THE PRINCIPLES AND PRACTICE OF KNOWLEDGE MANAGEMENT

by

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I dedicate this dissertation to my late husband Casper Squier.

DISSERTATION SUMMARY

Title: The principles and practice of knowledge management.

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Keywords: Explicit knowledge, intangible assets, intellectual capital, knowledge assets, knowledge economy, knowledge management, knowledge techniques, knowledge technologies, learning organisation, tacit knowledge.

The aim of the study is to provide a theoretical background to knowledge management and related concepts and to determine the current situation with regard to knowledge management implementation in industry, specifically financial organisations.

Organisations all over the world are realising that knowledge in the form of expertise and competence is the organisation's most important asset and that its quality and availability affect all aspects of the organisation. More and more executives and managers realise that in modern organisations, all available work is centred on knowledge-intensive activities and the organisation's success is directly related to the quality and relevance of these activities, particularly through knowledge workers' willingness to use that knowledge to the advantage of the organisation.

Knowledge management is seen as a business process, integrating knowledge, people, processes, strategies, techniques and technologies. It is the process through which organisations create and use their institutional or collective knowledge assets. Knowledge management is not only about managing these knowledge assets but also about managing the processes that act upon the assets. These processes include developing knowledge and preserving knowledge within organisations, including learning processes and the management of information systems.

Knowledge management techniques and technologies play an important role in supporting knowledge management processes and activities. Technology and people related techniques bring to knowledge management the ability to carry out knowledge management processes quickly, efficiently and cost-effectively, making it an enabling solution.

When implementing a knowledge management initiative the knowledge management strategy is closely linked to the overall business strategy. The study proposed a knowledge management implementation framework. The emphasis of the framework was on the management of the organisation, people, processes and infrastructure as well as the alignment of the knowledge management strategy to the overall business strategy of the organisation.

Based on the theoretical background, three well-known financial organisations were used in a case study to investigate the current state of knowledge management implementation in industry. Finally conclusions, based on the literature survey and the case studies are given. From the conclusions, gaps in the literature have been identified and addressed in the discussion of possible further research possibilities.

SAMEVATTING VAN VERHANDELING

Titel: The principles and practice of knowledge management.

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Sleutelterme: Eksplisiete kennis, intellektuele kapitaal, implisiete kennis, kennisbestuur, kennisekonomie, kennishulpbronne, leergierige organisasie, nie-tasbare bates.

Die doel van die studie is om die teoretiese agtergrond en verwante terme van kennisbestuur te beskryf, asook die huidige stand van kennisbestuur-implementering in organisasies te bepaal, met spesifieke verwysing na finansiële instellings.

Dwarsoor die wêreld besef organisasies dat kennis in die vorm van kundigheid en vaardighede die organisasie se belangrikste bate is. Die kwaliteit en beskikbaarheid van kennisbronne het ‘n invloed op alle aspekte van die organisasie. Al hoe meer bedryfsleiers en bestuurshoofde besef dat werk in moderne organisasies op intellektuele aktiwiteite gesentreer is. Die instelling se sukses word direk verbind met die kwaliteit en relevansie van hierdie aktiwiteite, veral deur die kenniswerker se bereidwilligheid om die intellektuele bates tot voordeel van die organisasie te bestuur en ten volle te benut.

Kennisbestuur word beskou as ‘n besigheidsproses wat kennis, mense, prosesse, strategieë, tegnieke en tegnologie integreer en bestuur. Dit is ‘n proses waardeur ‘n organisasie intellektuele bates skep en aanwend tot voordeel van die onderneming.

Kennisbestuur behels die vermoë om nie net kennisbates te bestuur nie maar ook die besigheidsprosesse wat daarmee verband hou. Kennisbestuursprosesse sluit die skepping, beskerming en hergebruik van kennis in, asook leerprosesse en die bestuur van inligtingstelsels.

Kennisbestuurstegnieke en -tegnologie speel ‘n belangrike ondersteuningsrol tydens die prosesse en aktiwiteite van kennisbestuur. Tegnologie en mens-gesentreerde tegnieke dien as hulpmiddel om kennisbestuursprosesse vinnig, doeltreffend en koste-efektief uit te voer. Dit vereis innoverende oplossings wat alleenlik relevante inligting aan gebruikers beskikbaar stel.

Wanneer ‘n kennisbestuursinisiatief geïmplementeer word, vorm die besigheidstrategie ‘n integrerende deel van die kennisbestuurstrategie. Die studie beveel ‘n raamwerk vir die implementering van ‘n kennisbestuursinisiatief aan. Die raamwerk fokus op die bestuur van die organisasie, mense, prosesse en infrastruktuur, asook ‘n skakeling tussen die kennisbestuurstrategie en die besigheidstrategie van die organisasie.

‘n Gevallestudie waartydens insette van drie bekende finansiële instellings met bevindinge in die literatuur vergelyk is, is gebruik om die huidige stand van die implementering van kennisbestuur in die bedryf te ondersoek. Gapings wat in die studie geïdentifiseer is, is aangespreek in die bespreking van verdere navorsingsmoontlikhede.

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- My Creator, for granting me the insight, knowledge and ability to complete this study.

GLOSSARY

(Partially adapted from: http://www.kit.nl/specials/html/km_glossary.asp)

Term	Description
Balanced scorecard system	A method of measuring performance of a firm beyond the typical financial measures. It links corporate goals and direct performance measures in a framework specific to a firm, and is one method of measuring the impact of knowledge management.
Best practice	A way of doing something, which has produced good results and that could be adapted to another situation.
Communities of practice	Communities of people who share the same experience or who are trying to achieve a similar goal.
Data	A set of objective facts about events. Data are transformed into information by adding value through context, categorisation and corrections. Data are facts and figures without context or interpretation.
Enablers of knowledge management	Techniques and technologies, which ensure that knowledge is created, captured, shared and leveraged.
Explicit knowledge	The knowledge that is there for all to find and use in, for example, databases and publications.
Information	Facts with context and perspectives.
Intellectual capital	The sum of everything everybody in a company knows that gives them a competitive edge in the market place (Stewart, 1991).
Knowledge	Information, which provides guidance for action. It comprises a fluid mix of experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experience and information.

Knowledge Management implementation strategy	A high-level plan that aims at supplying the organisation with the knowledge resources that it needs to carry out its vision and goals and is closely link with the overall business strategy
Knowledge worker	Employees who are actively involved in the process of using techniques and technologies for collecting data, analysing information, communicating and acting on it.
Learning organisations	Where people continually expand their capacity to create the results they truly desire, where new patterns of thinking are nurtured and where people are continually learning how to learn together.
Tacit knowledge	Resides in people's heads or knowledge that a person does not make explicit.

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CHAPTER 1

INTRODUCTION TO THE RESEARCH SUBJECT

1. INTRODUCTION TO THE RESEARCH SUBJECT

"To share an asset, usually it must first be divided. But knowledge is one of the few assets that multiplies when shared." Gaurav Dalmia

1.1 Introduction

Many organisations are becoming increasingly concerned with organisational knowledge and their use of knowledge to create and make quality products, deliver quality services, and maximize the efficiency of their internal operations. The fact that knowledge is a company's asset no longer lies in the ability to store and retrieve them, but in the management of its usage in a dynamic knowledge era.

Managers all over the world are realising that knowledge in the form of expertise and competence, is the organisation's most important asset and that its quality and availability affect all aspects of the organisation. More and more executives, managers and professionals realise that in modern organisations, all valuable work is centred on knowledge-intensive activities and that the organisation's success is directly related to the quality and relevance of these activities, particularly through knowledge workers' expertise and willingness to use that expertise to the advantage of the organisation.

There is thus little doubt that we have entered the knowledge economy, where what organisations "know" is becoming more important than the traditional sources of economic power - capital, land, plant and labour (Drucker, 1992a: 6). Natural resources, once the most valuable asset of the organisation, have been replaced by the knowledge, created by and embedded in the knowledge worker's mind. Unlike industrial age assets that were managed on the principle of scarcity, the knowledge asset, if managed and exploited appropriately, increases through sharing.

The late twentieth century has been described as the Age of Information, where an emphasis was placed on the transformation and re-engineering of organisations.
It has already been suggested by authors such as Davenport (1999); Drucker (1992a); Hamel (1995); Nonaka (1998a); Prusak (1996); Skyrme (1998a); Sveiby (1995);

Wiig (1993, 1994, 1995b) and many others that the twenty-first century will be the Age of the Mind. The focus on the externally observable features of information will have been replaced by a completely different set of rules, customs and modes of delivery. People will use knowledge according to judgements made on a different set of criteria - the criteria for the management of knowledge.

