuous complex realities. Competitive knowledge processes and structures fashion new creative possibilities into consequent knowledge-creation cycles. According to Sackney *et al* . (1999:46) the supposition of teamwork and the utilisation of continuous interaction with consensus-based communities, leverage product development teams and advances innovation searching.

The process of balancing creativity and value capturing enables leadership to produce new ideas and methodologies to achieve maximum return on investment through innovation networks. This is fundamental to facilitate the implementation of knowledge architectures to ensure that innovative behaviour is formally developed

(as the data produced in Phase 5 also indicates). The need exists for a new leadership paradigm to develop new mental models for enhanced knowledge productivity through increased innovation initiatives. The role of leadership in advancing creativity and innovation is required to be redefined within a new innovation focus to prescribe methods to unlock the creative energies of the collective human capital. The creative energies of the organisation requires participative knowledge enabled decision-making practices to optimise knowledge productivity (Couger, 1993:45).

The optimal utilisation of creativity and innovation necessitates a new management approach as traditional philosophies have become redundant in an era characterised by openness, transparency, participation and speed (Dunbar, 1997:479). The outcomes indicated that the current organisational paradigm is not facilitated by leadership who apparently fails to appreciate the creative and innovative paradigm of postmodern thought. The regression analysis revealed that managerial effectiveness leads to the productive utilisation of knowledge, and is closely associated with innovative awareness and the creative capabilities namely; fluency and elaboration (see Table 4.18 and Figure 5.1).

The researcher argues that in facilitating an innovation-led organisation, managerial effectiveness proffers a viable solution to deal with the turbulence and complexity of the changing knowledge economy viewed respectively from a managerial and organisational development perspective. Leadership in the new knowledge era directs human capital towards continuous innovation, as competition is discontinuous. This implies a high level of proactiveness, a willingness to take calculated risks and the possession of the capacity to initiate and generate diverse creative ideation. Effective innovation-based management is required to facilitate a pro-active approach towards knowledge ownership to foster sensitivity and authentic communication to maintain and expand the continuous innovation process. This furthermore implies that managerial effectiveness should establish trust and vision (Figures 4.6 and 4.8) which aligns all stakeholders with the strategic knowledge intent that leverages new tactical objectives and implementation procedures.

According to Fulmer and Vicere (1995:5) managerial effectiveness is achieved through supporting innovative knowledge creation rather than controlling it. This includes facilitating relationships to encourage creativity and innovation processes. From a postmodern perspective, creative leadership provides support for adaptive

creativity and innovative productivity and draws from the collective vision of the knowledge-trading organisation, which is located in the hyper reality of the collective knowledge workers. This valuable competency is shaped by both the individual knowledge worker and the value-add through communities of practice and ultimately translates into sustained collective competitiveness.

According to Von Krogh (2000:3) communities of practice utilise knowledge processes optimally and accommodates the knowledge worker in a structure free from organisational constraints that suppress creative and innovative behaviour (Tables 4.19 and 4.20). The research data suggests that managerial effectiveness (as also noted in Table 4.18) cannot be achieved unless the values and objectives of the organisation are aligned to resonate within a knowledge sharing culture (Denison, 2001:54; Huyssen, 1990:361). This condition pertains both internally to knowledge workers and externally to customers, suppliers and strategic alliances. Teamwork facilitates the tactical alignment of all knowledge functions and resources obtainable through communities of practice to facilitate relationship building. Creative leadership is required to nurture and encourage creative thought and innovative awareness as the essential elements required to craft a fertile environment for new innovations.

In summary, Galliers and Newell (2003:5) and Garvey (1999:54) postulate that knowledge productivity is driven by managerial effectiveness and can manipulate the degree of innovative awareness of knowledge workers. These are imperative to leverage implementation of innovative objectives to secure knowledge integration beyond organisational boundaries and current knowledge management conceptualisations. Throughout this discussion, a description of creative leadership was offered which revealed that contemporary organisations need a paradigm shift to realise the enormity of future innovation-based opportunities. An important question arising from this study through discourse with contemporary knowledge workers is how to acquire competence for the designing of an ideal workplace and culture that develops sustainable methods and could be utilised to increase knowledge productivity. The competencies that were emphasised in the findings referred to increasing inter-subjective reflexivity required to find methods for applying knowledge to enhance knowledge management praxis. The researcher is of the notion that reflexive skills are probably most crucial in this process as it could assist in promoting meaningful knowledge repositories through trust (Figure 4.8) as well as mutual organisational vision (Figure 4.6). These variables could also be enhanced through

constructive communication involvement as noted in Figures 4.1 and 4.5, which support and promote communities of knowledge experts through knowledge-captured leadership.

Organisational learning is closely related to knowledge concomitance and a knowledge-sharing environment should become integrated into the very fabric of the future knowledge organisation. Knowledge life-cycles are monitored by concomitance to facilitate new ideas, and innovation (McElroy, 2003a). According to Bennis (1999:23) the knowledge era promotes environments that enable knowledge concomitance, building and the nurturing of innovation networks through creativity-driven interaction and interdependencies. The collaborative nature of the knowledge concomitance model promotes diverse knowledge exchanges creating a collusion of knowledge roles and expertise that are bound together to strengthen collaborating knowledge-trading and knowledge processing networks (Steyn, 2008:318).

Randeree (2006:145) introduces social capital as the combination of knowledge resources obtained through knowledge exchanges to become embedded within future knowledge-based organisations, and promoted as knowledge investments. The research findings showed that knowledge exchanges within communities of practice are the primary producers of new knowledge capital. This refers to the mechanism of knowledge concomitance facilitated by formal communities of practice. The new proposed model promotes the leveraging of collective knowledge where creativity and innovation is actively integrated to increase access to sustainable competitive advantage.

5.3 CONCLUSION

The research findings suggest that creativity can be enhanced through training interventions with an explicit knowledge sharing focus required to enhance managerial effectiveness within the diverse organisational functions. Managerial effectiveness is advanced through innovation awareness driven by elaboration and fluency, which seemingly promotes increased knowledge productivity.

An organisational climate is required where leadership encourages creativity and innovation through the provision of instrumental facilitators to practice creative initiatives to increase knowledge productivity. The researcher is of the notion that when knowledge workers are given authority to use their innovation skills it enables them to become self-motivated and share ownership of the knowledge landscape,

which increases knowledge productivity. This type of organisational culture would require effective collaboration, driven by communities of practice within the new knowledge paradigm, which encourages and exploits knowledge competencies. The knowledge worker could be expected to generate high levels of knowledge productivity, which would place the organisation at a more competitive stance.

The research findings indicated three components regarding knowledge workers that were the primary drivers for effective knowledge dissemination, namely leadership, communities of practice and a conducive culture for creative ideation. Furthermore, individual creative ability, namely fluency and elaboration led to increased levels of efficiency, which apparently increases two-way communication. An environment should be created which is conducive to collaborative concomitance amongst all critical organisational functions. This could provide efficient channels to establish ease of access of information. From this cultural environmental diagnosis, two-way communication, continuous learning, vision and direction were regarded by the research participants as the most important themes that need to be addressed in the new economic dispensation. This could furthermore suggest that a collaborative culture is urgently required to promote vision and meta-cognitive awareness of creativity and innovation to redefine contemporary knowledge organisations. In the next chapter, the knowledge concomitance model will be introduced to serve as a reference for the new corporate curriculum and to facilitate the provision of recommendations.

CHAPTER 6

THE KNOWLEDGE CONCOMITANCE MODEL

“In the transformed workplace life has become too complicated for hierarchy and bureaucracy. With change as the underlying driver, organisations need more speed and flexibility, greater scope and sharper intelligence, more creativity and shared responsibility. The network is emerging as the signature form of organisations in the Information Age, just as bureaucracy stamped the Industrial Age.” (Lipnack & Stamps, 1994:p3)

6.1 INTRODUCTION

The intelligent organisation of the future should perpetually challenge leadership to realise the value of creative and innovative concomitance in transforming corporations into advanced knowledge-manifesting and knowledge producing enterprises. Amidst the proliferation of new technology, the only source of lasting competitive advantage is arguably, the generation of new knowledge. Communities of practice introduce repositories of future value propositions, which are disseminated and shared throughout the organisation. This includes the development of new technologies to support the development of innovative services and products within the intelligent organisation and ideally deploys the dynamic corporate curriculum where the intention is continuous knowledge generation and innovation.

Within this competitive intelligence paradigm, it is vitally important that leadership encourages knowledge-driven organisations to instil a culture, which rewards innovation, and thereby establish frameworks for the expansion of innovative architectures. Innovation is not merely about invention, but fuels the commercial application of knowledge and technology to achieve strategic knowledge advantage. Organisations of the future will come to rely more on the critical ability to harness individual and organisational creativity as it has become the new imperative for determining continued competitiveness (Jackson, 2000:79). This is essentially articulated within the human capital domain of the organisation which is represented by the knowledge worker and its subsequent relationship with leadership which is crucial for sustaining knowledge competency in this new economic transition (Dalkir, 2005:81; Garvey & Alred, 2001:520).

The modern organisation will continue to face even greater complexity and fiercer competition with each accelerating shift. It is the responsibility of creative leadership

to maintain knowledge as the key source and driving force of value creation. This translates into increasing and possibly even exponential value returns within the knowledge capitalised economy.

The research methodology employed postmodern narrative interrogating core theory for the leveraging of improved leadership initiatives within the new knowledge economy. Future organisations should become empowered to redirect its leadership paradigm to transform the current culture into one, which enables learning, through openness and knowledge transparency. In addition, self-directed leadership and individual autonomy should be supported to prevent traditional power and ownership structures from impeding or obstructing the diffusion of knowledge (McElroy, 2003b:19). The thought leadership of the future will demand new and radical innovative strategies to initiate networked communities of practice and creative leadership expertise. The proposed model that emanated from this research will ultimately outline the strategic intent of postmodern knowledge and creative leadership to offer suggestions regarding the transformation of current knowledge management practice.

6.2 THE ECONOMY OF KNOWLEDGE IN THE RESEARCH CONTEXT

The economising of knowledge constitutes a non-static and dynamic knowledge production framework, wherein knowledge workers generate innovations as the primary product and driver for sustainable wealth creation. Knowledge has replaced traditional capital as the prime economic rent generating resource to be optimally applied and exploited for maximum future knowledge advantage.

Future knowledge management praxis introduces creative leadership, which accelerates the pace of scientific and technological advancement. However, this leadership framework should facilitate an organisational culture and climate where creativity and innovation are exploited as crucial knowledge production inputs. Within the economising of knowledge it is critical to continually deliver innovative service offerings to existing and future customers, with minimal change to operating costs but with potentially increasing and even exponential returns on the knowledge invested (Garvey & Williamson, 2002:115; Wren, 1994:330).

Current modernist organisational culture considers the exclusivity and privacy of knowledge, based on authority and hierarchy. What could almost be best described as “totalitarian structures” are vested and embedded in traditional leadership.

Postmodern culture celebrates the multiplicity of subjective truths as defined by personal experience and through the direct participation of leadership. Within the postmodern dialogue, loss of absolute authority and control provide for sufficient reflexivity to compose informed choices and thereby facilitate a more effective understanding of the contemporary workplace (English, 1998:426). According to Fulmer and Vicere (1995:10) values such as innovation, creativity and diversity are currently regarded as standard within the *new normal* of knowledge management practice (McNamee, 2004:31). This represents the decline of the traditional management hierarchy and signals a broader cultural shift in the apprehension of reason and reveals that the parameters of this complex cultural shift is defined within the dialectic of the postmodern debate. The celebration of the knowledge worker’s recognition to develop creativity and to be enabled to function independently would result in autonomous decision making in the work place and replace the notion of pre- determined control and authority, which presents renewed strategic choice and economic opportunities (Depres & Chauvel, 1999:112). This is precisely the context wherein new innovative opportunities that accelerate new intangible knowledge wealth are initiated.

The research results suggest that knowledge-intensive organisations are still caught up in traditional mental models pertaining to leadership, which appears not to display an appreciation or sufficient understanding of the value of the new knowledge engines that drive the postmodern global economy. The importance of creative leadership to leverage immediate, participative responses through knowledge generating capabilities, appear to remain excluded from current innovative thought within knowledge management praxis. This implies that current leadership models may still exhibit narrowness of thought according to De Dreu and West (2001:1192). Leadership should recognise the production of knowledge as the major strategic capability, which initiates new value creating opportunities and future value propositions. The researcher argues from the premise of enhanced knowledge productivity, that learning only occurs successfully when a cohesive knowledge context is supplied and made centrally available to all systems within the organisation. Knowledge production is embedded within the knowledge worker who is the new intellectual asset driving corporate wealth creation towards an innovation-

based knowledge environment and concurs with the research of Crawford (2005:8) and De Cock (1993:15).

Globalisation and technology have facilitated the new era in which knowledge assets have become the basis of wealth creation in which human capital is reaching new levels of autonomy and specialisation. According to Gorard and Rees (2002:65) the competitive advantage is obtained through continuous learning and a knowledge-sharing culture. Leadership compels the future vision through mining knowledge efficiently and realising that knowledge workers are essential to this process and should be placed strategically to produce knowledge from an entrepreneurial orientation to thereby manipulate the knowledge assets driving the new economy. The challenges and opportunities for future sustainability are optimised within the knowledge intelligent organisation that appreciates the strategic importance of knowledge concomitance to extract and manipulate the exploitation of intangible knowledge assets with a view to furthering future value creation.

6.3 THE INTELLIGENT ORGANISATION OF THE FUTURE

Intelligent organisations are characterised by their capacity for strategic innovation, which is defined as the creation and perpetuation of new growth strategies, new product categories, services or business models that change and generate significant value for all stakeholders. Strategic innovation challenges the knowledge-driven organisation to search beyond established business boundaries and mental models and participate in an open-minded, creative exploration within the realm of infinite possibilities. The challenge is to re-evaluate strategies and redefine future value propositions as current organisations realise that creative leadership is critical to the process of economising and exploiting knowledge to differentiate the competitive advantage of the future (Ahmed, 1998:30-34; Garvey & Williamson, 2002:130).

According to McElroy (2003b:70) creative leadership aims to improve knowledge competencies throughout the organisation and depends on innovative corporate strategic frameworks to support successful implementation. Strategic competencies in the new economy are unique, as they are rooted in knowledge and intangible assets, and initiated by a creativity tolerant corporate culture. Creative leadership delivers the competitive advantage by directing the focus up on a knowledge concomitant vision and strategy to provide direction for establishing the intelligent organisation (Alred & Garvey, 2000:261-272; Dalkir, 2005:70).

Strategic innovation management is a continuous process, defining the attributes for a creativity-based strategy, and presents the subsequent strategic processes as inextricably part of the new corporate curriculum. The intelligent organisation nurtures its creative resources and anticipates knowledge workers to implement continuous innovation by encouraging and investing into human capital development imbuing a willingness and capability to generate new ideas (Garvey & Alred, 2001:529). Creativity is then not regarded as a separate construct from innovation as the distinctive new ideation and application of imaginative action leverages the implementation of continuous innovation. Creative leadership is now required to take cognisance of the dynamics within the working environment and investigate how creative ideas could be instrumental in propelling innovative activities to maintain competitive advantage. According to Montamedi (1982:89) creative ideas translate into innovative knowledge practice only when this process is carefully managed, as creativity is essentially an inherent intangible asset distilled within the minds of knowledge workers.

Managerial effectiveness refers to the extent to which management achieves expected productivity and Hughes *et al.* (1999:122) and Stankowsky (2005:66) agree that managerial effectiveness mainly focuses on internal managerial efficiency and evaluates how successfully knowledge management processes are delivered. Drucker (2005:38) postulates that traditional performance-based management contrasts with strategic knowledge initiatives and Crawford (2005:15) and Housel and Bell (2001:39) agree that new competencies are now needed to support organisations in the knowledge driven economy. Traditionally, authority is vested in the re-arrangement of workflow and the research revealed that contemporary knowledge organisations are still productivity-driven, while the relevant leadership needed in the knowledge economy is vital for its perpetuation. The knowledge concomitance model introduces the proliferation of fora for creativity and advocates innovation awareness, which ought to be capitalised by creative leadership.

The intelligent curriculum is flexible and imposes constant renewal and installs the ability to foresee changes and learn with the assistance of concomitant vision, which facilitates and expands creative and innovative intelligence. Visionary management is the driving force to facilitate thought-leadership through cautious idea generation with the realisation that ideas energise the concomitance within the knowledge organisation. A shared vision is then presented and exists in the minds of knowledge navigators when cultivated continuously. Communication plays a vital role as this

renewal process and is supported by a flexible structure as communities of *practice* support innovation-based strategic intent (Steyn, 2008:16).

The intelligent organisation places significant emphasis on the value of the customer to maintain the competitiveness in the industry. The challenge is how to communicate the vision and strategy throughout the business and integrate it into sound knowledge management practice. The competence management process supports and enhances strategic management processes as it communicates the competence strategy through the integration of different business units to achieve synergy and knowledge optimisation.

Creative leadership provides a representation of the organisation's realistic, carefully considered future. Strategic innovation positions the organisation within market segments with the objective of attaining sustained innovative competitive advantage. Competency strategies are designed to improve competitive advantage by developing ideal processes, competencies and information systems. It involves analysing the creative competence levels of knowledge workers, knowledge teams and providing the knowledge organisation with the crucial skills, attitudes, experience, knowledge and relationships required to obtain knowledge competitiveness. The most important focus of strategic innovation is to maintain and develop the core competencies of knowledge production organisations through innovation and continuous knowledge sharing to reposition knowledge capability to achieve future advantage (Alavi *et al.*, 2005:193).

6.4 THE CORPORATE CURRICULUM OF THE FUTURE ORGANISATION

The suggested corporate curriculum contrasts sharply with the traditional objectivist organisational learning paradigm, which creates in the mind of the knowledge worker a dominant narrative regarding power, possessed by the knowledge process owners. Traditional formal curricula are based on assessment and evaluation with maximum managerial control and procedural direction (McElroy, 2003b:22). The postmodern argument according to Baumann (2000:54) promotes the social affair of knowledge and innovation and encourages the promulgation of creative thought. In contrast knowledge concomitance introduces an open-ended curriculum, which places the knowledge worker in control and challenges the *status quo* through high levels of initiative and innovation. The new curriculum introduces a sense of disorder as the dominant narrative relates more to a subjectivist paradigm, applied across all times

zones, past, present and future. The researcher is of the notion that future knowledge organisations should critically necessitate the generation of knowledge innovation and flexibility to leverage creativity and reflexivity which is crucial to economising new knowledge generation. This advances organisations the opportunity to develop knowledge workers who are able to adapt to the turmoil and the non-permanent characteristic of the knowledge economy. The challenge of the future is for creative leadership to recognise that knowledge based organisations operate in a high potential learning environment, which as the study suggests, can provide the necessary stimulus and support for continuous learning and knowledge generation to be maintained. It is through the proactive participation of knowledge workers collectively that knowledge advantage can be achieved. Knowledge productivity can ultimately be enhanced by the opportunities created by the new curriculum, which in turn leverages meaningful dialogue and offers diverse cognitive landscapes for active knowledge participation.

Within these knowledge landscapes learning occurs holistically, encouraging creativity and lateral thinking, which in turn drives strategic innovation into successful implementation. According to Easterby-Smith *et al.* (2000:783) knowledge-based organisations endeavour to ensure and exploit the achievement of optimum creativity and innovation, a deliberate process is initiated which endeavours to include all stakeholders concomitantly (Steyn, 2008:317). Leadership should focus on establishing a link between strategy, capability, knowledge productivity and learning by ensuring the establishment of a platform for sustaining increased fluency, elaboration and innovative awareness (Easterby- Smith *et al.*, 2000:783).

The intelligent organisation is a social system that operates within a complex social landscape, which is closely coupled with a culture of continuous learning and knowledge sharing (Rowley, 2003:435). The knowledge management strategy is aligned to the knowledge value chain as it directs a philosophy of creative thought and innovation awareness which is contingent on the particular future needs of customers and Carrillo (2002:379) and Desouza (2002:12) agree that an objective understanding of the future knowledge organisation, within its continuous complex interactions will remain a future leadership challenge.

Creative leadership adopts a viewpoint on how the knowledge society functions and bases decisions on knowledge philosophy that directs behaviour accordingly. The curriculum may not be based on learned beliefs, but rather acquired from the

interaction process with knowledge societies that become the dominant social narrative diffused throughout the organisation. The competitive environment of modern economic life has become a strategic challenge and innovation driven strategies are critically important as it represents a rational process where the organisation makes decisions in relation to its current knowledge operating environment. Environmental changes are identifiable and consequently the curriculum restructures itself to adapt to these changes to maintain knowledge advantage given the continuously changing competitive forces (Alavi *et al.*, 2005:191; Desouza, 2002:15).

The intelligent organisation is the consequence of efficient organisational learning processes which aims to establish future competitiveness based on the collective innovative corporate curricula. It should be characterised not only by knowledge, but also by insight into opportunities for continuous innovation that produces new wealth. Collective learning by all stakeholders is thus a crucial factor. To be successful, future organisations will be required to be efficient in extracting concomitance from all business units and this according to McElroy (2003b:31) necessitates cooperative intelligence. This is primarily derived from the existing knowledge repository, wisdom competence and strategic perception inherent to the corporate curriculum based on particular knowledge demands at a particular time. The leadership of future knowledge trading organisations will utilise creative intelligence to transform current knowledge architecture to obtain competitive difference in the future (Easterby-Smith *et al.*, 2000:783).

The corporate curriculum constantly renews knowledge repositories through revising the curriculum, anticipating changes and perpetuating new knowledge sharing and collective learning. The future knowledge organisation adapts and functions like a living organism navigating knowledge operations in search of innovative opportunities. It should be versatile in its utilisation and application of knowledge, which constantly changes and understands the meta-cognitive prerequisites of knowledge combinations and applies it accordingly to the particular knowledge requirements and circumstances. If the value of knowledge is not understood and appreciated throughout the organisation it will not extract maximum value. The intelligent organisation establishes a knowledge-base, which includes the creation, dissemination and application of new innovations for the development of sustainable competencies (Couger, 1996:30; Dalkir, 2005:35).

The new corporate curriculum designs knowledge competence centres to consistently supply new products and services, instantaneously. Future leadership should constantly strive for excellence in knowledge deployment to achieve these strategic objectives. It is imperative that the corporate curriculum is lead by knowledge values, which are set by all stakeholders concomitantly as the leadership within the innovation culture supports all operational functions. The organisation needs to understand the importance of knowledge values and the dynamics of applicability to external stakeholders and customers. The concept of continuous improvement based on creative and innovative practices driven by knowledge needs should be the basis of the knowledge operations and practices (Coleman, 2000:15, Coombs & Hull, 1998:238).

The intelligent curriculum invests in creative leadership to develop new competencies for knowledge management as the key component and consists of diverse processes, which are determined and implemented by communities of practice. The corporate curriculum gathers feedback continuously to support the learning process, and aims to abridge the learning cycle through the exploitation of Information Technology. Maximum knowledge benefit can be achieved as urgent knowledge provides challenges to search for solutions to achieve speed to market. Creative leadership should be viewed as a service function in the new curriculum, with the task of organising anticipatory competence and causal readiness for implementing change

A different perspective is therefore needed to manage the knowledge organisation of the future. Managing in the global economy necessitates virtual communities of practice who establish confluences for organisational collaboration processes and connects the networked economy. According to the postmodern proxy promoted by Baumann (2000:21), English (1998:426), Kezar (2005:53) and Weindberger (2001:3) the leadership of future knowledge-driven organisations will constitute visionary management, strategic management, performance management and self-directed leadership. The synergy achieved through this joint application has the benefit of renewing visionary management to all stakeholders within the knowledge-based organisation. The collective vision provides purpose to knowledge activities and navigates strategic management, which steers knowledge concomitance. According to Bailey and Clarke (2000:235), Baines (1997:46), Neck and Manz (1996:445) and Montamedi (1982:91) the sustaining of the economy of knowledge requires particular knowledge actions, taken by creative leadership to enable the diverse domains of

knowledge to be exerted to achieve knowledge competence on the individual and organisational level.

The corporate curriculum inspires a vision, which anticipates the future direction and contains significant goals to be achieved through enhanced knowledge productivity, which translates into innovative knowledge performance. Creative leadership supports this vision and provides creative intelligence, which in turn originates from the cultural knowledge values embedded within the organisation. Creative leadership is synergistic in approach and directs the innovative-led strategy, which provides focus and perpetuates this discontinuous process of creativity and innovation within the intelligent curriculum wherein all knowledge workers participate in the development of strategy. Strategic innovation is applied throughout the organisation and strategies are constantly updated and discussed. The intelligent organisation should be viewed as a future desired state where creative leadership is the distinct characteristic driving new competencies to sustain knowledge competence. The intelligent organisation should guide knowledge workers and realise their value in supporting the achievement of continuous knowledge competitiveness (Neely & Kennerley, 2003:18; Nolan & Croson, 1995:50; Mumford & Connelly, 1999:27).

The vision of creative leadership should be to create, maintain and develop the competencies of knowledge workers and implies increased organisational efficiency to stay competitive by imbedding a learning environment for future repositioning. Intelligent organisations recognise that creative leadership is based on respect for individual differences and supports creative thought and innovative awareness in the process of continuously developing and sustaining the creative intelligence of knowledge workers (Menon & Varadarajan, 1992:50; Nolan & Croson, 1995:17; O'Reilly, Chatman & Caldwell, 1991:487).

Leadership in the future knowledge organisation needs to be based on an approach, which appreciates individual creative behaviour and nurtures the diverse talents of knowledge workers. To achieve top performance necessitates strong knowledge competence, commitment and an extensive conceptual perception of particular knowledge demands. The different roles of knowledge workers will become more prominent in future as all roles are simultaneously performed in pursuit of knowledge excellence (Choo, 1996:329). Creative leadership persuades and sells new innovative ideas to the diverse stakeholder audience to establish collective buy-in. The future leader is a knowledge worker who is pro-active and practical, flexible, goal

orientated and an efficient implementer of new creative and innovative practices. The profile of a knowledge-enabled leader should be based on establishing to what degree strategic innovation capabilities are harvested and executed (Bunce & West, 1996:209; Burbules & Torres, 2000:25).

The knowledge-enabled leader supports continuous change, connecting human capital to strategy and competence management. The ideal state of leading in the intelligent organisation could be therefore characterised by knowledge-enabled leadership where knowledge is shared and made available to all interested parties. The corporate curriculum should avail foresight into the future to determine the pace of learning to adequately cope with the changing external and internal knowledge environments as the knowledge worker is the organisations most valuable resource and his/her position should be structured to accommodate the creativity and innovative needs and talents to support the community of *practice* (Bloom, 2000:53; Birkinshaw, Nobel & Ridderstgrale, 2002:277; Cobb, 1994:13).

6.5 THE NEW KNOWLEDGE COEXISTENCE PERSPECTIVE FOR THE FUTURE ORGANISATION

According to Stacey (2003:221) the interaction within and among organisations is understood in systems terms as a combination of strategic choice and learning theory which analyses a system/sub-system based on self-regulating dynamics. It furthermore takes account of amplifying learning through information exchanges. Fulmer and Vicere (1995:10) suggest that open systems theory focuses attention on regulatory functions at the organisations boundary and aims to regulate the flows of knowledge ensuring continuous knowledge flows to support knowledge-driven organisations within a competitive environment (Choo & Bontis, 2002:23; Christenson, 1997:6; Christensen & Lundvall, 2004:27; Cohen & Bailey, 1997:239).