The challenge to manage the knowledge assets of the organisation introduces a new business philosophy, knowledge management, which aims at leveraging a knowledge worker's true knowledge-creating potential. Knowledge management is about connecting people to people and people to information to create a competitive advantage, as illustrated in Figure 1.1.

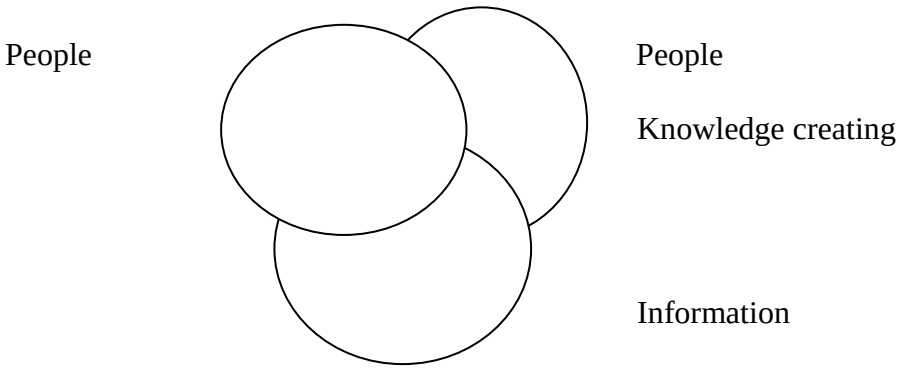

Figure 1.1: Connecting people to people and people to information.
(Arthur Andersen, 1998.)

The intersection of these connections is where creativity spawns innovation (knowledge creating) and thus establishes competitive advantage. This is referred to as connectedness, and is accomplished through knowledge management.

Knowledge management provides the perspectives, approaches and the vision to put investments made in data, information, best practices, proven processes and a wealth of experiences to better use, where it is needed most in the organisation.

Knowledge management directs decisions on where, how and when to create, accumulate, update and account for new knowledge. It allows an organisation to best leverage its key asset, the knowledge of their employees (Wiig, 1993: 18).

The major advantage of a knowledge management initiative is that it leverages knowledge to improve organisational innovation, productivity responsiveness and competency. Knowledge management is an evolving business process that proactively manages all internal and external information to create a competitive advantage that is linked to core business objectives and goals. From these perspectives knowledge management focuses on eight important activities:

- Survey, develop, maintain and secure the intellectual and knowledge resources of the organisation.
- Promote knowledge creation and innovation by all employees in the organisation.
- Determine the knowledge and expertise required to perform work tasks, organise them, make the knowledge available, “package” it (for example training courses, manuals or knowledge-based systems), and distribute it to the relevant points-of-use.
- Modify and restructure the enterprise/organisation to use knowledge most efficiently, take advantage of opportunities to exploit knowledge assets, minimise knowledge gaps and maximise the value-added knowledge content of products and services.
- Create and monitor future and long-term knowledge-based activities - in particularly new knowledge investments - based on the unique priorities and needs of different organisation environments and clients.
- Safeguard organisational and competitive knowledge and control the use of knowledge to ascertain that only the best knowledge is used and that it is not given away to competitors.
- Provide knowledge management capabilities and knowledge architecture to support active knowledge management as part of the organisation’s practices and culture.

- Measure performance of all knowledge assets and account for them to fulfil the organisation's mission and objectives (Wiig, 1993: 18-30).

In today's competitive business environment, many organisations are struggling to meet or keep up with the demands put upon them by their clients, competitors, investors and regulators. With the globalisation of business, no organisation is immune to this pressure. Organisations that excel at leveraging their knowledge assets in a systematic way will create and sustain a competitive advantage that will exceed the current and future demands placed upon them.

Given that competitiveness in the marketplace is essential for survival of an enterprise and that the ability to sustain innovation is recognised as a strategic advantage, it has become evident that knowledge must be generated and integrated within an organisation. Such knowledge is essential for successful learning and innovation (or knowledge creation) within the organisation.

The real problem however, lies in pinpointing such assets, as most corporate knowledge is tacit and has to be made explicit before it can be evaluated, enhanced and shared. Explicit knowledge is articulated knowledge - knowledge that has been formalised by way of speech, text, visual graphics and compiled data. Tacit knowledge includes the intuition, perspectives, beliefs and values that people form as a result of their experiences. It is the management of tacit and explicit knowledge that permits enterprises to find ways of making meaning from knowledge (Barclay and Murray, 1998).

To manage the abovementioned valuable knowledge assets of a company appropriately, a holistic management approach is recommended. Such an approach encompasses the creation of a knowledge management strategy that is synchronised with the organisation's mission and strategy, and the development of an appropriate mindset that creates cultural norms – trust, sharing, common goals, lust for learning and acceptance of change, that represent every aspect of the organisation.

This study, like many others attempts to define the new rules for managing the organisation's most valuable resource, the knowledge worker with his/her knowledge.

1.2 Problem statement and objectives of the research.

The knowledge that supports an organisation's processes and decision-making capability is an absolutely vital resource, but it is a resource that usually suffers from under-management. In the past knowledge has been managed through human resources and/or information technology divisions and it has not received the direct attention of management that it deserves and needs. This is a major cause of sub-optimal performance and is a source of risk.

The two major reasons for this situation are:

- A poor understanding of what knowledge is; and
- The lack of a suitable approach to managing it to best advantage.

The aim of the dissertation is to provide a theoretical background to knowledge management and related concepts and to determine the current situation with regard to knowledge management implementation in industry, specifically financial organisations.

In order to achieve this aim the following objectives will be addressed:

- To give a brief explanation of what is meant by the core concepts involved in knowledge management.
- To understand the theory and philosophy behind knowledge management.
- To identify the role of organisational learning and the learning organisation within a knowledge management context.
- To give a brief overview of the enablers of knowledge management, namely knowledge management techniques and technologies.

- To propose a framework for implementing a knowledge management initiative.
- To determine what is the current state of knowledge management implementation in industry in South Africa, with specific reference to financial organisations.

Financial organisations are seen as an important area for study as they play a major role in the changing fortunes of the South African economy as instruments of government monetary policy. A literature review indicated that financial organisations have been ranked first amongst the leading industries implementing knowledge management initiatives (see Figure 7.1). Financial organisations regard the knowledge of their employees and technological investment as the keys to generating competitive advantage and maintaining their threatened domination of the market for financial services.

1.3 Research methodology

The research study followed a qualitative research approach. In qualitative research numerous forms of data are collected and examined from various angles to construct a meaningful picture of a multifaceted situation. Qualitative research focuses on phenomena that occur in natural settings and involve studying those phenomena in all their complexity (Leedy & Ormrod, 2001: 147).

According to Peshkin, cited in Leedy and Ormrod (2001: 148) qualitative research studies typically serve one or more of the following purposes:

- They can reveal the nature of certain situations, settings, processes, relationships, systems or people.
- They enable the researcher to (a) gain insights about the nature of a particular phenomenon, (b) develop new concepts or theoretical perspectives about the phenomenon and (c) discover the problems that exist within the phenomenon.

- They allow a researcher to test the validity of certain assumptions, theories or generalisations within real-world contexts.
- They provide a means through which a researcher can judge the effectiveness of particular practices or innovations.

Both non-empirical and empirical research designs were followed. The non-empirical research consisted of a literature review, which provided an overview of the most important concepts in the field of knowledge management. It also served as background for the empirical research conducted.

The empirical research consisted of case studies. Case studies are usually qualitative in nature and aim to provide an in-depth description of a small number (fewer than 50) of cases (Mouton, 2001: 149). Powell (1998: 49) is also of the opinion that in contrast to most survey research, case studies involve intensive analyses of a small number of subjects rather than gathering data from a large sample or population.

According to Powell (1998: 49) a variety of data collection methods are usually employed in case studies, for example questionnaires, interviews, observation and the analysis of documents. For the purpose of this study two data collection methods were used, namely questionnaires and interviews.

A **questionnaire**, which Webster's new collegiate dictionary (1990) defines as "A *set of questions for submission to a number of persons to get data…*" , offers several important advantages over other methods or instruments for collecting data. Among them are the following:

- The questionnaire tends to encourage frank answers and help to eliminate interviewer bias.
- Questionnaires are usually relatively inexpensive to administer and can be completed in the respondent's own time.

A questionnaire (see Appendix A) aimed primarily at senior personnel of three financial organisations was used because the study considers the impact of knowledge management implementation mainly from the point of view of top managers and chief knowledge officers. An electronic version of the questionnaire was sent to 30 designated representatives of three financial organisations, thus 10 respondents from each organisation. A detailed cover letter was included in order to explain the purpose of the study to the respondents.

For the purpose of this study structured questions, also known as closed questions, have been used. Closed questions limited the responses of the participants to stated alternatives. Respondents were offered a set of answers from which they were asked to choose the ones that most closely represented their views.

Face-to-face interviews were conducted with one senior representative of each of the financial service organisations. Face-to-face interviews can be regarded as an interpersonal-role situation in which an interviewer asks respondents questions designed to obtain answers pertinent to the objective of the study (Powell, 1998: 109).

According to Babbie (1990: 91) the greatest advantage of face-to-face interviews is flexibility. The interviewer assesses attitudes and opinions more readily, by recording non-verbal as well as verbal behaviour. One of the most important aspects is that the interviewer is in a position to keep the respondents interested and responsive until the end of the interviews. The interviewing technique encourages the use of closed or open-ended questions, thus enabling the researcher to obtain far more interesting and in-depth answers. Notes were made during the interviews.

In both instances the purposive sampling method was used to construct a representative sample from the total group. Purposive sampling proceeds on the belief that the researcher knows enough about the population and its characteristics to handpick the sample (Leedy & Ormrod, 2001: 219).

Information obtained from questionnaires and during interviews was analysed using the content analysis method. According to Powell (1998: 175) content analysis is essentially a systematic, objective, quantitative analysis of the occurrence of words, phrases, concepts etc. in books, journals, videos and other kinds of materials. Content analysis was used, for example, to determine how frequently specific answers appeared in the questionnaires or during the interviews.

1.4 Demarcation of the study

Although the aim of the study was to be comprehensive in a rapidly developing field such as knowledge management, it was impossible to be anywhere near exhaustive in terms of a literature review. New titles in the knowledge management field are being published daily, as a cursory glance at Amazon.com's website will confirm. Therefore some of the latest developments and practices in the field of knowledge management were not included in the study.

Technology is seen as just one element in knowledge management, albeit an important one. This study deliberately omitted in-depth technical discussions of specific knowledge management technologies, as these warrant a study in their own right. Reference was made to a range of technologies that have been employed in various companies, but the emphasis was primarily on the matching of knowledge processes with appropriate technologies.

Measurement, be it of knowledge itself, of a organisation's intellectual assets or of the success of knowledge management initiatives, is another area that was not be included in this study, because the many different measurement metrics that are available also warrant a comprehensive study on their own.

1.5 Division of chapters

The research study is subdivided into eight chapters. Besides **Chapter 1**, which includes the research problem and research methodology and the demarcation of the study, the dissertation is structured into the following chapters:

- **Chapter 2:** A brief explanation of the core concepts involved in knowledge management, namely data, information and knowledge.
- **Chapter 3:** A literature study of the theory behind knowledge management. Knowledge management is defined and the current state of knowledge management in organisations is discussed. Then the relationship between knowledge management and information management is given. subsequent sections in the chapter cover the knowledge-based organisation, the driving forces behind knowledge management, principles, barriers, advantages and activities of a knowledge management initiative. Finally the different approaches to knowledge management are discussed.
- **Chapter 4:** A clear link between learning, knowledge and change are discussed. Then an overview of organisational learning is provided, covering the following aspects: definitions of organisational learning, principles of organisational learning, the organisational learning context and learning in organisations. The next section covers the learning organisation with specific reference to what a learning organisation is, discussing the characteristics of a learning organisation, learning organisations versus traditional organisations, advantages of a learning organisation and learning organisation frameworks and models. Finally the distinction and relationship between organisational learning and learning organisation are discussed, and the learning organisation and organisational learning are placed within a knowledge management context.
- **Chapter 5:** First a brief overview is given of the role of knowledge management techniques and technologies to support knowledge management processes and activities, and then the different techniques and technologies to support knowledge management are discussed.
- **Chapter 6:** A framework for the implementation of a knowledge management initiative is presented, based on the findings of a literature survey and the recommendations of Rubenstein-Montano *et al.*
- **Chapter 7:** A report on the findings of three case studies on the current state of knowledge management implementation initiatives in three financial organisations.

- **Chapter 8:** In conclusion a discussion of the main findings that have been obtained in the study is given, by drawing together the results of the previous chapters. Recommendations are made for further research.

CHAPTER 2

KNOWLEDGE AS A CONCEPT

2. KNOWLEDGE AS A CONCEPT

2.1 Introduction

"*Knowledge has become the key economic resource and the dominant – and perhaps even the only source of competitive advantage."* Peter Drucker

In today's economy, knowledge is associated with people, money, leverage, learning flexibility, power and competitive advantage. Knowledge is more relevant to sustained business than capital, labour or land. Knowledge is more than justified true belief and is essential for action, performance and adoption. Knowledge provides the ability to respond to new, unknown and strange situations. However, it remains one of the most neglected assets in organisations (Allee, 1997: 3-6).

A holistic view considers knowledge to be present in ideas, judgements, relationships, and concepts. Unlike data and information, knowledge is never static but is continually shaped inside peoples' heads by experience, reasoning and the inflow of new stimuli.

Knowledge is what people know, there is no knowledge without someone knowing it. While knowledge can exist outside a person's head, in the form of organisational processes, products, services, facilities and systems, it still requires the intervention and interaction of humans to render it of any value. To be of value, knowledge must be constantly changing and self-generating, inseparable from the people who create, develop, share and transmit it. Humans need to remember they, and not computer systems hold the key to knowledge creation.

According to Nonaka (1994) the one sure source of lasting competitive advantage is knowledge. Successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation and embody it in new technologies and products. These activities define the knowledge creating company, whose sole business is continuous innovation.

Individuals need to articulate new knowledge and to combine it with existing knowledge, in order to share it with other groups or departments to create organisational knowledge.

Organisational knowledge is created through a continuous dialogue between the tacit and explicit knowledge of employees. Four patterns of interaction involving tacit and explicit knowledge are identified (Nonaka, 1998a). There is also a range of characteristics, levels and forms of knowledge that must be acknowledged during the knowledge creation process (Depres & Chauvel, 2000).

While individuals develop new knowledge, organisations play a critical role in articulating and expanding that knowledge. The ability to create and share knowledge will be the number one factor for success in the 21st century. Drucker's (1993) oft-repeated statement that "knowledge has become the key economic resource and the dominant and perhaps even the only source of competitive advantage" stresses the urgency of taking knowledge seriously. As the world begins to fill with "knowledge workers", creating and sharing knowledge in new ways within knowledge-based businesses, the global economy looks much different than it did just ten years ago.

This chapter addresses the fundamental concepts around which the research study is built. The following specific issues will be discussed:

- The knowledge era.
- Data, information and knowledge
- Types of knowledge.
- Knowledge creation and knowledge conversion processes.
- Knowledge as an intangible asset.
- Organisation of knowledge.
- The use of knowledge in organisations.

The chapter will be concluded with an overview of the main conclusions that were reached.

2.2 The knowledge era

It is widely observed that the society, in which people live in today has gradually been turned into a "global knowledge society" (Bell, 1990; Drucker, 1992a; Toffler, 1993). The knowledge society is a concept that has often appeared in the literature worldwide in recent years. The new era has also been referred to by various other authors as: knowledge paradigm or to see the world from a knowledge perspective (Sveiby, 1987); knowledge economy (Quinn, 1992); knowledge revolution or knowledge capital era (Allee, 1997); knowledge era (Savage, 2000).

Whatever name the "knowledge era" goes by, it is rewriting the rules of business and forcing a radical rethink of the corporate value and business models of past eras. The origins of today's focus on knowledge can be traced back to key influences over the past centuries.

The key influences to the old economy in past eras or societies were the classical factors of production: land, labour and capital. The operating model during that time was one of scarcity. Enterprises wanted to have as much control over the classical factors in the sense of managerial control (Savage, 2000).

During the nineteenth century, society moved from working primarily on farms and as single artisans (labourers, mechanics and craftsmen) producing products one at a time, to working in factories, producing hundreds of copies of a product at the same time. The driver of the economy changed from land to capital. Factories produced wealth. People who worked there carried out instructions for making wealth. Instructions were passed down an organisational hierarchy and performance monitoring was passed up (Toffler, 1990).