Stacey (2003:53) furthermore suggests that open systems theory focuses attention on the micro and macro level, and scrutinises the sub-systems of which the whole is composed and is concerned with the individuals and the groups that constitute the knowledge organisation. According to Kezar (2003:150) postmodern leadership is the process of adaptation in search of new solutions within the prevailing economical conditions and organisational circumstances within diverse systems.

According to Desouza and Awazu (2004:14) systems interact within organisational processes while systemic innovation and creativity influence the role of leadership in relation to the knowledge operating dynamics inherent to innovation processes. During the management of innovation processes, complex systems ignite extensive interaction, which demands requisite variety continuously, which implies extensive knowledge navigation. At the knowledge creation level, innovation is enhanced through collaboration achieved by communities of practice and involves organic and formal development of business processes at all levels within the organisation. Creative leadership should guide these processes through high levels of commitment and proactive participation in two-way communication and instil a clear vision based on mutual trust and a supportive climate to deliver autonomy to knowledge workers and the respective communities of practice.

Clarke (2001:193) suggests that the sharing of new knowledge has become rapid in the new economy and demands a shift from a linear model to a more complex relationship reality. Instead of creative discovery and innovation preceding a linear sequence, innovation has now become the result of numerous interactions involving diverse stakeholders. A knowledge platform is introduced where innovation and creativity translate into the essential tools to manufacture and increase knowledge productivity. Creative leadership provides the means to generate distribute and re-use knowledge in innovative ways to add competitive value to ordinary business activities. This provides new opportunities and benefits to be realised within appropriate innovation strategies within future innovative environments, the knowledge concomitance model (Steyn, 2008:317), offers the knowledge-based organisation a methodology to manipulate the present knowledge capacity to generate new knowledge and to integrate its transfer through performance innovation achieved through the application of creative leadership. The strategic innovation drivers are therefore ultimately concerned with the development of intellectual capital to improve knowledge performance to sustain knowledge intelligence through the advancement of learning, which subsequently promotes continual innovation implementation (Arthur & Parker, 2002:12).

The knowledge economy has emerged along with the recognition that real value is delivered through optimal performance, which requires the consistent delivery of value to market. Knowledge generation and application are inherent to enable optimal performance and collective learning, promoted through active involvement. This is essentially the source to grow intellectual and social capital. Managerial

effectiveness is the precursor to creative leadership and needs to be self-regulated and mutually adapted as the responsibilities of all functions of the organisation are expected to be interlinked which in turn leverages interdependent task performance and enhanced organisational learning (Awazu & Desouza, 2004:1018; Clegg, 2003:27).

According to Alavi *et al.* (2005:195), Cross, Yan and Louis (2000:841) and Ford (1996:1112) competitive knowledge combinations are increasingly more complex and sophisticated, which emphasises the importance of knowledge sharing through formalised communities of practice. It is only through collaborative knowledge co-creation that an organisation leverages the knowledge held collectively by its stakeholders and is foundational for elevating competitive advantage. Collaboration has therefore far-reaching implications for the enterprise-wide culture of the knowledge-trading organisation. The Concomitance Model proposed by Steyn (2006:118) advances a proposed framework for the pre-structural implementation of an integrated collaborative strategic path model that integrates all managerial functions. The knowledge concomitance builds on previous models to integrate the diverse aspects of the complex new economic landscape.

McElroy (2003a) states that in knowledge-driven organisations innovation should be the top priority within a cultural setting that supports creativity and problem solving. Leadership is challenged to recognise and employ the untapped creative capabilities of knowledge workers as the knowledge concomitance model suggests. The reality implicit in these assumptions are that organisations exist in a new knowledge era where an essential ingredient is the development and integration of knowledge by all stakeholders and agents to maintain a concomitant knowledge-processing environment.

The introduction of the Knowledge Concomitance Model in Figure 6.1 integrates the Concomitance Model (Fig. 2.1) to establish an epistemic access between the traditional productivity-driven organisation and future knowledge-trading. The new suggested model is focused on knowledge productivity and embeds the major findings of this research exploration to sustain the strategic competitive positioning through a participative paradigm. The relevant participants and knowledge players access the reservoir of creative power for the generation of renewed organisational value concomitantly, to nurture a climate and culture wherein often-untapped innovation is not misplaced but optimally utilised.

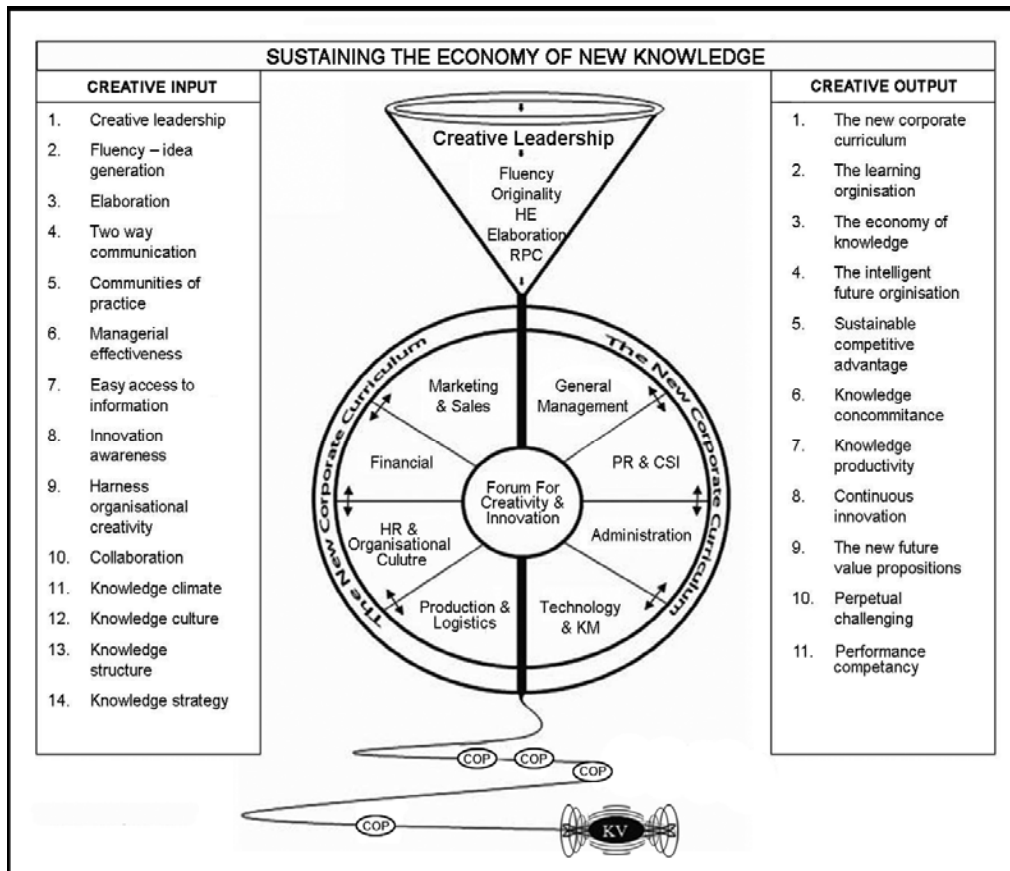


Figure 6.1: Knowledge concomitance for sustaining the economy of knowledge (Steyn, 2008:319)

As outlined in Figure 6.1, it is imperative for creative leadership to be committed to the new corporate curriculum, which incorporates learning as pivotal to knowledge concomitance. Instead of producing vague and impractical prescriptions as a defence against uncertainties in a traditional hierarchical system, the model suggests training and mentorship, which should involve all managerial levels. This is further maintained through a creative forum, which facilitates the creative process cautiously and continuously provides networks that interconnect every operational function through open communication channels (Coyle, 2000:225-244).

The contemporary knowledge organisation can capitalise on the creative and innovative potential of leadership and nurture a culture for the development of these intangible assets to unleash this tacit knowledge, which goes to waste or becomes negative frustration that does not add value. The model proposes a solution for knowledge management praxis to unify its resources and sever traditional hierarchies to establish a creative forum where knowledge workers can share and jointly reflect on value propositions, which could lead the value of future knowledge competence.

The model further suggests that the learning organisation excels when it is able to access the commitment and capacity of all its members to collectively learn. Change and increased profitability flow from a process of organisational learning which achieves the building of a shared vision. This inspires knowledge workers to identify scenarios for the future and develop collaborative knowledge resources. Amidst the complexity and uncertainty new competent knowledge solutions can be successfully implemented by effective concomitance, and the creativity and innovation potentialities exploited for the development of new knowledge opportunities (Austin, 2000:31).

The challenge of creative leadership is to deploy new communication and knowledge management initiatives to institute a mindset of knowledge concomitance to achieve exponential knowledge productivity. The current leadership should be transformed to act as an enabler in fostering open communication and through knowledge sharing continuously transform knowledge repositories to establish new organisational structures which search and implement future value propositions (Amidon, 2003:18; Dalkir, 2005:119).

Postmodernists pose questions such as whether leadership needs to be developed or whether communities of practice should be fostered and whether the modernist and mechanistic orientations can be applied in this global interconnected world (Kezar, 2005:50). Unlocking the organisational collective creative potential and innovation necessitates a new managerial approach. Traditional leadership and philosophies have become redundant in an era that is characterised by transparency and knowledge participation. The research findings of this study revealed that knowledge workers thrive in an environment where communities of practice optimise the utilisation of knowledge for the achievement of exponential results. The research furthermore established that this new suggested leadership paradigm should be facilitated by collaboration, which drives creativity and innovation for productive utilisation of knowledge, which results in managerial effectiveness. Managerial effectiveness is closely associated with innovative awareness, fluency and elaboration. These processes are optimally utilised within the community of practice where the knowledge worker is accommodated in a structure free from the organisational constraints which suppress creative and innovative behaviour to become energised by concomitant collaboration (Anderson & West, 1998:236).

Traditional knowledge practices need to be replaced by innovative methodologies

pertaining to solving problems, improving efficiency and sustaining organisational development. Successful knowledge organisations of the future will be those who can economise knowledge to become highly knowledge productive. The knowledge concomitance model introduces a curriculum for knowledge productive organisations to acquire the means to generate new ideas and innovations to enable competitive sustainability to continuously maintain innovative products and services. This innovation-driven organisation of the future operates within an embedded culture of creativity where leadership supports and navigates risk taking and performance is evaluated differently as individual competencies and talents are acknowledged.

The nature of the knowledge organisations commitment to learning and the evaluation of new futures enable them to reframe value propositions, which would otherwise not be known. Therefore engaging in open-ended facilitated dialogue, the process of knowledge exploration reveals new perspectives on the present and opens new options for future development. Strategic knowledge capability relates to profound knowledge of the environment and reflects the organisations ability to be strategically aware of change and diverse opportunity. From the data the researcher postulates that strategic capability is aligned and influenced by knowledge productivity, which in turn is influenced by the quality of learning through creative and innovation relationships. In the model the quality of the corporate curriculum drives an organisations capability to be knowledge productive and exploit its strategic capabilities. The greater the strategic capability - the more able an organisation will be to prosper and progress in the dynamics of this fast changing knowledge environment (Gordon, 2000:53).

Facilitated by technology, these multiple-participating knowledge networks could create new business strategies that leverage the capabilities of multiple participants to deliver new products and service to future customers. As organisational structures become networks of creative capabilities and innovative relationships they could potentially form collaborative communities of practice that translate into a knowledge platform that will enable participation in value creating networks that redefine the traditional boundaries of the organisation.

The model introduces future leadership to new guidelines for the realignment of knowledge concomitance responsibilities and accountability. It provides solutions to knowledge gaps for decision-making and establishes diverse routes for the corporate curriculum to be applied. It suggests input and output strategies for collaborative

decision-making within communities of knowledge workers and develops decision-making guidelines for cross-functional teams. Leadership should furthermore nurture an active delegation process, which realigns human resource strategies for the recognition and reward of the collaborative contributions and innovative knowledge results produced by knowledge workers. Knowledge workers may subsequently develop new expanded solutions for collaborative knowledge performance based on feedback from communities of experts to thereby support the culture change towards radical innovation (Coombs & Hull, 1998:245).

Communities of practice should be introduced as an integral structure of knowledge-based organisations where leadership directs the collective focus on learning to find solutions to improve current knowledge management practice and ultimately, increase the individual knowledge worker's capabilities through nurturing creativity and innovation. Leadership that encourages ongoing dialogue for the generation of collective networks of knowledge communication would re-enforce the importance of the knowledge worker within the new economic dispensation (Dalkir, 2005:81).

This study identified a number of issues relating to knowledge language and discourse as the vehicles through which leadership expresses ideology to make apparent and find solutions for the complexities inherent in contemporary leadership. Communities of practice support organisational learning to create a vehicle for competitive learning and thereby generate new knowledge that increases the flow of new knowledge capital. Knowledge management is perpetually challenged in the knowledge-based economy where innovation translates an organisation's competitive advantage for the improvement of the quality of knowledge delivery (Cohen & Bailey, 1997:240; Cooke, 2000:34).

The model indicates that creative leadership produces knowledge asset creation processes through which information evolves into tacit assets. The knowledge worker's implicit expertise translates into valuable organisational knowledge. The tacit-explicit spectrum of knowledge, shared between individuals, groups and organisations, diffuses information through the sharing of knowledge and consequently, produces methodologies for knowledge innovation. Takeuchi and Nonaka (2004:78) explain that knowledge-innovation drives the socialisation of knowledge from an inferred approach towards future innovative organisational strategies. This research explored the knowledge transformation process where creativity and innovation are fundamental aspects of organisational learning and aim

to achieve sustainable and applicable methodologies for economising knowledge. Leadership ignites the key to creating the future value proposition by building effective collaboration and knowledge co-ordinating mechanisms into knowledge management praxis for maintaining competitive advantage in the global market place. Creative leadership is opportunity driven and uses knowledge resources and exact information selection synchronised through knowledge socialisation to drive the strategic intent. The knowledge worker is the active pivot driving the knowledge spiral propelled by information technology. Multiple knowledge layers develop, enabling internal and external networks to become knowledge platforms and foundations for new knowledge solutions. These processes precede the metamorphosis from the tangible to the intangible knowledge asset.

Leadership in the new knowledge economy should drive the optimisation of the human capital through creative and innovation-based management practices. All functions of the organisation needs to be aligned and synthesised to create concomitance for the achievement of knowledge strategy and capitalising on new value propositions for future competitive advantage. Knowledge creation is a transcending process through which communities of practice transcend the traditional boundaries by consistently acquiring new knowledge. During this process new knowledge structures for interaction are created, which provide possibilities as well as constraints to consequent knowledge-creation cycles and it is the responsibility of leadership to redirect and re-engineer these functional processes to ensure strategic competitiveness (Crawford, 2005:12). The model introduces knowledge management as a flexible and diverse systems framework that distributes creative solutions in varying combinations to accomplish the main goal of leveraging knowledge capital to assist in strategic decision-making. This redesigned model profoundly impacts organisational goals, structures and processes to be applied to new diverse learning initiatives to create future value for customers and knowledge communities.

Creative leadership supported by an innovative culture are functional imperatives to drive mutual engagement for a shared concomitant repertoire, as knowledge workers collaborate towards strategic knowledge enablement (Tushman & O'Reilly, 1997:3; Ulrich & Eppinger, 2003; Upton & Kim, 1998:15; Uzumeri & Sanderson, 1995:583; Van Dulken, 2000; Von Krogh, 2000:24; Von Krogh, Roos & Kleine, 1998:54). Creative leadership drives the classification and distribution of knowledge sharing, promoting and demonstrating new value and maintaining continued support for the

immediate competitive knowledge value achieved. Commercial success is based on the collective interaction of organisations through openness to form potential knowledge alliances. Leadership propels knowledge as a competitive asset to include the entire network of organisations in the global industry. This connectivity enables the contemporary knowledge-trading organisation to realign new products and services, and to forecast potential future opportunities. Inter-organisational networks develop knowledge sharing and trust relations to develop standardisation, which has become imperative in the global knowledge socialisation process (Manville & Ober, 2003:49). This collaboration of networks sears across commercial and industrial sectors to ultimately enhance the application of information technology to fashion specific competitive knowledge solutions (Tsai & Ghoshal, 1998:464; Tsoukas & Vladimirou, 2001:973; Von Hippel & Tyre, 1995:5).

Leadership in the new economy reassembles the collective stakeholder potentials facilitated by formal communities of practice to ensure that the complex realities of knowledge management practices produce strategic knowledge sustainability. The knowledge concomitance model illustrates that creative leadership in the new knowledge economy optimises human capital through creative and innovation-based management. All functions of the organisation require to be aligned and synthesised to create concomitance for the achievement of a knowledge strategy and the implementation of new value propositions for future competitive advantage. Knowledge creation is a total quality management process through which creativity and innovation awareness can be optimised to sustain the economy of knowledge. Traditional organisation theory is based on the view of an organisation as an information-processing mechanism, which processes information from the environment to solve problems and adapts to the environment to obtain strategic knowledge advantage (Drucker, 1994a:11; McElroy, 2003b:31; Von Hippel, 1988:15; Woodman & Schoenfeldt, 1990:27; Yun *et al.*, 2006:374; Zack, 1999a:45).

The purpose of a learning organisation is to ultimately identify leverage points where creative exchanges and innovation produces optimal beneficial effect through knowledge manipulation and economic exploitation. The creative process adds value to this process by introducing new achievable innovations through the installation of a forum that is instrumental for the establishment of a culture and climate that supports this innovation. Process-based knowledge organisations evolve through the contributions made by the levels of learning of human capital, which is transferred and integrated back into the organisational knowledge memory. New creative

routines are required for the effective commercialisation of new innovations as it depends on these important human assets and the knowledge competencies of organisational knowledge functions, which include production, marketing and technology. These opportunities for innovation are strongly influenced by the creative input of management to provide the appropriate knowledge facilities for the reinforcement of creative exploration of ideas to enable strategic competitive advantage (Abdullah, 2005; Soros, 2000:37; Sutton & Hargadon, 1996:710; Torrance, 1984:156; Van der Walt, 2005; Wall, Kirk & Martin, 2004; Williamson, 1998; *Wilson et al.*, 1992:315).

Creative leadership integrates knowledge leadership to introduce a constructivist style, which allows for more autonomous vision wherein knowledge workers generate strategic knowledge environments to strategically support innovation. It contrasts with the current leadership style where top management derives power and knowledge ownership through hierarchal positioning while knowledge workers are motivated only by the task and respond mainly to short- term objectives.

The model illustrates that collaboration cuts across organisational divisions leveraging the ability and willingness to creatively share and recreate new knowledge within knowledge communities. Given the realities of the current corporate environment, collaboration evidently delivers a major organisational advantage. The challenge is to integrate a whole organisational systems approach to facilitate diverse knowledge networks. Traditional management systems emphasise individual accomplishment but effective knowledge management creates networks of trust, alignment of personal and corporate values to drive collective knowledge concomitance (Reed & Harvey, 1992:353; Robbins, 2003:11; Scarbrough, Swan & Preston, 1999; Schultz, 1996:165; Sternberg & Lubart, 1996:677; 1999:45).

Creative leadership could be viewed as the new imperative and the research findings established that traditional leadership practices are ineffectual in providing the necessary stimulus required for efficient creative and innovative praxis for fourth generation knowledge management. The research found that a fundamentally different approach to navigating leadership in the knowledge economy is needed to cope with a new economic paradigm. The researcher is of the opinion that new methodologies and principles for creative and innovative leadership are required to be developed to facilitate the economic realities of the new era of knowledge management. Organisational culture should initiate a forum and platform to

accommodate and facilitate new modes of knowledge for future business applications (Peters, 1997:18; Pinchot & Pinchot, 1996:11; Rubenson & Runco, 1992:131).

According to Brewster *et al.* (2000:18) managerial influence is situated within knowledge co-ordinating, controlling and concerns the measurement of knowledge. The research established that these basic management functions are not always optimally practiced and therefore it can be reasoned that managerial influence through the application of creative leadership in the knowledge production process can improve the competitive positioning of knowledge creation competencies. It can also be deducted that managerial effectiveness is still affected by the traditional orientation of management's focus on planning, activating, organising and controlling knowledge resources to achieve organisational objectives. The research indicated that current knowledge leadership is largely reactive and primarily facilitates the execution of short-term tactical plans without harnessing expansive innovative strategies nor utilises enhanced creativity to perpetuate a competitive advantage (Amabile, Goldfarb & Brockfield, 1990:20; Anderson, Greeno, Reder & Simon, 2000:11; Bussotti & Pettenati, 2005:93; Changani, 1998; Casey, 2004a:20, 2004b:302; Castells, 2000:16; Christenson, 1997:21; Claxton, 2005).

Leadership in the knowledge economy should utilise innovative methods to increase the production of intangible assets to maximise future corporate wealth creation. To achieve this new economic objective leadership roles and functions are critical. Flexibility and autonomy has become the essential drivers in the knowledge economy and is predominantly based on novel solutions for knowledge management and the production of new knowledge available more frequently to achieve sustainable competitive advantage (Bontis, Crossan & Hulland, 2002:440; Bray, 1995:8; Brown, 1989:101; Garvey, 1999:50). Knowledge enabled leaders understand the relationship between knowledge acquisition and the business processes and functions required to support and facilitate the trading acquisition and sharing of knowledge. Leadership navigates knowledge competencies to exploit available knowledge repositories and sponsor ideas for further use through innovative strategies. Knowledge enabled leaders are responsible for discharging their individual knowledge into an empowered organisational environment producing new products of their respective areas of knowledge specialisation. Effective knowledge enabled leadership practices should therefore include elements of change, transformation management and encourage self-dispersed leadership styles economise knowledge.

According to Johannessen *et al.* (1999:117) the function of knowledge leadership is to enhance capabilities for knowledge creation by instilling a responsibility towards new knowledge acquisition and trading. Knowledge leadership translates into creative leadership as it provides the infrastructure with incentives for knowledge manipulation. Knowledge leadership encompasses all leadership processes and products, thereby supporting creativity and innovation as a means to benchmark quality outcomes and to expand quantum opportunities. The model introduces important principles, which enhance the enablement of creativity by providing encouragement, freedom and sufficient knowledge resources. The research found these to be largely absent in the knowledge management environment pertaining to this study. These obstacles however were observable as a persistent reality and impacted on time management, which furthermore resulted in structural deficiencies regarding external communication practices. The research data indicated that a statistically significant relationship exists among leadership and the dimensions of creativity, innovation awareness and knowledge productivity, which are essentially prerequisites for enabling effective knowledge management praxis.

Creative potential cannot be optimised to facilitate creative behaviour in a work environment inept of a definite focus to promulgate creative thought and committed to drive knowledge competency. Organisations that do not focus on creative and innovative potential forfeit this capability and many opportunities are lost. A knowledge community provides a forum for new idea generation through exchanges with partners, customers and suppliers collectively aligned with knowledge concomitance. The research proved that the formal knowledge community harnesses individual creativity. The focus of the research is directed towards training and development to enable individual knowledge workers and teams to seize and manipulate future opportunities. These opportunities are instrumental in designing new knowledge architecture by introducing networks to facilitate technology as an enabler for effective knowledge management practice. The creative leader liaises with external information sources and provides critical input into the creation of just-in-time knowledge combinations for future knowledge trading. Creative leadership translates future knowledge propositions into action with exponential results by selling the future vision and steering strategic innovation. The primary success factor in performing creative leadership is through strategic conversations, sense making of knowledge content and this redesigns strategic intent where leadership evaluates and benchmarks intellectual capital to transform new knowledge into structural capital (Amabile & Kramer, 2007).

Decision making in the new knowledge era requires to become democratised and leadership transformed, as essential prerequisites for the implementation of fourth generation knowledge management. Technology and the rapid development of innovative systems for knowledge dissemination, has accelerated the rate of knowledge creation and the obsolescence of information. The major impetus for collaborative knowledge exchanges is strategic knowledge and immediate implementation for the purpose of knowledge trading and competitive knowledge positioning. The establishment of knowledge exchanges leverages information transfers, which arises from the knowledge sharing, and interactive dialogues, which produces new architectural taxonomies and competitive cognitive schema. Stemming from the research it is suggested that collaboration endures creative leadership and necessitates an integrated approach to unlock collective creative potential to increase innovation implementation.

6.6 CONCLUSION

Organisations are dynamic entities of complexity, which continuously evolve and present unique knowledge implementation strategies that require substantial improvisation and innovation. The knowledge concomitance model was introduced in this chapter and explored to determine how creative leadership could aim at developing an integrated knowledge concomitant intelligence platform to make certain the exploitation and economising of knowledge.

A new understanding of organisational situation-handling includes knowledge decision-making and problem solving as imperative factors required to lead knowledge successfully and this demands new insights into diverse domains of knowledge exploration. These insights are critical for future diagnosis of knowledge related operations to conceptualise knowledge management initiatives, and implement the critical capabilities to thereby assess the optimal utilisation of knowledge resources and praxis.

Future organisations will require the capacity and capability to communicate critical knowledge competencies within meta-markets of knowledge production and develop the competence to effectively communicate knowledge internally and also with external stakeholders transcending the physical boundaries and limitations of the modern organisational mindset. In the final chapter the conclusions and recommendations will be presented.

CHAPTER 7

RECOMMENDATIONS AND CONCLUSIONS

“The acceleration of history, of technology, and of social change implies weakened legitimacy of all traditions and institutions...What we are seeing today is the transformation of authority – not merely the downfall of traditional authorities but their replacement with different, knowledge-era institutions.” (Mazarr, 1999:p195)

7.1 INTRODUCTION

In the future knowledge landscape, organisations are compelled to compete in a complex and challenging context that is constantly undergoing transformation driven by globalisation, technological discontinuity and the need for innovative knowledge competencies. Within this new environment, knowledge-trading organisations will require a new leadership paradigm to engage in innovative sustainable capabilities to ensure competitive future positioning. This study promotes communities of practice as integral to future organisational structure where creative leadership deploys learning to find solutions to improve current knowledge management practice to ultimately increase individual and collective innovative capabilities through the development of the dimensions of creativity. Creative leadership encourages ongoing dialogue to generate networks of knowledge communication and enforces the identification and acknowledgement of the future knowledge worker as central to this critical process.

The qualitative data extracted from phases 4 and 5 identified a number of issues relating to knowledge syntax and invites discourse regarding creative ideation and innovative awareness as the vehicles necessary to achieve knowledge concomitance. The researcher advances a new corporate philosophy to reveal and make apparent the complexities inherent within contemporary leadership. The overall findings suggest that communities of practice support organisational learning to facilitate knowledge networks. The networked economy is stimulated by organisational learning which generates new knowledge continuously and increases the flow of knowledge capital in the future organisation. The researcher suggests that future knowledge management praxis should formally introduce a forum for creativity and innovation to support the economising of knowledge-based assets and thereby establish a new competitive advantage. In Chapter Six the knowledge concomitance

model was introduced and a new corporate curriculum was proffered to economise and sustain new knowledge generation in an environment, which necessitates the exponential value of creativity and innovation.

Creative leadership could coerce new knowledge solutions by facilitating a forum for knowledge learning to deal with the dynamic nature of diverse knowledge contexts to assist in future knowledge decision making. Within contemporary knowledge-trading organisations new leadership rubrics are required to act as an enabler, fostering open communication and knowledge sharing to thereby transform current knowledge repositories and traditional performance into new innovation-driven fora in search of future value propositions (Carrillo, 2002:370, Kelly, 2000:92; Kogut & Zander, 1992:395; Lakshman, 2005:429).