In the last forty years, organisations and workplaces changed again. Suddenly information and technology were more important than physical capital. A company that was smarter in getting the most use out of a physical device (e.g. microchips and compact disks containing information) was more successful than those that did not invest in technology.

The “information economy” or “information society” had a profound effect on the nature of the workplace. The information economy added information and technology as the prime factors of production and the economic model changed from one of scarcity to one of abundance or more than enough.

One of the effects of technological change has been the creation of a heightened information awareness throughout society, but especially within the business community. The realisation that information is an important, personal, organisational and social resource that can be capitalised has market value and requires effective organisation, has shifted attention to the content of information systems and the uses and applications of information. Information began to be treated like a commodity, and as one which does not deplete on consumption, can be easily replicated or mass-produced and has the features of a social good (Savage, 2000).

Since 1990 knowledge has become an important factor in economic life. Knowledge is now the prime ingredient of what organisations buy and sell. It is the raw material with which employees work. Today knowledge is an indispensable asset of organisations that cannot be set aside. Knowledge is seen as fundamental to future business success. Enterprises have become more knowledge-conscious and this is a trend that is expected to intensify over time (Skyrme, 1997: 4-7).

According to Skyrme (1997: 2) there is a growing number of examples that illustrate the critical role and value of knowledge in organisations. Research shows that companies that have developed a deep understanding of the role of knowledge in business, treat it like an asset, nurture and exploit it and are gaining significant business benefits as a result.

The key findings in research (Drucker, 1993, Nonaka 1998a, Wiig, 1993) include the following:

- Knowledge is fundamental. It is a key factor for achieving competitiveness virtually in every industry.
- Knowledge is flexible, has power and contributes to deliver higher customer value from product development to customer service.

- Knowledge is the basis for and the driver of the global knowledge economy.
- Market conditions and customer needs are changing at such a rate that companies need to respond with creativity and innovation.
- Several new perspectives of the value of knowledge and capital have emerged in business, such as knowledge assets, knowledge capital and knowledge value added.

The above-mentioned fundamentals are changing the business landscape and the focus on knowledge is sharpening. The ever-increasing importance of knowledge in society calls for a shift in thinking concerning the value of knowledge. It also raises questions about how organisations process knowledge and more important how knowledge is created. Such a shift in general orientation will involve a reconceptualisation of the knowledge hierarchy - information versus knowledge – and of the organisational knowledge creation process.

"The only thing that gives an organisation a competitive edge – the only thing that is sustainable – is what it knows, how it uses what it knows and how fast it can know something new" (Prusak, 1996: 6).

2.3 Data, information and knowledge

In the business world employees need data, information and knowledge for problem solving, decision-making processes and to create new knowledge. Access to these concepts comes in a vast number of ways.

Data, information and knowledge are derived from reading, talking to colleagues, databases, and from experiencing and noticing things in the environment. No one method is necessarily more important than the others, but will depend on the context of the scenario. What is important is how organisations create, access, share and use data, information and knowledge. The extent to which the organisation can be said to be efficient is the extent to which it applies available data, information and knowledge. The final step would be to move from knowledge to wisdom. Wisdom can be thought of knowledge that has been applied.

The task of defining these concepts, especially knowledge, has received attention for many years. Lately, the question of the precise nature of data, information and knowledge has been raised anew, not only in information science but also in organisational environments. Knowledge is also an interdisciplinary field and incorporates many disciplines such as philosophy, economics, management, information technology, human resources and artificial intelligence, to name a few (Nonaka, 1994: 12-13).

The wide variety of perspectives and definitions, which are available illustrate that data, information and knowledge are used quite differently, depending on context and intention of use. A basic problem in connection with these concepts is that they can also be used interchangeably (Wilson, 1996: 2-4). Information and knowledge can be seen as closely related in complementary stages along the same road. As such they perform essential roles in the problem-solving and decision-making processes.

Wilson (1996:1-9) presents a useful explanation of the relationship between information and knowledge with the "processing hierarchy" in Figure 2.1. He shows that by selecting data information can be produced; by selecting and combining information, knowledge can be generated; from this decisions can be made and action taken.

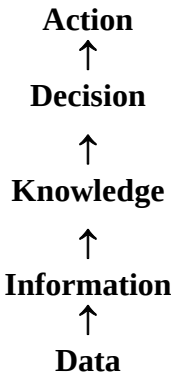

Figure 2.1: The processing hierarchy: data, information and knowledge in a hierarchy based on decision-making and problem solving (Wilson, 1996: 4)

According to Debons (1988: 5) data, information, knowledge and wisdom can be viewed as part of a continuum, one leading into another, each the result of actions on the preceding, with no clear boundaries between them. The continuum is illustrated in Figure 2.2.

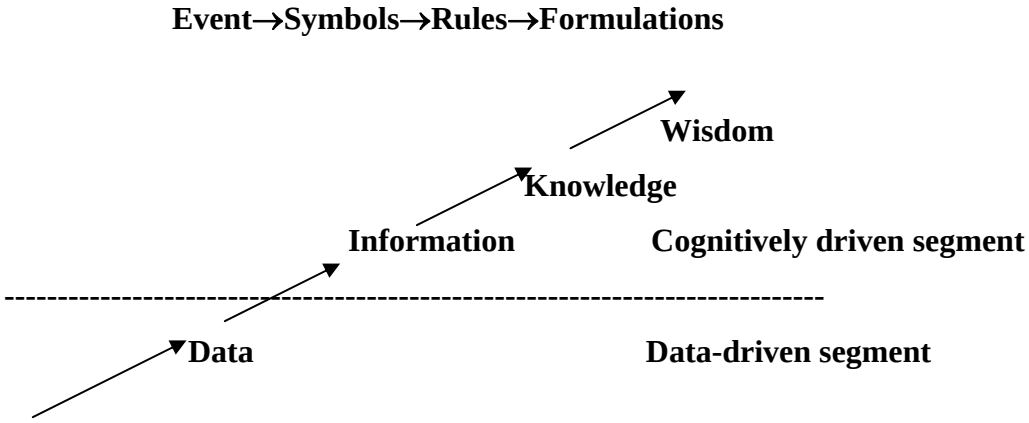

Figure 2.2: The knowledge continuum (Debons, 1988: 5)

The **event** is an occurrence, some condition or change in the state of the world. This state or condition has to be represented if humans have to deal with it. Invented **symbols -** numbers, letters, glyphs or pictures - become representations of the event. Rules are used to organise such representations and to generate a **datum** (singular) or **data** (plural). Data are perceived when one or more senses are stimulated. When a person is exposed to these stimuli, he/she becomes aware (a state of consciousness) of data about the event.

At this point, **information** has been acquired. He/she is now informed. Being informed means that he/she is aware of some occurrence, but nothing else. Humans can respond to this information in a number of ways: they can store it in their minds (called memory) or they can record or enter in a computer file. This physical or cognitive representation of data is called **information.**

When meaning or understanding is applied to awareness, higher cognitive processes are involved. When such processes are applied, a person senses that he/she

understands and can apply what is understood to those things that require resolution. This understanding enables people to analyse situations and to put things into their proper perspective. Thus when he/she goes beyond awareness (by own intellectual actions), **knowledge** has been obtained. Knowledge can be given physical representation by packaging it in books, records or databases. The ultimate step in the knowledge continuum is **wisdom,** which always involves the inclusion of values in judgement (Debons, 1988: 6-10).

The sequence data → information → knowledge→ wisdom sequence represents an emergent continuum. Although data is a discrete entity, the progression to information, to knowledge and finally to wisdom does not occur in discrete stages of development. One progresses along the continuum as one's understanding develops. Each transformation (e.g. symbols to data, data to information) represents a step upward in human cognitive functioning (Debons, 1988: 9).

According to Harris (1996: 1): "*… the lowest level of known facts is **data**. Data has no intrinsic meaning. It must be sorted, grouped, analysed and interpreted. When data is processed in this manner, it becomes information. **Information** has a substance and a purpose. However, information does not have meaning. When information is combined with context experience, it becomes **knowledge**".*

Knowledge is the combination of information, context and experience. Context is an individual's framework for viewing life. This includes influences like values, religion, cultural heritage and gender. Experience is previously acquired knowledge. When knowledge is transferred from one person to another, the **knowledge** is drawn into the receiver's context and experience. The knowledge is interpreted according to the receiver's context and experience (Harris, 1996: 4).