Creative leadership should produce these new knowledge asset creation processes through the involvement of communities of practice and compel the evolution of information into new exponential tacit assets. The knowledge worker's implicit expertise translates into valuable organisational knowledge and this tacit-explicit spectrum of knowledge, diffuses information to manifest knowledge productive innovation. Nonaka and Takeuchi (1995:51) and Van de Ven, Angle and Poole (1989:341) explain that innovation steers the socialisation of knowledge from an inferred approach towards diverse innovation strategies. This research explored the knowledge transformation process wherein creativity and innovation are promoted as fundamental facilitators of organisational learning and proposed solutions to increase organisational knowledge productivity.

The research data suggested that creative leadership could be instrumental to introduce future knowledge collaboration. The new leadership paradigm translates into a knowledge co-ordinating mechanism for competitive advantage in the global market place. Creative leadership is opportunity driven and aligns knowledge resources through knowledge socialisation to accomplish future strategic intent. The knowledge worker is the active pivot driving the knowledge spiral propelled by information technology and facilitates the development of multiple knowledge layers. The storage and enabling of networked knowledge solutions expand into knowledge platforms, which become knowledge repositories. According to Amit and Schoemaker (1993:34) these processes precede the metamorphoses from the tangible to the intangible asset, which constitutes the new economic rent.

Creative leadership in the new knowledge economy optimises the functionality of human capital through creative and innovation-based management strategies. All functions of the organisation need to be aligned and synthesised to establish knowledge concomitance which according to Steyn (2008:319) is imperative to perpetuate a sustainable knowledge advantage. Creative leadership and an innovative culture are vital to drive mutual knowledge engagement through the active participation of all stakeholders across the different levels of the organisation to produce an integrated repertoire of knowledge and innovation management competencies. Creative leadership drives the classification and distribution of knowledge sharing which according to Alavi *et al.* (2005:195) promotes and demonstrates new future value by maintaining continued support for a new knowledge concomitant identity to steer knowledge workers towards collaborative knowledge enablement.

This postmodern argument disputes traditional organisational theory, which is based on the view that organisations are information-processing mechanisms, processing information from the environment to add value to sustain strategic competitive advantage. Creative leadership ensures the development of learning communities as the basis to influence creativity and innovation. This extends the knowledge search beyond organisational boundaries and encourages a climate most conducive to strategic innovation. Social cohesiveness establishes multiple networks for creative exchanges, which enhance knowledge flexibility. A summary of the overall results are proffered and recommendations are made to industry for further research.

7.2 SUMMARY OF RESULTS

It was found that the intervention measures administered had a positive effect on the development of creative ability and innovation awareness among the research participants. It was also found that the relationship between creativity and managerial effectiveness is more statistically significant than the relationship between creativity and knowledge productivity. Innovative awareness also showed a stronger correlation with managerial effectiveness than with knowledge productivity. With regard to the research participant's perception on leadership collaboration in the workplace, the data indicated that responses were mainly neutral but positively correlated and agreed more with statements relating to individual knowledge capabilities and their functioning within the organisation. Responses relating to the organisation and particularly to leadership as support and enabler of the individual

knowledge worker were widely dispersed. This suggests a duality between the knowledge worker and the organisation. The results furthermore indicated that there were different levels of individual, group and organisational readiness for collaboration and diverse opinions regarding the perceived role of leadership in knowledge organisations. The perception towards an innovation culture and climate in general reveals that current leadership does not support a knowledge forum sufficiently which suggests that organisations are still traditionally productivity driven and not particularly focussed on knowledge productivity. The data revealed that a learning organisation was not actively promoted by the current leadership, thus preventing the sharing of knowledge, which is critical for establishing a learning organisation and the establishment of formal communities of practice.

The data furthermore revealed that current knowledge-based organisations were generally perceived not to be harnessing individual or the collective creative potentials of knowledge workers and are not geared towards innovation implementation. Finally, a modelling of variables revealed that knowledge productivity was driven primarily by managerial effectiveness, which in turn was driven by innovative awareness, fluency, elaboration, two-way communication and facilitated by communities of practice. These were the most important characteristics of creative leadership within the scope of this study. A definition of creative leadership is proffered and includes two-way communications, communities of *practice* supporting the expansion of creative capabilities and innovation awareness to achieve knowledge productivity through managerial effectiveness.

From the data it can be deduced that contemporary knowledge-trading organisations continue to focus on knowledge as an output based on the traditional production approach and suggests that the contemporary knowledge worker still continues to operate within traditional production management systems, which is time-driven and provides insignificant importance for creativity and innovation to establish new knowledge repositories in search of future knowledge solutions.

7.3 RECOMMENDATIONS

The following recommendations are proffered and engage in postmodern discourse to present new conceptualisations of contemporary leadership. This promotes the new corporate curriculum, which shifts the dynamics of local knowledge contexts and connects global trends. Directive approaches to decision-making and individualist

forms of leadership normally have modernist and mechanistic orientations and are disputed in this global interconnected world where a new rubric of leadership is required to absorb the discontinuous change amidst a turbulent economic environment.

7.3.1 Establishing a forum for creativity and innovation

The first research recommendation pertains to establishing of a physical space or forum for creativity and innovation to be enhanced as part of the collective strategic intent. Further research is recommended regarding functional imperatives for the establishment of fora for creativity and innovation for the achievement of knowledge solutions. New knowledge contexts are inter-organisational specific and a physical space is required for knowledge socialisation to transpire and expand effectively. Knowledge exists in the cognition of knowledge workers but is originally created in situated action, which is context-specific and relates to time, space and multiple knowledge relationships with all stakeholders. Knowledge cannot be created in a vacuum, but needs space where information is transformed into meaningful solutions through diverse interpretations to become usable knowledge. This suggests that a knowledge platform is a shared context in motion, in which knowledge is shared, created, and utilised to draw on multiple innovation opportunities. The knowledge platform provides the facility and liberty to perform knowledge conversions for purposes of the expansion of the knowledge spiral (Garvey & Williamson, 2002:56; Housel & Bell, 2001:63; Nonaka & Takeuchi, 1995:28).

The knowledge platform ignites interactions that emerge through knowledge exchanges among knowledge workers. This suggested platform is a place where the entire organization collectively shares multiple contexts to create new meanings through knowledge socialisation. The knowledge platform provides a space to re-organise meaning into networked organic configurations initiating interaction within the diverse economic environment. An organisation-wide creativity and innovation forum provides the opportunity for knowledge workers to integrate communities of practice from different functional groups to thereby build cross-departmental collaboration. Knowledge dialogues become effective vehicles to transfer innovative solutions for expanding and upgrading knowledge infrastructures, which leverages real future value (Frydman, Wilson & Wyr, 2000:28).

Further research could explore the variables regarding the inputs and outputs pertaining to the knowledge concomitance model and the role of leadership required to establish a comprehensive continuous learning programme within the forum for the development of creativity and innovation skills to identify future knowledge opportunities. Creative leadership should develop a knowledge specific communication program and commit to an innovative culture, which secures to-way communication. The development of communication and dialogue programmes could facilitate a knowledge syllabus that signifies a creativity forum for the development of creative and innovation-based strategies.

Research regarding the stimulation of knowledge narratives could add new perspectives to future knowledge management practice. Unlocking the creative potentials and energies of the organisation requires an approach, which is transparent and accommodating. Creative leadership should re-invent strategic management practice and strive to follow a balanced implementation approach based on exerting knowledge enabled decision-making which defines the innovation strategy and expands the existing creativity portfolios. Value creation should be continuously encouraged and the innovation strategy should naturally surge into organisation strategic focus ensuring a whole organisational approach for the collective achievement of competitive advantage. Innovation should become an integral part of the organisational mentality to ensure all that processes support the innovation-awareness culture.

7.3.2 Creative Leadership imbeds a conducive organisational climate and culture that appreciates the value of creative thought and innovation awareness

The second recommendation pertains to the embedding of a conducive organisational culture that appreciates the value of creative thought and innovation awareness. Further research regarding a conducive culture and climate for the facilitation and expansion of the dimensions of creativity and innovation could be explored. Culture is an important factor in the organisational learning and knowledge management process and this study provides a context for further research to indicate the critical importance of collaboration to achieve a collective organisational culture conducive to creativity enhancement. Research regarding the implementation of a new corporate curriculum is crucial to suggest methodologies to explore the importance of collaboration to achieve collective organisational vision for the

establishment of knowledge narratives and the successful entrenchment of real time cultural change.

Creative leadership should demonstrate and promote trust as an ongoing process to promote strategic intent through self-leadership. Building a knowledge culture is generally time consuming and demands immense effort. Creative leadership could be further explored to ascertain applicable methodologies for the promotion of a collaborative vision. Increased sharing of appropriately competent organisational knowledge praxis demonstrates superior levels of knowledge concomitance throughout the organisation and could be further explored to find solutions to the barriers to effective innovation management (Kanter, 1997:121; McElroy, 2002:87).

In the new knowledge economy a collaborative culture is regarded as essential to support continuous learning. Knowledge workers increase their participation within collaborative frameworks by developing creative, cognitive and intellectual competencies collectively. The continuous learning process involves all stakeholders and increases alignment towards a knowledge creating culture and can be further studied to suggest key forces for the promotion of future knowledge competitiveness.

Further research regarding creative leadership should be encouraged to explore cultural frameworks for the achievement of competitive advantage. Current knowledge management practice seems not appropriate to meet current organisational demands regarding the expansion of new knowledge and requires new mental models for optimal dissemination (Kelly, 2000:92). Communication within the knowledge organisation could impede the ability of knowledge workers to operate concomitantly as the traditional hierarchical culture of current organisations prevents attracting or retaining autonomous knowledge workers that are essential for continued success and trading of valuable implicit organisational knowledge (Lakshman, 2005:429; Neef, 2005:112).

This explorative study questions whether creative leadership holds the pivotal position in empowering knowledge workers to become successful self-managers and self-leaders (Hines & Bishop, 2006:5). Current knowledge-based organisations still seem primarily command-orientated as knowledge managers control human capital and observe the hierarchical organisation. Further research could add valuable information to propose change processes required to achieve an empowering knowledge environment.

7.3.3 Creative Leadership establishes formal communities of practice

The third recommendation pertains to the importance of establishing communities of practice. These communities are instrumental in realising knowledge strategy by activating new information domain searches for future innovation to support strategic knowledge competency. Furthermore, community-based structures assist in developing and retaining knowledge value to achieve knowledge excellence and integrate all functions of the knowledge-driven organisation as a solid support system. The generation of new ideas increases opportunities for innovation through the application of strategic conversations, which are absorbed within the respective community of practice and posted to the knowledge vault (Gundry & La Mantia, 2001:11).

Communities of practice facilitate an innovative knowledge syntax, which introduces knowledge concomitance for the establishment of a knowledge platform, as all stakeholders understand the particular knowledge vernacular. The community of experts increase access to knowledge proficiency across organisational borders and thereby instils a repository of tacit knowledge and innovative solutions to provide resources for purposive knowledge solution sharing. The community of practice assists knowledge workers to perform proficiently by offering knowledge libraries and initiating strategic alliances, which foster collective learning for the endorsement of new spirals of knowledge which according to Nonaka and Takeuchi (1995:119) is imperative for strategic advantage.

The strategic importance of communities of practice became evident in this particular study and further research is required to illustrate continued to leveraging of strategic knowledge capabilities within formal networks to ignite dynamic interactions within industry and facilitate the expansion of knowledge competence. The advantage of strategic communities is situated in the ability to facilitate the value of networked knowledge through innovative technologies and thereby embed a culture supportive of creativity and innovation (Wenger & Snyder, 2000:140).

Research in the new economy is needed to explore how creative leadership can support communities to leverage the collective imagination to create exponential innovative knowledge solutions. Communities of practice have become instrumental for knowledge capability development to increase knowledge competency and thereby effectively exploit the swiftness of market changes. The new global focus on

communities of practice is a major challenge for economising knowledge as the speed and the agility with which the knowledge-driven organisation can innovate contributes significantly to realising future strategic imperatives (Wenger, Mc Dermott & Snyder, 2002:80).

7.3.4 Creative Leadership promotes the learning organisation

The fourth recommendation pertains to the development and promotion of a learning organisation. Future research could be instrumental in providing suggestions regarding the role of leadership and avail new knowledge management praxis. Managerial effectiveness drives the success of learning through perpetual interactions among communities of practice and navigates the knowledge roles performed. Knowledge managers need to learn to manage without the direct control of knowledge content accumulation and the regulation of knowledge life cycles creating exclusive knowledge ownership. Organisational learning is the process of improving knowledge actions through understanding the diverse dynamics regarding the transformation of new innovation transposed into knowledge assets. Organisational learning enhances the development of a culture that supports the new corporate curriculum as a key strategic aspect for gaining competitive advantage. Leadership facilitates cognitive frameworks for knowledge creation to build, sustain and continuously recreate a knowledge environment through continuous social interactions, which produces novel learning opportunities (Werner, 2005:186).

Social knowledge sharing necessitates social interaction, which links communities of practice to the spiral of knowledge and fuels the learning organisation. Knowledge workers need to enact the conversion process of tacit and explicit knowledge consistently to avoid the loss of relevant creative competencies. The newly acquired knowledge creation originates within the socialisation process during which new tacit knowledge is converted through shared experiences. Tacit knowledge is complex to formalise but can be acquired only through shared experience directed through social exchanges. Future research can be useful to explore the commitment required to actively partake in communities of practice to achieve superior levels of knowledge concomitance capability and collective creative performance. Creative leadership exploits comprehensive learning within an innovation-based culture to augment exponential knowledge sharing and thereby ascertain future knowledge competitiveness (Pannel, 2005:24).

7.3.5 Creative Leadership and the establishment of a new corporate curriculum for the intelligent organisation of the future

The fifth recommendation pertains to the establishment of a new corporate curriculum for the intelligent organisation of the future. The new economical landscape requires a corporate curriculum, which develops the collective creative potentials of all stakeholders and realises that previous traditional managerial strategies and leadership methods are no longer valid. The new corporate curriculum introduces specific key business objectives to challenge modernist mindsets and endeavours to make achievable sustained organisational learning to thereby maximise participation and competitive contribution among diverse knowledge workers. The curriculum evaluates and reports new creative ideation and innovations continuously to ensure that current knowledge management results and progress are shared collectively to establish collaborative interactions within communities of knowledge praxis. Creative leadership deploys the corporate curriculum to identify and overcome barriers to collaborative interactions and develops methods to encourage and reward knowledge workers (Randeree, 2006:145, Rowley, 2003:433; Nissen, 2006:225).

The corporate curriculum introduces an integrated framework to develop a successful organisational culture, which collaboratively interacts with internal and external stakeholders to communicate competitive innovation strategies, and thereby, assert the global market arena. The new corporate curriculum could furthermore assist in organisational transformation processes as previous prototypes are being replaced by collaborative improvement of creativity and innovation levels to sustain the knowledge creation process (Kezar & Eckel, 2002a:295, 2002b:435).

7.4 RESEARCH LIMITATIONS

The research limitations will be discussed and issues pertaining to the measuring instruments used during the research process will be elaborated upon.

A concern was that knowledge workers were situated in diverse domains of knowledge work. The quantitative and qualitative instruments administered focused on managers in knowledge-driven organisations and the results obtained by administering the questionnaires at a specific period in their careers may have been

dependent on their current position within their respective knowledge speciality fields and as such, could have distorted some of the responses obtained.

Culture and organisational climate are also factors that could have influenced the behaviour of the research participants, as creativity is a new field of study, which necessitates further research. The *Baseline Managerial Behaviour Questionnaire* (Kriek, 1990) was completed by knowledge workers within diverse organisational environments and cultural settings. Knowledge managers may have responded in a manner acceptable to the specific procedural conditions applicable where participants were employed. This could have furthermore affected the managerial style and scores achieved by the individual research participants. The researcher had limited control concerning the nature of the sample as natural maturation was experienced during pre-and-post test activities and this could have impacted on the empirical value of this research.

Although the *Innovation Climate Survey* (Davila, *et al.*, 2004) has been tested extensively in the international business environment, it is not sure whether the instrument has been widely tested in the South African knowledge management environment or whether the dynamics in the South African organisational cultural environment could influence the value of the information obtained.

This study offers a review of diverse investigations concerning the *Torrance Test of Creative Thinking* (Torrance, 1984) leadership, innovation and organisational climate. The study aims to link the results obtained to the implications of a global theory for organisational creativity and innovation to ascertain the impact for achieving sustainable competitive advantage within knowledge-enabled environments. It furthermore attempted to show all the possible mediating structures that intervene in the individual and organisational creativity processes to derive new leadership solutions and proffer suggestions for future knowledge management praxis. Despite these limitations and those that might emerge, this explorative study invites intellectual discussion and scientific debate.

When organisational culture and leadership is assessed, certain information and opinions can be withheld due to intellectual property issues, privacy issues and ethical complications. Equally, the creativity dimensions of individuals could be influenced by emotional aspects like mood, cognitive factors and personality variables (Amabile, 1998:76-87). Time constraints for the applied action interventions

in the leadership, innovation, climate and organisational learning assessment constructs, could have also significantly influenced other external and internal variables that related to the results. It could become problematic to control these constructs and conditions, however the researcher acknowledged these risks during the research exploration process.

Exploration of the creativity dimensions of knowledge workers with the goal to establish an understanding of the importance of leadership and its role in the imbeddance of a culture for the expansion of knowledge combinations in this contextual landscape could impact differently within other knowledge management environments. The period of evaluation and the diverse interventions that were administered could also have proffered issues pertaining to an in-depth evaluation regarding the particular knowledge processes deployed by the respective organisations and critique is invited. The theoretical foundation was based on the following four constructs of creative leadership: innovation, creativity, culture and collaboration but could have included a variety of related constructs that could have produced different results (Wolfgang *et al.*, 2004:20).

Several administrative limitations during this research were overcome by obtaining permission and access to a large number of knowledge organisations from various industries in South Africa as well as the participation of various business schools. Furthermore as additional research becomes available, the ability to derive more general conclusions should enhance and ultimately enable a wider understanding of the theoretical application of creative leadership within knowledge management in South Africa. There is an urgent need for the establishment of theoretical models to underscore creative leadership for sustaining the economy of knowledge.

According to Mahoney (2000:241-243) many leaders in the field of knowledge management have become disconnected in the need to understand the discontinuous dynamics of the eminent knowledge economy. The grasping of the relevance and organisational significance of this dynamic science is urgently required by knowledge practitioners. This could indicate that further reported research is needed to conceptualise and suggest new views regarding future practices within knowledge management to obtain future competitive advantage in. Emerging opportunities in future knowledge management praxis require knowledge leaders to play a crucial role in building and maintaining an innovative organisational culture of

knowledge sharing. The new imperatives for leadership warrant that the entire organisation supports and promotes a knowledge culture concomitantly.

7.5 CONCLUSION

Innovation is the action available to future knowledge driven organisations and presents the opportunity to not only sustain knowledge advantage but significantly influence the knowledge industry globally. Knowledge based organisations operate within particular social contexts of increased complexity and extreme risk but are required to realise that the individual knowledge worker is the new source of economic rent. Only then can knowledge productivity exponentially increase and subsequently alleviate risk. Regardless of the level or position of knowledge workers, they ultimately possess the intangible asset that might be exploited to address future innovations and achieve sustained knowledge advantage. In the eminent knowledge economy the major challenge of sustaining sufficient coherence and integration requisite for efficient knowledge practice is increasingly pointing towards the degree of responsiveness to prompt the submission of creative ideas and the promotion of innovative implementation. This study endeavoured to stimulate managerial dialectic by contesting dominant organisational rationalities and furthermore revealed transformative possibilities - not as a postmodern iconoclasm that cynically observes the politically coercive organisational response to extreme uncertainty - but to rather suggest alternatives that may extend support to current knowledge management praxis.

Current knowledge management has become more networked through communities of practice, which added challenges to efficiently facilitate the economising of this new source of wealth. This will require new leadership rubrics to maintain coherence in optimising knowledge productivity performance as the key to redesigning managerial effectiveness for a postmodern environment. Effective management of human capital could provide knowledge environments where leadership encourages and supports innovation to establish a continuous learning culture to enable efficient knowledge sharing and dissemination. Communities of practice add extreme value to knowledge socialisation, which drives organisations and thereby spans knowledge competence to effectively employ innovative knowledge assets to maximise knowledge trading. Communities of experts could become knowledge vehicles leveraging creative expertise for innovative manipulation, which accelerates learning to compete more competitively in fast-moving knowledge environments. In this

intelligence-based economy the rules of economics have changed and new commercial realities require radically new leadership paradigms to navigate the knowledge commodity innovatively.

The proposed knowledge concomitance model endeavours to promote sagacity within the economy of knowledge and promotes creativity and innovation as essential drivers for sustaining knowledge competency. The vast value of intangible assets has changed the perception of leadership and intangible economics and is currently challenging ingrained managerial and organisational wisdom. New forms of human capital are now required to manifest tacit and intellectual capacity through creativity and innovation, rather than explicit and production-driven modalities. Traditionally productivity was best achieved and improved through the advancement of technology and division of labour. Postmodern organisational leadership is therefore required to access new innovative talent to engage acutely in creative thinking as reproduction within the old traditions of management and control no longer suffice. Knowledge productivity pursues efficiency through value creation and exponential multiplication, shifting from the visible to the invisible knowledge offering. Organisations need to conjure new aspects of leadership to harness and transform novel solutions into knowledge action, thereby creating an environment, which validates creativity and innovation as the major building blocks for future knowledge transfer and trading. This study explored the challenges of leadership in grasping future value solutions offering tools to unlock creativity and innovation for the enhancement of knowledge productivity.

Succinctly speaking, the production of novel and intelligent ideas are the gateway to new opportunities in the knowledge economy and contemporary leadership should perpetually challenge their communities of practice to seek new creative horizons. This would yield the competencies and capabilities required for improved performance, based on the individual and the collective's creative contribution. It is therefore imperative for creative leadership to introduce a new corporate curriculum and embrace radical innovative approaches, which are required in today's hyper-competitive economy. The suggested concomitant approach harnesses the creative and innovative potentials of knowledge workers to impel knowledge productivity, which has become the critical component required to sustain the economy of knowledge.

The economy of knowledge has emerged along with the recognition that real strategic value is delivered by knowledge based resources, which primarily include the intellectual and creative capabilities of knowledge workers as well as their capacity to learn and innovate new methodologies to increase knowledge productivity. Within knowledge intensive organisations an understanding of future knowledge management practice is crucial to sustain competitive advantage as knowledge value only lies in its immediacy to market and subsequent innovation potential, to remain the provider of choice. Innovation is the exploitation of a profitable opportunity assisted by new knowledge and creative ideation. This translates into real time future value propositions, which are exclusively generated by the investment made by knowledge intensive organisations. These investments translate into the creative and innovative potential of the most precious knowledge asset namely - the empowered knowledge worker.

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ANNEXURES A - E

ANNEXURE A1 – TORRANCE TEST OF CREATIVE THINKING: FIGURAL FORMS A AND B: EVALUATION TEMPLATE (TORRANCE, 1984)

Name: _____ Test Form: _____
 Date: _____
 Grade: _____ Age: _____ Sex: _____ School: _____

	Raw Score	Standard Score
1. Fluency: Act. 2 _____ + Act. 3 _____	= _____	_____
2. Originality: Act. 1 _____ + Act. 2 _____ Bonus + Act.3 _____ + Bonus _____	= _____	_____
3. Abstractness of titles: Act. 1 _____ Act. 2 _____	= _____	_____
4. Elaboration: (Circle appropriate number 1-6 for A or B)		
A {	Act. 1: 1(0-5) 2(6-12) 3(13-19) 4(20-26) 5(27-33) 6(34+)	
	Act. 2: 1(0-8) 2(9-17) 3(18-28) 4(29-39) 5(40-50) 6(51+)	
	Act. 3: 1(0-7) 2(8-16) 3(17-27) 4(28-37) 5(38-47) 6(48+)	
B {	Act. 1: 1(0-5) 2(6-13) 3(14-21) 4(22-29) 5(30-37) 6(38+)	
	Act. 2: 1(0-9) 2(10-19) 3(20-29) 4(30-39) 5(40-49) 6(50+)	
	Act. 3: 1(0-14) 2(15-24) 3(25-34) 4(35-44) 5(45-54) 6(55+)	
5. Resistance to _____ = _____	= _____	
Premature Closure Act: 2 _____ = _____	= _____	
TOTAL MEAN	= _____	_____

Ability In	Interpretation							
1. Fluency								
2. Originality								
3. Abstractness of Titles								
4. Elaboration								
5. Resistance to								
Standard Score	40	60	80	100	120	140	160	180
Percentile		2	16	50	84	98	99+	

Checklist of Creative Strengths:

- _____ 1 Emotional Expressiveness (In Drawings, titles)
- _____ 2 Storytelling Articulateness (Context, environment)
- _____ 3 Movement of Action (running, dancing, flying, flying, falling, etc.)
- _____ 4 Expressiveness of Titles
- _____ 5 Synthesis of Incomplete Figures (combination of 2 or more)
- _____ 6 Synthesis of Lines (combination of 2 or more, Activity, Form A or
Synthesis of circles (combination of 2 or more, Activity 3, Form B)
- _____ 7 Unusual Visualisation (above, below, at angle, etc)
- _____ 8 Internal Visualisation (inside, cross section, etc)
- _____ 9 Extending or Breaking Boundaries
- _____ 10 Humour (in titles, captions, drawings, etc)
- _____ 11 Richness of Imagery (variety, vividness, strength, etc)
- _____ 12 Colourfulness of Imagery (Excitingness, carthiness, etc)
- _____ 13 Fantasy (Figures in myths, fables, fairy tales, science fiction, etc)

TOTAL (Bonus)

Creativity Index Mean _____ Bonus _____ - _____

Comments:

**ANNEXURE A2 – CONVERSION OF RAW SCORES TO STANDARD SCORES FOR
COLLEGE/UNIVERSITY/ADULTS: STANDARD SCORES (TORRANCE, 1984)**

Raw Score	Fluency		Originality		Abstractness of Titles	Elaboration		Resistance to Premature		
	Form A	Form B	Form A	Form B		Form A	Form B	Form A	Form B	
1	49	55	48	58	60	64	30	37	45	40
2	52	57	52	61	65	68	37	44	50	45
3	55	60	56	65	70	73	44	51	55	50
4	58	62	60	68	75	77	51	58	60	55
5	61	65	64	72	80	82	58	65	65	60
6	64	67	68	75	85	86	65	72	70	65
7	67	70	72	79	90	91	72	79	75	70
8	70	72	76	82	95	95	79	86	80	75
9	73	75	80	86	100	100	86	93	85	80
10	76	77	84	89	105	104	93	100	90	85
11	79	80	88	93	110	109	100	107	95	90
12	82	82	92	96	115	113	107	114	100	95
13	85	85	96	100	120	118	114	121	105	100
14	88	87	100	103	125	122	121	128	110	105
15	91	90	104	107	130	127	128	135	115	110
16	94	92	108	110	135	131	135	142	120	115
17	97	95	112	114	140	136	142	149	125	120
18	100	97	116	117	145	140	149	156	130	125
19	103	100	120	121	150	145			135	130
20	106	102	124	124	155	149			140	135
21	109	105	128	128	160	154				
22	112	107	132	131	165	158				
23	115	110	136	135	170	163				
24	118	112	140	138	175	167				
25	121	115	144	142	180	172				
26	124	117	148	145	185	176				
27	127	120	152	149	190	181				
28	130	122	156	152	195	185				
29	133	125	160	156	200	190				
30	136	127	164	159		194				
31	139	130	168	163		199				
32	142	132	172	166						
33	145	135	176	170						
34	148	137	180	173						
35	151	140	184	177						
36	154	142	188	180						
37	157	145	192	184						
38	160	147	196	187						
39	163	150		191						
40	166	152		194						