Turban and Frenzel (1992: 10-12) approach data, information and knowledge from a computer science and specifically an artificial intelligence perspective:

- Data refers to numeric or alphanumeric strings that by themselves do not have meaning. These can be facts or figures to be processed.
- Information is data organised so that it is meaningful to the person receiving it.
- According to the two authors knowledge has several definitions:

  - Understanding
  - A clear and certain perception of something
  - Learning
  - All that can be perceived by the mind
  - Practical experience or skill
  - Cognisance and recognition, and
  - Organised information applicable to problem-solving

Once again knowledge is internal to the human being and therefore subjective whereas information and data remain external and objective.

According to the above-mentioned authors data, information, knowledge and wisdom can be seen as a continuous whole, each is followed by the other and the degree of human involvement divides the concepts. However, a symbiotic relationship exists between information and knowledge (Snowden, 1999: 11). Evidence of this symbiotic relationship can be found in Nonaka and Takeuchi's SECI model (see Figure 2.3).

Regardless of whether data, information and knowledge are seen as a continuous whole or as a symbiotic relationship, the following concepts form the foundation of this study:

- **Data:** Letters, numbers, lines and symbols used to represent events and their state, organised according to formal rules and conventions

- **Information:** The cognitive state of awareness (as being informed) given representation in physical form (data). This physical representation facilitates the process of knowing

- **Knowledge:** The cognitive state beyond awareness. Knowledge implies an active involvement and understanding and the ability to extend the level of understanding to meet life's contingencies. Knowledge can also refer to the organised record of human experience given physical representation (books, reports).

2.4 Types of knowledge

Organisations need to distinguish between various types or categories of knowledge contents. One reason why it is necessary to categorise knowledge according to type is that it may be used to indicate which type of knowledge is more suitable to management than others. Every task or skill also has a specific type of knowledge associated with it. Many different categorisations of knowledge are possible.

Nonaka (1994: 17) and Wiig (1993: 148) distinguish between various types of knowledge, namely personal knowledge, public knowledge, shared knowledge and organisational knowledge. The various types of knowledge are discussed here.

2.4.1 Personal knowledge

Personal knowledge is the combination of an individual's experiences and expertise. An organisation cannot create knowledge without individuals. According to Nonaka (1994: 18) organisations have to support creative individuals and have to provide a context for such individuals to create, develop and share their knowledge. Personal knowledge exists in an individual's mind and is used unconsciously in work and daily life.

According to Allee (1997) personal knowledge is seen as a "web" of knowing where many thoughts, feelings, concepts, ideas and beliefs are woven together. Personal knowledge is arranged according to a person's mental models of how the world is working. If this sorting mechanism does not operate efficiently "information overload" is experienced - the pressure of having too much to absorb and understand. In contrast information can also be "hard to find" and somehow difficult to retrieve.

Personal or tacit knowledge is the most basic form of knowledge. In most cases, it is detailed, complete and integrated knowledge. Wiig (1993: 147) indicates that the two other types of knowledge - public knowledge and shared knowledge - are derived from personal knowledge through long-term knowledge acquisition and codification.

2.4.2 Public knowledge

Public knowledge is generally available in the public domain. Polanyi (cited in Wiig, 1993: 148-150) describes public knowledge as articulated knowledge. Public knowledge is shared broadly and taught routinely. Public knowledge is more general and abstract and less detailed than personal knowledge. It often requires extensive personal interpretation and personal knowledge before it can be used. At times it may be even incomplete and incongruent (e.g. newspaper stories).

2.4.3 Shared knowledge

Shared knowledge consists of knowledge of all types and is more detailed than public knowledge. It is knowledge that is shared among individuals or professionals in a specific domain or field. Shared knowledge is of great importance in business and in industry (Wiig, 1993: 150)

Shared knowledge often deals with how a particular type of work should be performed and is structured as the “know-how” of organisations. This knowledge form also includes knowledge that is embedded in technology, work practices and patents. According to Wiig (1993) shared knowledge and embedded knowledge constitute the major knowledge assets of any organisation.

2.4.4 Organisational knowledge

Organisational knowledge is a combination of shared and personal knowledge. Organisational knowledge is embodied in two main forms – in products and processes. One of the challenges facing those who lead knowledge initiatives in their

organisations is how to classify and codify knowledge. Theorists offer many classifications. For example Wiig (1993: 147) lists four main types:

- Factual knowledge – facts, data, observations
- Conceptual knowledge – concepts, intuition, insights
- Expectational knowledge – judgement, hypotheses, expectations
- Methodological knowledge – procedural knowledge

Factual knowledge is retrieved from memory and is knowledge of what people "know to be true". Conceptual knowledge entails abstract models of the world for complex situations, built from observations and available facts and data. Expectational knowledge is accumulated experiences and associations.

Beliefs are formed by expectations and based on perspectives and confirmed data. Methodological knowledge provides the meta-knowledge for how to think and reason within a particular context.

Savage (1999) used a much simpler language in his categorisations: know-why, know-what, know-who and care-why. Quinn, Anderson and Finkelstein (1996: 71-83) describe four types of knowledge that incorporate some of Savage's categorisations:

- Cognitive knowledge (know-what) – the basic mastery of a discipline.
- Advanced skills (know-how) – beyond book learning into practical execution.
- Systems understanding (know-why) – "a deep knowledge of the web of cause and effect", the ultimate expression of which is high intuition.
- Self-motivated creativity (care-why) – the knowledge and motivation to succeed.

Know-what is the basic sense of knowing and represents experience. Know-how is the knowledge of how to get things done. Some of this knowledge is made explicit in organisation procedures. In practice, much of this knowledge is "tacit" and in people's heads. Know-why allows individuals to go about unstructured tasks in the most

appropriate ways. An example is of doing what is right for a customer rather than slavishly following procedures. Care-why is the knowledge and motivation to succeed (Savage, 1999).

There is, however, another dimension of knowledge that is more closely aligned in theory and practice. According to Taylor (1996) knowledge is formulated in the minds of individuals through experience. Knowledge is shared between groups and communities through shared experience and through the transfer of knowledge, both tacitly and explicitly.

Polanyi first made such a distinction in the 1960s, but it also forms one of the central structures of Nonaka and Takeuchi's viewpoint and is widely quoted by various other practitioners. According to Nonaka and Takeuchi (1995: 5-9) explicit knowledge is formal "codified" knowledge conveyed from one person to another in systematic ways:

"*Explicit knowledge can be expressed in words and numbers and can be easily communicated and shared in the form of hard data, scientific formulae, codified procedures or universal principles."*

Such knowledge is seen as being only the tip of the iceberg. Nonaka and Takeuchi (1995: 8) describe tacit knowledge as something not easily visible and expressible. Tacit knowledge is highly personal and hard to formalise. Subjective insights and intuitions fall into this category of knowledge.

"It is hard to formalise… difficult to communicate… deeply rooted in action and in an individual's commitment to a specific context… captured in the term 'know-how'. It consists of mental models, beliefs and perspectives so ingrained that we take them for granted, and therefore cannot easily articulate them" (Nonaka & Takeuchi, 1995: 9). The transfer of tacit knowledge throughout an enterprise involves complex processes including the conversion from tacit to explicit knowledge, and vice versa (see 2.5).

The above-mentioned categories are helpful in allowing practitioners to categorise and position knowledge in organisations. However, at this stage of development, most practitioners appear to be working most consciously only along one dimension – wrestling with the practical problems of making the tacit knowledge explicit. Consideration of the other types or forms of knowledge can provide important insights into unlocking knowledge potential.

2.5 Knowledge creation and knowledge conversion processes

As noted earlier, many authors and practitioners are influenced by the work of Nonaka and Takeuchi and particularly the concepts they have developed around tacit and explicit knowledge.

Nonaka and Takeuchi (1995: 18) view organisational-knowledge creation as an interaction between tacit and explicit knowledge. They see tacit and explicit knowledge working in both directions, in a continual movement. This process, which they call **knowledge conversion**, is a communal process. They suggest that as knowledge is socialised and shared, it passes through four different modes of knowledge conversion. In these four modes the flow of knowledge moves from tacit to explicit to tacit once again, through the knowledge spiral of knowledge creation.