ANNEXURE A3 (I) – CREATIVITY VARIABLES (TORRANCE, 1984)

Creative Variables	Coefficient of Correlation		
	Quantity	Length	Distances
Fluency	0.19	0.14	0.21*
Originality	0.24*	0.20*	0.32**
Abstractness of Titles	0.32**	0.35**	0.33**
Elaboration	0.25*	0.21*	0.29**
Resistance to Premature Closure	0.31**	0.22**	0.22**
Men of Norm Related Indicators	0.37**	0.32**	0.40**
Total number of Criterion- Referenced Indicators	0.29**	0.26**	0.40**
Creativity Index	0.39**	0.29**	0.43**

* Signifies at better then the 0.05 level

** Signifies at better the 0.01 level

Criteria Flue	Coefficients of Correlation					
	ncy	Originality	Elaboration	Abstractness of Titles	Resistance to Premature	Total Indicators
Adaptation-Innovation Inventory	0.36*	0.43**	0.26	0.12	0.05	0.36*
Creative Motivation Scale	0.34*	0.43**	0.56**	0.34*	0.23	0.41**
Physiognomic Cue Test	0.22	0.34*	0.17	0.38*	0.22	0.3
Possible Jobs	0.43**	0.31	0.35*	0.26	0.25	0.18
Rorschach Movement	0.29	0.36*	0.11	0.28	0.35*	0.36*
Rorschach Originality	0.24	0.3	0.2	0.11	0.16	0.45**
Rorschach Popular	0.04	0.02	0.15	0.17	0.16	0.05
Seeing Problems	0.35*	0.29	0.2	-0.07	0.03	0.16
Similes Test	0.42*	0.40*	0.22	0.35*	0.18	0.15
Something About Myself	0.27	0.37*	0.27	0.13	0.3	0.33
Style of Learning and Thinking Form A	0.42**	0.52**	0.36*	0.23	0.22	0.61**
What Kind of Person Are You?	0.37*	0.53**	0.46**	0.23	0.28	0.50**

* Signifies a better then 0.05 level

** Signifies a better then 0.01 level

ANNEXURE A3 (II)

“BASELINE”

(MBQ)

Management Behaviour Questionnaire

Copyright

Development and Assessment Designs

Professor HJ Kriek

EXECUTIVE AND MANAGEMENT DIMENSIONS

ORGANISATIONAL SENSITIVITY = TOTAL SCORE

Managerial:

Planning and Organising
Delegation
Control
Development of Subordinates

Supervisory:

Sensitivity
Leadership
Tenacity
Negotiation

Decision Making:

Analysis
Judgement
Creativity
Decisiveness

TECHNICAL AND PROFESSIONAL KNOWLEDGE = TOTAL SCORE

Personal:

Energy
Initiative
Tolerance for Stress
Flexibility/Adaptability

COMMUNICATION = TOTAL SCORE

= A OVERALL MANGERIAL EFFECTIVENESS = TOTAL SCORE

= B INNOVATION AWARENESS DIAGNOSTIC = TOTAL SCORE

= C KNOWLEDGE PRODUCTIVITY = TOTAL SCORE

ANNEXURE A4 – HYPOTHESIS TESTING – ONE-WAY: ANOVA (1)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
FLUENCY Fluency:	Between Groups	6426.202	2	3213.101	5.651	.004
	Within Groups	146687.599	258	568.557		
	Total	153113.801	260			
ORIGINALITY Originality:	Between Groups	9273.750	2	4636.875	7.036	.001
	Within Groups	170034.250	258	659.047		
	Total	179308.000	260			
HE Highlighting the essence:	Between Groups	498.173	2	249.087	.275	.760
	Within Groups	233815.620	258	906.262		
	Total	234313.793	260			
ELAB Elaboration:	Between Groups	3262.835	2	1631.418	2.279	.104
	Within Groups	184651.448	258	715.703		
	Total	187914.284	260			
RPC Resistance to premature closure:	Between Groups	1864.790	2	932.395	1.169	.312
	Within Groups	205844.988	258	797.849		
	Total	207709.778	260			
TOTALC Total creativity:	Between Groups	1916.763	2	958.381	2.666	.071
	Within Groups	92759.927	258	359.535		
	Total	94676.690	260			
INO Innovative awareness:	Between Groups	1.604	2	.802	1.536	.217
	Within Groups	134.680	258	.522		
	Total	136.284	260			

ANNEXURE A5 – HYPOTHESIS TESTING – T-TEST: INDEPENDENT SAMPLE TEST (1)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FLUENCY Fluency:	Equal variances assumed	.088	.768	-8.875	98	.000	-33.74000	3.80185	-41.28465	-26.19535
	Equal variances not assumed			-8.875	97.987	.000	-33.74000	3.80185	-41.28466	-26.19534
ORIGINALITY Originality:	Equal variances assumed	.733	.394	-6.071	98	.000	-29.88000	4.92207	-39.64768	-20.11232
	Equal variances not assumed			-6.071	97.634	.000	-29.88000	4.92207	-39.64814	-20.11186
HE Highlighting the essence:	Equal variances assumed	.282	.596	-4.525	98	.000	-28.90000	6.38610	-41.57301	-16.22699
	Equal variances not assumed			-4.525	96.991	.000	-28.90000	6.38610	-41.57466	-16.22534
ELAB Elaboration:	Equal variances assumed	.034	.855	-7.938	98	.000	-39.66000	4.99616	-49.57472	-29.74528
	Equal variances not assumed			-7.938	97.349	.000	-39.66000	4.99616	-49.57555	-29.74445
RPC Resistance to premature closure:	Equal variances assumed	.004	.948	-7.170	98	.000	-36.38000	5.07387	-46.44893	-26.31107
	Equal variances not assumed			-7.170	97.013	.000	-36.38000	5.07387	-46.45021	-26.30979
TOTALC Total creativity:	Equal variances assumed	.017	.895	-10.277	98	.000	-33.66000	3.27519	-40.15952	-27.16048
	Equal variances not assumed			-10.277	97.629	.000	-33.66000	3.27519	-40.15983	-27.16017
INO Innovative awareness:	Equal variances assumed	2.335	.130	-12.774	98	.000	-1.60000	.12526	-1.84857	-1.35143
	Equal variances not assumed			-12.774	97.831	.000	-1.60000	.12526	-1.84858	-1.35142

ANNEXURE A6 – HYPOTHESIS TESTING – T-TEST: INDEPENDENT SAMPLE TEST (2)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FLUENCY Fluency:	Equal variances assumed	2.965	.087	-3.666	198	.000	-14.02000	3.82382	-21.56064	-6.47936
	Equal variances not assumed			-3.666	190.603	.000	-14.02000	3.82382	-21.56244	-6.47756
ORIGINALITY Originality:	Equal variances assumed	.524	.470	-4.021	198	.000	-16.42000	4.08371	-24.47314	-8.36686
	Equal variances not assumed			-4.021	197.146	.000	-16.42000	4.08371	-24.47335	-8.36665
HE Highlighting the essence:	Equal variances assumed	.312	.577	-2.288	198	.023	-10.85000	4.74256	-20.20240	-1.49760
	Equal variances not assumed			-2.288	195.073	.023	-10.85000	4.74256	-20.20327	-1.49673
ELAB Elaboration:	Equal variances assumed	.576	.449	-2.874	198	.004	-10.97000	3.81739	-18.49796	-3.44204
	Equal variances not assumed			-2.874	195.421	.005	-10.97000	3.81739	-18.49857	-3.44143
RPC Resistance to premature closure:	Equal variances assumed	1.133	.289	-3.060	198	.003	-11.99000	3.91843	-19.71720	-4.26280
	Equal variances not assumed			-3.060	195.091	.003	-11.99000	3.91843	-19.71791	-4.26209
TOTALC Total creativity:	Equal variances assumed	.313	.577	-4.378	198	.000	-12.87000	2.93941	-18.66656	-7.07344
	Equal variances not assumed			-4.378	197.417	.000	-12.87000	2.93941	-18.66666	-7.07334
INO Innovative awareness:	Equal variances assumed	5.409	.021	-15.897	198	.000	-1.56000	.09813	-1.75352	-1.36648
	Equal variances not assumed			-15.897	191.068	.000	-1.56000	.09813	-1.75357	-1.36643

ANNEXURE A7 – HYPOTHESIS TESTING – T-TEST: INDEPENDENT SAMPLE TEST (3)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FLUENCY Fluency:	Equal variances assumed	.000	.999	.024	220	.981	.06306	2.63774	-5.13541	5.26154
	Equal variances not assumed			.024	219.999	.981	.06306	2.63774	-5.13541	5.26154
ORIGINALITY Originality:	Equal variances assumed	.022	.882	-.019	220	.985	-.06306	3.27756	-6.52249	6.39636
	Equal variances not assumed			-.019	219.986	.985	-.06306	3.27756	-6.52249	6.39637
HE Highlighting the essence:	Equal variances assumed	.007	.932	-.006	220	.995	-.01802	2.96282	-5.85717	5.82113
	Equal variances not assumed			-.006	219.997	.995	-.01802	2.96282	-5.85717	5.82113
ELAB Elaboration:	Equal variances assumed	.122	.728	-.075	220	.940	-.26126	3.48519	-7.12990	6.60738
	Equal variances not assumed			-.075	219.640	.940	-.26126	3.48519	-7.12996	6.60744
RPC Resistance to premature closure:	Equal variances assumed	.000	.984	-.019	220	.985	-.07207	3.74845	-7.45955	7.31540
	Equal variances not assumed			-.019	220.000	.985	-.07207	3.74845	-7.45955	7.31540
TOTALC Total creativity:	Equal variances assumed	.556	.457	.601	220	.548	1.37838	2.29249	-3.13967	5.89643
	Equal variances not assumed			.601	219.432	.548	1.37838	2.29249	-3.13973	5.89649
INO Innovative awareness:	Equal variances assumed	13.230	.000	-10.506	220	.000	-1.28829	.12262	-1.52995	-1.04663
	Equal variances not assumed			-10.506	193.619	.000	-1.28829	.12262	-1.53013	-1.04645

ANNEXURE A8 – HYPOTHESIS TESTING – ONE-WAY: ANOVA (2)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
FLUENCY Fluency:	Between Groups	17056.465	2	8528.233	18.578	.000
	Within Groups	118432.087	258	459.039		
	Total	135488.552	260			
ORIGINALITY Originality:	Between Groups	13299.383	2	6649.691	9.244	.000
	Within Groups	185584.487	258	719.320		
	Total	198883.870	260			
HE Highlighting the essence:	Between Groups	33034.458	2	16517.229	21.747	.000
	Within Groups	195953.680	258	759.510		
	Total	228988.138	260			
ELAB Elaboration:	Between Groups	35218.070	2	17609.035	26.869	.000
	Within Groups	169081.616	258	655.355		
	Total	204299.686	260			
RPC Resistance to premature closure:	Between Groups	53707.396	2	26853.698	38.321	.000
	Within Groups	180794.887	258	700.755		
	Total	234502.284	260			
TOTALC Total creativity:	Between Groups	27869.562	2	13934.781	43.197	.000
	Within Groups	83227.679	258	322.588		
	Total	111097.241	260			
INO Innovative awareness:	Between Groups	5.736	2	2.868	4.050	.019
	Within Groups	182.686	258	.708		
	Total	188.421	260			

ANNEXURE A9 – PEARSON CORRELATION

Correlations

		ME Managerial effectiveness:	PROD Productivity:	FLUENCY Fluency:	ORIGINALITY Originality:	HE Highlighting the essence:	ELAB Elaboration:	RPC Resistance to premature closure:	TOTALC Total creativity:	INO Innovative awareness:
ME Managerial effectiveness:	Pearson Correlation	1	.541**	.329**	.285**	.211**	.252**	.237**	.354**	.519**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
PROD Productivity:	Pearson Correlation	.541**	1	.201**	.166**	.100*	.211**	.213**	.231**	.457**
	Sig. (2-tailed)	.000	.000	.000	.000	.022	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
FLUENCY Fluency:	Pearson Correlation	.329**	.201**	1	.693**	.361**	.274**	.358**	.705**	.268**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
ORIGINALITY Originality:	Pearson Correlation	.285**	.166**	.693**	1	.427**	.385**	.295**	.748**	.258**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
HE Highlighting the essence:	Pearson Correlation	.211**	.100*	.361**	.427**	1	.441**	.441**	.742**	.232**
	Sig. (2-tailed)	.000	.022	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
ELAB Elaboration:	Pearson Correlation	.252**	.211**	.274**	.385**	.441**	1	.537**	.720**	.183**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
RPC Resistance to premature closure:	Pearson Correlation	.237**	.213**	.358**	.295**	.441**	.537**	1	.725**	.261**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
TOTALC Total creativity:	Pearson Correlation	.354**	.231**	.705**	.748**	.742**	.720**	.725**	1	.317**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522
INO Innovative awareness:	Pearson Correlation	.519**	.457**	.268**	.258**	.232**	.183**	.261**	.317**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	522	522	522	522	522	522	522	522	522

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

ANNEXURE A10 – REGRESSION: MODEL SUMMARY (1)

Model Summary

Model	R	R Square ^a	Adjusted R Square	Std. Error of the Estimate
1	.969 ^b	.939	.939	.995
2	.974 ^c	.948	.948	.918
3	.976 ^d	.952	.952	.883

a. For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.

b. Predictors: Managerial effectiveness:

c. Predictors: Managerial effectiveness;, Innovative awareness:

d. Predictors: Managerial effectiveness;, Innovative awareness;, Total creativity:

ANNEXURE A11 – REGRESSION: MODEL SUMMARY (1) - ANOVA^{E, F}

ANOVA^{e, f}

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7905.589	1	7905.589	7991.320	.000 ^a
	Residual	515.411	521	.989		
	Total	8421.000 ^b	522			
2	Regression	7983.190	2	3991.595	4740.937	.000 ^c
	Residual	437.810	520	.842		
	Total	8421.000 ^b	522			
3	Regression	8015.890	3	2671.963	3423.145	.000 ^d
	Residual	405.110	519	.781		
	Total	8421.000 ^b	522			

a. Predictors: Managerial effectiveness:

b. This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c. Predictors: Managerial effectiveness;, Innovative awareness:

d. Predictors: Managerial effectiveness;, Innovative awareness;, Total creativity:

e. Dependent Variable: Productivity:

f. Linear Regression through the Origin

ANNEXURE A12 – REGRESSION: MODEL SUMMARY (1) - COEFFICIENTS^{A, B}

Coefficients^{a, b}

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	Managerial effectiveness:	.530	.046	.486	11.619	.000
	Innovative awareness:	.281	.042	.254	6.737	.000
	Total creativity:	.010	.002	.248	6.473	.000

a. Dependent Variable: Productivity:

b. Linear Regression through the Origin

ANNEXURE A13 – REGRESSION: MODEL SUMMARY (2)

Model Summary

Model	R	R Square ^a	Adjusted R Square	Std. Error of the Estimate
1	.961 ^b	.924	.924	1.019
2	.973 ^c	.947	.946	.853
3	.974 ^d	.950	.949	.830

a. For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.

b. Predictors: Innovative awareness:

c. Predictors: Innovative awareness;, Fluency:

d. Predictors: Innovative awareness;, Fluency;, Elaboration:

ANNEXURE A14 – REGRESSION: MODEL SUMMARY (2) - ANOVA^{E, F}

ANOVA^{e,f}

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6542.397	1	6542.397	6305.158	.000 ^a
	Residual	540.603	521	1.038		
	Total	7083.000 ^b	522			
2	Regression	6704.230	2	3352.115	4602.004	.000 ^c
	Residual	378.770	520	.728		
	Total	7083.000 ^b	522			
3	Regression	6725.544	3	2241.848	3255.003	.000 ^d
	Residual	357.456	519	.689		
	Total	7083.000 ^b	522			

a. Predictors: Innovative awareness:

b. This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c. Predictors: Innovative awareness;, Fluency:

d. Predictors: Innovative awareness;, Fluency;, Elaboration:

e. Dependent Variable: Managerial effectiveness:

f. Linear Regression through the Origin

ANNEXURE A15 – REGRESSION: MODEL SUMMARY (2) - COEFFICIENTS^{A, B}

Coefficients^{a,b}

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Innovative awareness:	.464	.033	.457	14.071	.000
Fluency:	.012	.001	.352	9.080	.000
Elaboration:	.007	.001	.183	5.563	.000

a. Dependent Variable: Managerial effectiveness:

b. Linear Regression through the Origin

ANNEXURE A16 – REGRESSION: MODEL SUMMARY (3)

Model Summary

Model	R	R Square ^a	Adjusted R Square	Std. Error of the Estimate
1	.932 ^b	.868	.866	1.274

a. For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.

b. Predictors: TWO WAY COMMUNICATION

ANNEXURE A17 – REGRESSION: MODEL SUMMARY (3) - ANOVA^{C, D}

ANOVA^{c,d}

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	787.889	1	787.889	485.418	.000 ^a
	Residual	120.111	74	1.623		
	Total	908.000 ^b	75			

a. Predictors: TWO WAY COMMUNICATION

b. This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c. Dependent Variable: Productivity:

d. Linear Regression through the Origin

ANNEXURE A18 – REGRESSION: MODEL SUMMARY (2) - COEFFICIENTS^{A, B}

Coefficients^{a,b}

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
TWO WAY COMMUNICATION	.842	.038	.932	22.032	.000

a. Dependent Variable: Productivity:

b. Linear Regression through the Origin

ANNEXURE B – COLLABORATIVE LEADERSHIP QUESTIONNAIRE: HOW COLLABORATIVE IS YOUR ORGANISATION? HOW COLLABORATIVE IS LEADERSHIP WITHIN YOUR ORGANISATION? (STOKES & LOGAN, 2004)

ABOUT YOURSELF

1. What industry are you currently working in?-----

2. What position are you in?

Supervisor	
Lower management	
Middle management	
Upper management	
EXCO	
Other, please specify	

Please indicate your opinion of the following statements by ticking in the relevant box.

1. The information that I bring to my job and to my working group is appropriate, current, and complete for the task at hand.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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2. I can clearly articulate and explain my needs and position to others.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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3. I take the needs of others into account when communicating with them.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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4. I enjoy diversity in opinions as it causes more richness in group discussions as opposed to conflict.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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5. Management and the organization listen to and respond to my and my working groups ideas.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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6. I try to stimulate two way communication.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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7. My manager keeps me informed about important and current information.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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8. The communication infrastructure in my organization is adequate to provide meaningful collaborative communication with all members of the organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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9. I frame, organize and communicate my ideas to others so that they may be easily understood.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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10. I have access to all the information I require to do my job.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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11. My customers have access to the correct information so that I can serve them better.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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12. I am able to search for information and have access to information from both organizational and world wide resources from my desktop.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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13. I am able to organize and build knowledge structures both independently and with others.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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14. I can evaluate my own competencies as well as those of others.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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15. I am able to source knowledge that I might not process.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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16. I value learning and am disciplined enough to do the work necessary for effective learning.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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17. Continuous learning is encouraged, facilitated and provided by my organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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18. I can share and integrate my knowledge easily with others.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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19. I am aligned with my organization's and working group's vision.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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20. The group's objectives are well defined and understood by all members and aligned with the values of the members.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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21. I am motivated to find and enhance similarities and common elements between my working group and the organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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22. There is alignment and integration of the data, information and knowledge available to the group.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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23. The members of the work group are aligned to work together collaboratively.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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23. I feel supported by my workplace community.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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24. I enjoy my community of work colleagues.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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25. I am enthusiastic to work with others rather than work on my own.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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26. There are sufficient opportunities to have face-to-face meetings and regularly scheduled events with co-workers.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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27. Face-to-face meetings are supplemented with electronic communications.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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28. My co-workers consistently provide support and advice.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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29. My co-workers have a sense of allegiance and loyalty to the organization as a whole and to each other.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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30. I have the analytical and creative thinking skills to contribute to the vision of my working group and my organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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31. I have a clear vision of my own professional career.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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32. I believe strongly in my organization's vision.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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33. The organization's vision is dynamic.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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34. The organization's vision has captured my imagination and passion.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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35. There is a clearly defined vision for my organization's operations.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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36. The members of my organization have as set of shared values.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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37. The whole organization is included in the visioning process.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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38. I have the necessary decision-making skills to take an active and effective leadership role in my team.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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39. I take the opportunity for leadership roles by initiating actions appropriate to my position and experience.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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40. I am willing and prepared to take on more responsibilities.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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41. Senior management is committed to making the company a collaborative organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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42. My manager encourages me to be innovative and to present my ideas.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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43. In my company all staff are encouraged to make important work decisions and initiate strategic actions both individually and as part of a working group.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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44. My company provides me with the opportunity for online/workshop training in leadership skills.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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45. I trust that the members of my team have the skills and abilities to overcome the challenges that we must face to meet our objectives.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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46. I trust that the members of my work group will behave in a reliable manner.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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47. I trust that the members of my work group will be supportive and not take advantages of my vulnerabilities.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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48. My manager trusts the quality of my work by giving me increasingly challenging assignments.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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49. I believe that the organization treats me fairly.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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50. Trust and respect are core values of my organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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51. The goals that must be achieved, either as a group or as individuals, are clearly set.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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52. I am personally committed to the goals set by both my working group and the organization.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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53. I am actively involved in setting the goals that I must achieve.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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54. The work group sets goals collaboratively.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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55. I can voice my opinion on how the working group's goals are determined.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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56. I proactively involve my customers to develop jointly a business strategy.

<u>STRONGLY</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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<u>DISAGREE</u>		<u>AGREE</u>		
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57. I have a clear understanding of the organizations business strategies.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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58. I have a clear understanding of the work group's strategies.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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59. The work group's strategies are derived through collaborative consultation with the group members.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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60. There is adequate communication flow between different working groups in developing overall organizational strategies.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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61. The strategies of the different working groups and departments are aligned and coordinated.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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62. My team encourages all members to actively participate in creating the project objectives.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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63. I have an active role in formulating the project or account objectives that I am responsible for achieving.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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64. The tactical objectives of individual working groups are communicated to each other.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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65. The tactical objectives of working groups are coordinated.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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66. The tactical objectives of the organization are clearly defined and communicated.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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67. My work team has the resources necessary for achieving the tactical objectives for which it is responsible.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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68. I have gaps in my technical skills that inhibit me from carrying out my responsibilities.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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69. It is easy to work with my co-workers on a day-to-day basis.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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70. My day-to-day work is exciting and challenging.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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71. Each team member is encouraged to express their views on how the project is going so that the team is quickly alerted to potential problems in the implementation process.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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72. I have the communication and collaboration tools necessary to work with my team members throughout the organization on a daily basis.

<u>STRONGLY DISAGREE</u>	<u>DISAGREE</u>	<u>NEITHER DISAGREE NOR AGREE</u>	<u>AGREE</u>	<u>STRONGLY AGREE</u>
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ANNEXURE C – INNOVATION CLIMATE SURVEY (DAVILA, ET AL., 2004)

Innovation Climate Survey	Scoring				
	1	2	3	4	5
Leadership does not openly encourages future innovations					
Management has a closed attitude regarding external alliances and strategic innovative partnerships					
Management expects knowledge workers to be totally devoted to the development of the organisation					
Leadership puts little emphasis on the management of people for innovative interactions					
Formal vertical communications within the organisation are the norm					
Planning focuses on rationing resources					
Management decides without much input from other levels of the organisation					
Innovation budgets are much less than the competition					
The leadership offers no career guidance with appropriate power and titles for innovators					
Leadership's knowledge of real customer needs is inferior to that of our competitors					
Decision processes are elaborate and formal and do not encourage innovative inputs					
Leadership's innovation knowledge is inferior to that of our competitors					
The organisational culture is planning orientated creating analysis paralysis syndrome					
Few resources are available for new innovative ventures including availability of time					
The senior leadership is unaware of individual creativity and its important relationship with future innovations and competitive advantage					
Management has low tolerance for uncertainty and flexibility					
Management is looking for short-term profits					
Management is not tolerant of failure					
Leadership creates confidence and direction for future innovations and value propositions to be harnessed					
Project failures are systematically reviewed and analysed for lessons to be shared through the learning organisation					
Leadership drives service and product innovatively and is attuned to the market					
Product and service managers tend to underestimate and under use technology for innovation					
Customers and experts are never directly associated with the innovation process					
Management has high tolerance for innovative knowledge workers					
The organisation is able to make balanced choices regarding national and global innovations					
Innovative successes are neither publicized nor discussed					
Management explicitly looks for innovation					
Leadership does not encourage departure from the corporate norm					
Management encourages the systematic use of independent innovation task forces for special purposes					
Specific Incentives exist for creative and innovative workforce					
The leadership philosophy favours decentralization where knowledge workers can make decisions close to where the action is					
Individual project innovation championing is encouraged and rewarded					
High innovative value ideation is practiced in this organisation					
Leadership sets reasonable innovative result expectations on new products and ventures					
The human capital in this organisation are highly self-motivated and driven through creativity and innovation					
Leadership has a clear vision of the role and focus of innovation in achieving its objectives					

ANNEXURE D – SEMI STRUCTURED INTERVIEW SCHEDULE

Theme	Discussion	Question
Theme One	Knowledge culture	Is there a knowledge culture in the organisation that supports innovation? Discuss.
<i>Theme Two</i>	<i>The learning organisation</i>	Can your department or organisation be called a learning organisation? Discuss
<i>Theme Three</i>	<i>Support for creativity and innovation</i>	Discuss the support given for creativity and innovation in your department or organisation? Discuss.
<i>Theme four</i>	<i>Organisational support for creativity and innovation</i>	What support do you give for creativity and innovation in your department? Discuss.
<i>Theme five</i>	<i>Innovation diagnostic</i>	What proportion of output is innovative (building on old concepts) and what proportion is creative (novel inventions)? What proportion of new creations (both innovative and creative) is implemented? Discuss.
Theme six	Innovation and strategic knowledge management	Give your opinion on the need for innovation strategic knowledge management transformation of the: A) Workplace B) Human capital? Discuss
Theme seven	Competitive intelligence and innovation	Does competitive intelligence and innovation connect knowledge management with the knowledge futures in your organisation? Discuss.
Theme eight	Strategic intent and knowledge management	Is the strategic intent of knowledge management aligned with all functions throughout the organisation? Discuss.
Theme nine	Strategic Objectives	What do you believe the strategic function of innovation is in your organisation? Discuss.
Theme ten	Comprehensive innovation impressions	What are your overall impressions of the current innovation situation within your organisation? Discuss.

ANNEXURE E – NON DIRECTIVE INTERVIEWS

Theme	Discussion
Theme 1	Leadership, innovation and creativity in the knowledge-based organisation: Discuss
Theme 2	Characteristics required for creative leadership: Discuss