Nonaka and Takeuchi (1995: 59-64) (see Figure 2.3) define four modes of knowledge conversion processes:

- Tacit-to-tacit (socialisation) – where individuals acquire new knowledge directly from others.
- Tacit-to-explicit (externalisation) – the articulation of knowledge into tangible form through dialogue.
- Explicit-to-explicit (combination) – combining different forms of explicit knowledge, such as that in documents or databases.
- Explicit-to-tacit (internalisation) – such as learning by doing, where individuals internalise knowledge from documents into their own body of experience.

2.5.1 From tacit to tacit

Sometimes, one individual shares tacit knowledge directly with another. Part of the one's tacit knowledge becomes part of the other's own tacit knowledge base. One important point to note here is that an individual can acquire tacit knowledge without language. Apprentices work with their mentors and learn not through language but by observation, imitation and practice. In a business setting, on-the-job training uses the same principle.

According to Nonaka (1994: 19) the key to acquiring tacit knowledge is experience. Without some form of shared experience, it is difficult to share each others thinking processes. This process of creating tacit knowledge through shared experience is called **socialisation.** On its own, **socialisation** is a rather limited form of knowledge creation, because the knowledge never becomes explicit, it cannot be leveraged by the organisation as a whole.

2.5.2 From tacit to explicit

The third and fourth modes of knowledge conversion relate to patterns of conversion involving both tacit and explicit knowledge. These conversion modes capture the idea that tacit and explicit are complementary and can expand over time through a process of mutual interaction. This interaction involves two different operations. From tacit to explicit. One is the conversion of tacit knowledge into explicit knowledge, which is called **externalisation.** This mode is important for the entire knowledge-creation process in that tacit knowledge becomes explicit.

2.5.3 From explicit to explicit

An individual can also combine pieces of explicit knowledge into a new whole. Individuals exchange and combine knowledge through such exchange mechanisms as meetings and telephone conversations. According to Nonaka (1994: 19) the reconstruction of existing information through sorting, adding, recategorising of

explicit knowledge can lead to new knowledge. This process of creating explicit knowledge from explicit knowledge is referred to as **combination.**

2.5.4 From explicit to tacit

New explicit knowledge is shared throughout an organisation. Employees begin to internalise it – that is, they use it to broaden, extend and reframe their own tacit knowledge. **Internalisation** is the process from explicit into tacit knowledge. Internalisation is the process of embodying explicit knowledge and it is according to Nonaka (1994: 20) closely related to learning by doing. The new knowledge created through combination is internalised into individual tacit knowledge again.
Thus it becomes part of the tacit knowledge base in the form of shared mental models or technical know-how, becoming valuable knowledge assets.

Figure 2.3 Four modes of knowledge conversion (SECI Model)
(Nonaka & Takeuchi, 1995)

The model with its four modes is called the SECI Model after the first letter of each of the conversion types. In the SECI Model, all four modes need to be realised as an integrated process of knowledge creation. Unless shared knowledge is articulated, it cannot be easily leveraged by the organisation as a whole. The process remains partial

and incomplete if any of the conversion modes is omitted or no balance among them is achieved.

In the knowledge-creating company, all four of these patterns exist in dynamic interaction, a kind of spiral of knowledge. Externalisation (converting tacit knowledge into explicit knowledge) and internalisation (using that explicit knowledge to extend one's own tacit knowledge base) are the critical steps in this spiral of knowledge. The reason is that both require the active involvement of the self – that is, personal commitment (Nonaka, 1998a: 21-47).

Because tacit knowledge includes mental models and beliefs in addition to know-how, moving from the tacit to the explicit is really a process of articulating one's vision of the world – what it is and what it ought to be. When employees invent or learn new knowledge they are also reinventing themselves, the company and even the world around them.

To convert tacit knowledge into explicit knowledge means finding a way to express the inexpressible. Unfortunately, one of the most powerful management tools for doing so is also among the most frequently overlooked: the store of figurative language and symbolism that employees can draw from to articulate their knowledge and insights (Nonaka, 1998a: 28-31).

This idea, describing the movement of knowledge from tacit to explicit, from individual awareness to communication between people, is a continuous spiral. This process of knowledge generation goes on indefinitely through time. Thought and knowledge "have to be seen as one unbroken totality of movement" (Bohm, 1983: 49-50)

2.6 Knowledge as an intangible asset

It is now widely recognised that knowledge assets are the key requirement for securing competitive advantage in the knowledge economy. Yet the physical and

institutional differences between tangible assets and knowledge assets remains poorly understood.

According to Huang (1997) intellectual capital consists of:

"Information, knowledge, assets, experience, wisdom and/or ideas that are structured to enable knowledge sharing for reuse and to deliver value to customers and shareholders."

Bukowitz and Williams (1999: 2) start with a dictionary definition of asset:

"*Asset: a useful or valuable quality, person or thing; an advantage or a resource. A valuable item that is owned. Assets: Accounting: the entries on a balance sheet. Showing all properties, tangible and intangible and claims against others that may be applied directly to cover the liabilities of a person or business, such as stock or goodwill".*

To define intellectual or knowledge asset, they merge the definition of asset with the accounting definition, creating a hybrid that is specific to assets derived from knowledge:

"Intellectual or knowledge asset: anything valued without physical dimensions that is embedded in people is derived from processes, systems and the culture – brands, individual knowledge, intellectual property and all forms of organisational knowledge."

The difference between knowledge assets and assets as they are defined in accounting is that knowledge assets are not always owned by the organisation – for example in a tacit form in the mind of the employee, it may or may not be an asset to the organisation – whereas assets as they are defined in accounting are owned by the organisation.

Organisations are evaluated in financial terms. The double entry accounting system, which is used to account for a company's assets and liabilities, was invented in 1494 by Laca Pacioli, in a world where everyone was either a farmer or shopkeeper. Aside from the addition of specialised reports such as balance sheets, income statements and cost accounting, the scheme has not changed in 509 years (Stuart, 1997b: 8).

The problem with the old accounting system is that it only recognises tangible assets. When an organisation acquires **tangible assets** like a computer, the cash is used and the corresponding value is shown as an **asset** on the balance sheet. In accountancy terms, there has been a negative cash flow but neither profit nor loss in the profit & loss account (Sveiby, 1987: 1).

When an organisation invests in **intangible assets** like know-how, accountants in many countries do not allow the company to bring the value into the balance sheet. The investment therefore is corresponded by an "invisible" equity. The investment shows as both a negative cash flow and a loss in the profit & loss account (Sveiby, 1987: 1).

The accounting system has no way to recognise a company's intellectual assets. The components of cost in a product today are largely Research & Development, intellectual assets and services. The old accounting system, which tells us the cost of material and labour, is not applicable (Stuart, 1997b: 6).

The affect of this is that companies are often sold for many times their book value - thus for many times their physical assets – based on the perceived value of their intangible assets. On the books, this amount is listed as "goodwill", but somehow that is not really an adequate representation.

2.6.1 New measures for knowledge assets

Consideration of the above criticisms and difficulties has led to serious consideration of new measures – both of an organisation's valuation and its overall performance, and also to link management actions to these measures. According to Skyrme (1997:

134) a useful starting point is to determine what are the intangibles that account for the difference between an organisation's financial value and its market value. This difference is largely intellectual capital.

A group of three leading practitioners – Saint-Onge of Canadian Bank, Edvinsson of Skandia and Petrash of Dow Chemical – have developed a model of a company's intellectual capital (Edvinsson, 1999). They divide it into three categories:

- **Human capital:** The knowledge and skills of individuals. A company always has much more knowledge and expertise than it realises and many companies are very poor at realising and exploiting it.
- **Structural capital:** The physical means by which knowledge and experience can be shared - what is left when the employees go home at night – databases trademarks and the organisation's processes.
- **Customer capital:** The organisation's ongoing relationships with its customers – its ability to clearly understand what the customer wants, is critical.

Brooking (1999: 30) uses a slightly different breakdown. The first three – human-centred assets, structural assets and customer property assets – map closely to Edvinsson's model, but Brooking adds a fourth – market assets. Market assets represent value created in the marketplace. Part of this value is broad based and the result of image, often developed over many years. Many brands, such as Coca-Cola are worth millions today.

Once the knowledge assets have been identified, the second step will be to capture and organise them – to make the tacit explicit and to create a process for doing this on an ongoing basis. It is only then that companies can begin to "manage" their knowledge assets and optimise their inherent value.

For most companies, measuring and publicly accounting for all intangible assets is an idea whose time has come. Identifying, capturing and managing the critical knowledge assets – those that give a company a competitive edge – is something that

all companies should actively pursue. The technology and methodology are available. Only organisational cultures and the mindsets of employees need to change to share existing knowledge and to create new knowledge.

2.6.2 The economic value of knowledge

From long-term economic and societal perspectives, knowledge and its use is the engine that drives the process that makes it possible for us to earn our living and maintain our lifestyle. All the other resources, raw materials and economic wealth, are only of value when we apply our knowledge to create valuables from them. Knowledge is of the utmost importance in many different ways. It is important for an organisation's operation and competitive advantage and it is important for continued survival. Knowledge is a basic economic good.

"*Possession of property is exclusive; possession of knowledge is not exclusive, for the knowledge which one man has, may also be the possession of another"* (Powell, cited in Wiig, 1993:137).

Powell (cited in Wiig, 1993: 138) made this statement more than one hundred years ago. It is a relevant perspective when we think about the economics and value of knowledge – how knowledge is created, made available, traded and exchanged. According to Powell knowledge is non-exclusive and can be shared between many individuals without loss of content. When knowledge is used to create products and services, knowledge is not depleted in the same way as other resources. Use of knowledge leads to better insights and creation of new knowledge with greater value. In other words, knowledge is not a depletable resource – it increases in value when used. Knowledge that is not used is gradually forgotten, to disappear unless stored in a repository, which is made readily accessible.

In the competitive world, the market value of knowledge is a function of its exclusivity. For example, when we apply closely held knowledge to generate products or services, we can obtain a competitive advantage in the market place. The knowledge provides us with the capability to be in the forefront, and the knowledge

becomes highly valuable. If such knowledge is broadly shared, the competitive advantage disappears, and its value is reduced. Once knowledge becomes "standard knowledge" – highly essential to an organisation and widely available to all competitors – its value may remain high since omitting its use can have negative effects unless other alternatives can be found (Wiig, 1993: 137-141).

2.7 Organisation of knowledge

Before knowledge can be managed it must be useful, accessible and organised. Knowledge needs to be organised according to the general purpose that is planned for its use. Since knowledge may be use for different purposes, the same basic knowledge may be organised in different ways for each use.

Humans cannot organise knowledge in their minds by transferring it from one part of the brain to another, or store knowledge that they have organised in different ways in more than one location in the brain (Wiig, 1993: 106).

When knowledge is organised, it is dealt with in many ways. As it grows and its organisation improves, its characteristics also change. These changes must be observed in order to understand the quality of the knowledge that is dealt with in a particular situation. This is true for knowledge that is held in the mind as well as for knowledge that is stored in knowledge bases (Wiig, 1993: 106-107).

2.8 The use of knowledge in organisations

Knowledge is increasingly recognised to underlie the success of all enterprises. It is the agent that generates visions, the ingredient that drives people's reasoning, and the capability that leads to intelligent behaviour. Knowledge is the factor that creates value for the organisation and it is judged to be the most valuable asset that an organisation has.

In order to drive the best value from knowledge – to ensure the best success for organisations – organisations need to manage it. To manage knowledge, employees need to know "enough" about it and all the relevant aspects that pertain to identifying its present state, handling any problems, envision and create knowledge-related opportunities, and making the required changes that will bring about the desired results (Prusak, 1996: 6).

Over the last decades in all work with knowledge-related activities and the people who are concerned with them, it was found that there is inadequate understanding of what knowledge is, how it is used, and how it can be managed. Chief executive officers indicate that they very much would like to manage knowledge – but do not always know how. Knowledge professionals try to do the best they can but need additional insights before they understand what knowledge is, how it is used, and what can be done to improve present situations and practices.

The more people know, the easier it is to learn and to provide quality work. Therefore organisations should provide their employees with better knowledge and insights into what knowledge is and give them better understanding of thinking about thinking. These capabilities help individuals and organisations alike and can lead to:

- Improved learning and ability to stay ahead of competition and changes in the world.
- Better problem solving and decision-making.
- More innovation and greater creativity.
- Higher quality knowledge work.
- Improved knowledge embedded in products and services.
- More effective networking and collaboration.
- Greater vigilance and energetic behaviour. (Wiig, 1993: 7)

All these capabilities are critical for organisations to be durable leaders and provide value to their owners, excellent products and services and highly rewarding and productive work environments for their employees.

Knowledge becomes a resource that can be stored and reused by employees at any time and anywhere. Each individual then becomes empowered with the total knowledge of that organisation, and that has an impact on the organisation as a whole.

2.9 Summary

All the economies of the past were based on natural resources as the means of production and the employment of hard capital in the form of buildings, gold-based currencies and machines. Agriculture and industrial economies are economies of scarcity, based on finite resources. Today, the new knowledge economy is based on an infinite resource – ideas. Employees still have physical inputs into production processes, but the input that gives the greatest competitive advantage is knowledge.

Knowledge also does not behave the same way as other resources. Knowledge, as ideas, replicates endlessly. It is an infinite resource. Natural resources deplete with use. Knowledge expands with use. If a natural resource is sold or given to another it is at the expense of whoever had to give it up. However, sharing knowledge allows both parties to not only retain the resource but to amplify and expand it through the exchange process itself.

Knowledge – the insights, understandings and practical know-how that all possess – is the fundamental resource that allows people to function intelligently. Over time, considerable knowledge is also transformed into other manifestations – such as books, technology, practices and traditions – within organisations of all kinds and in society in general. These transformations result in cumulated expertise and when used appropriately, increased effectiveness. Knowledge is one factor, if not the principal factor, that makes intelligent personal, organisational and societal behaviour possible.

Organisations that know how to give employees the organisational knowledge they need – at a point and time needed – can position themselves to compete more effectively and succeed much faster. Many organisations have vital knowledge resting with one individual and do little to make this knowledge more generally available.

Organisations that harness and manage their intellectual capital can apply that asset to their business challenges and opportunities.

CHAPTER 3

THE THEORY OF KNOWLEDGE MANAGEMENT

3. THE THEORY OF KNOWLEDGE MANAGEMENT

"Globalization has placed businesses everywhere in new and different competitive situations where knowledgeable, effective behaviour has come to provide the competitive edge…." Karl M. Wiig

3.1 Introduction

From the previous chapter it is clear that knowledge is the basis for, and the driver of, our post-industrial economy. Knowledge is the full utilisation of data and information, coupled with the potential of people's skills, competencies, ideas, intuitions, commitments and motivations. In today's economy, knowledge is more relevant to sustained business than capital, labour or land. For knowledge to be of value in organisations it must be focussed, current, tested, shared and managed.

The knowledge that supports an organisation's processes and decision-making capability is an absolutely vital resource, but it is a resource that usually suffers from under-management. This is a major cause of sub-optimal performance and is a source of risk for organisations. The two major reasons for this situation are:

- A poor understanding of what knowledge is; and
- The lack of an appropriate management approach to knowledge.

The major issues about knowledge are that it is:

- Vital to the continued operation and development of organisations and their future plans and objectives;
- Expensive to acquire and valuable once you have acquired it; but
- Intractable: difficult to understand, assess, obtain, retain, share and protect; thus, difficult to manage (Barclay & Murray, 1997: 6).

According to Taylor (1999: 14) organisations also suffer from specific characteristic problems associated with knowledge:

- **Knowledge bottleneck:** A particular skill or expertise is lacking or is in short supply, causing a bottleneck that restricts operations or workflow.
- **Corporate amnesia:** Organisations fail to retain knowledge acquired or lessons learned in the past. The people who had the knowledge leave and no retrievable records remain.
- **Wasted resources:** Since the organisation does not really know what knowledge resources it has, it fails to capitalise on potential new initiatives and keep on reinventing the wheel every time. All to often one part of the organisation repeats work of another part simply because it is impossible to keep track of, and make use of knowledge in other parts.

Organisations need to know:

- What their knowledge assets are; and
- How to manage and make use of these assets to get maximum return.

Most traditional company policies focus on the tangible assets of the company and leave unmanaged their important intangible knowledge assets.
In business terms, the following happens:

- Some knowledge resources are under-utilised or wasted.
- Some knowledge resources are over-used.
- The growth and development of the organisation is restricted.

Despite the vital nature and value of knowledge, its apparent intractability has also meant that it has not always received the direct attention of management that it deserves and needs. Knowledge has usually been only indirectly managed through human resources and information technology initiatives.

In today's fast-paced society an organisation's knowledge base is quickly becoming its only sustainable competitive advantage. As such, this resource must be protected,

cultivated and shared among members. Until recently organisations could succeed upon the individual knowledge of a handful of strategically positioned individuals. However, when competitors promise more knowledge as part of their services the competition is over. Why? Because organisational knowledge does not replace individual knowledge, it complements individual knowledge, making it stronger and broader. Thus, the full utilisation of an organisation's knowledge-base, coupled with the potential of individual skills, competencies, thoughts, innovations and ideas will enable a company to compete more effectively in the future (University of Texas, Online).

This chapter provides an overview of the existing theory and key aspects of knowledge management. Knowledge management as a concept is defined, the current state of knowledge management is discussed and the relationship between knowledge management and information management is described. An overview is given of what exactly a "knowledge-based organisation" is, together with a discussion of the driving forces behind knowledge management. The principles, advantages and barriers of knowledge management for organisations are described and finally knowledge management activities and the various approaches to knowledge management are considered.

3.2 Knowledge management defined

Many of the principles of knowledge management have historical roots in a variety of disciplines. Similar ideas with different names have evolved in all these disciplines that are contributing to knowledge management. Knowledge management is thus a cross-disciplinary domain and draws from a wide range of disciplines and technologies (Barclay and Murray, 1997: 10-17). These include:

- **Cognitive science:** Insights from "how we know" will certainly improve tools and techniques for gathering and transferring knowledge.

- **Expert systems and artificial intelligence:** These technologies continue to be applied widely, and the lessons practitioners have learned are directly applicable to knowledge management.
- **Library and information science:** Classification and knowledge organisation that make libraries work will be more vital as knowledge workers are inundated by knowledge in business.
- **Simulation:** Knowledge management expert Sveiby (1993) suggests "simulation" as a component technology of knowledge management, referring to computer simulations and manual simulations e.g. one system by another.

This is only a partial list. Other technologies include electronic publishing technology, hypertext, the World Wide Web, helpdesk technology, full-text search and retrieval systems and semantic networks.

The cross-disciplinary domain results in a confusion of terminology from these different disciplines. Interpretations and use of the terminology may also differ according to duties and functions, for example managers, practitioners and technologists may have their own perspectives on what knowledge management is. This makes a clear-cut definition of knowledge management a difficult task.

The application of traditional management processes to knowledge within an organisation would be the most obvious definition. Traditional management processes include planning, organisation, co-ordination and control. The nature of knowledge defies control. Therefore such an approach is irrelevant and inappropriate.

A selection of definitions with different perspectives from various authors is given below:

- Knowledge management is the explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organising, diffusing, using and exploitation. It requires turning personal knowledge into organisational knowledge that can be shared widely throughout an organisation and applied appropriately (Demarest, 1997: 375).

- Processes of capturing, distributing and effectively using knowledge (Davenport, 1997b).
- The management process of ensuring that the organisation's knowledge needs are met and exploiting the organisation's existing knowledge assets (Taylor, 1996).
- Knowledge management is the conceptualising of an organisation as an integrated knowledge system, and the management of the organisation for effective use of that knowledge. Where knowledge refers to human cognitive and innovative processes and the artefacts that support them (Quinn, 1992).
- The central premise behind knowledge management is that all the factors that lead to superior performance – organisational creativity, operational effectiveness, quality of products and services – are improved when better knowledge is made available and used competently (Wiig, 1994: 16).

What knowledge management involves is a systematic approach to nurturing, protecting and exploiting that knowledge, which is important to the success of the organisation.

From the above it is clear that: Knowledge management involves the identification and analysis of available and required knowledge assets and knowledge-related processes and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organisational objectives. Knowledge management helps an organisation to gain insight and understanding from its own experience. Specific knowledge management activities help focus the organisation on acquiring, storing and utilising knowledge for problem solving, dynamic learning, strategic planning and decision making.

Any type of organisation can apply knowledge management to develop and improve their control and effectiveness. According to Drucker (2001) there is also not such a thing as generic knowledge management, and one company's knowledge management success can rarely serve as an exact model for others. Just as each organisation's business processes are unique, the specific goals and reasons for knowledge management initiatives vary from company to company.

Strictly speaking, therefore, knowledge management is not management of knowledge. What can be managed is not knowledge, but the space and the enabling environment in which the processes of knowledge creation, sharing and application take place.

3.3 The current state of knowledge management

The broad consensus is that knowledge management thinking is evolving into a second generation. According to McElroy (2000: 200) first-generation thinking was all about delivering information to support a task and it was all about individual performance in the field. The target of all investments in first-generation knowledge management was the individual worker, and the extent to which he or she has access to and could leverage information needed to get the work done – where and when it occurs. Nowhere was there any discussion of the importance of knowledge, knowledge creation and organisational learning.

According to Skyrme (2000) two opposite shifts are seen in second-generation knowledge management thinking. Firstly knowledge management is becoming more segmented – for example, professional segments have been created such as knowledge management for marketers, technologists and engineers and special sectors such as storytelling and intranets. Secondly, knowledge management thinking now embraces and integrates many other activities that once stood alone, for example organisational learning (see Chapter 4, paragraph 4.3). Knowledge management is also becoming more widespread and is increasingly recognised by senior business executives as an important dimension of the business strategy and a contributor to organisational performance. More importantly, that knowledge management is as much about human and social factors – communities, personal development and working environments – as it is about information processes and technology.

The once eagerly sought conferences are being replaced by regular series of repeated workshops, seminars (for newcomers to the subject), textbooks and academic courses. New aspects are continuing to attract interest e.g. measuring of intellectual capital, the role of thesauri and the increasing amount of new search engine technologies.

3.4 The relationship between knowledge management and information management

Distinguishing between information and knowledge is difficult. However, at the conceptual level, information is what data becomes when employees interpret and contextualise it. In the broadest sense, information is the substance to create knowledge (Nonaka & Takeuchi, 1995).

Knowledge is information within people's minds. Knowledge is highly valuable, because humans create new ideas, insights and interpretations and apply these directly to information use and decision-making. Knowledge is difficult to 'manage' in other people because (being mental) it is invisible and its extraction, sharing and use rely on human motivation (Davenport & Marchand, 1998: 166).

Information management adds value to data and transforms it into information. Knowledge management enables the use and reuse of knowledge, created and developed in the tacit thoughts of employees to generate solutions for clients.

According to Ponelis and Fairer-Wessels (1998: 5) knowledge management is concerned with (a) the identification of knowledge needs, assets, problems and opportunities in a knowledge environment and (b) the design, development and implementation of knowledge management strategies, which is much the same as information management with "knowledge" substituted for "information".

According to Letley (1999) knowledge management is the broader term as it recognises the interconnected nature of people (tacit knowledge), processes and information in organisational activity. Information management is an important component of knowledge management but must be seen and understood in the broader context.

Knowledge and its management cannot replace information and data and its management. According to various authors (Malhotra, 1998, Skyrme, 1997, Willard 1997), this is one of the barriers or pitfalls of knowledge management – because

knowledge can only follow on information and information can only follow on data. The absence of a proper data and information management programme can cause the failure of a knowledge management programme. Organisations that prosper with knowledge management will be those that realise that it is as much about managing people as information.

Thus, the integration and management of data, information and knowledge within an organisation is needed to succeed in a knowledge management program.

3.5 The knowledge-based organisation

Skyrme (1997) argues that the first main thrust of creating a knowledge-based organisation is "to know what you know", and then to share and leverage it throughout the business. The second main thrust is that of innovation – of creating new knowledge. Building a knowledge-based business is not a short-term project. The leading practitioners described it as a journey. According to Nonaka and Takeuchi (1995) many organisations are just starting this journey, while others have discovered that this journey already started some time in the past.

The characteristics of knowledge-based organisations are:

- There is a clear distinction between tacit and explicit knowledge.
- Creation of new knowledge comes from knowledge conversion between these two modes.
- Individuals are at the centre of these conversion processes.
- The core of knowledge creation takes place at group level. The individual provides the creativity and the organisation provides the enabling context.
- A style of middle-up-down management is required to create the necessary interaction between tacit and explicit knowledge (Skyrme, 1997).

Note: Some of these concepts are more fully described in Chapter 2, paragraph 2.5.1-2.5.4. of this study.

Sveiby (1993) stands out as one writer who has provided a practical grounding for knowledge-based organisations. His writings on 'the know-how company' identify four distinguishing features of knowledge-based businesses:

- Networked organisational structures
- Creativity and innovation
- High dependency on individuals and their knowledge
- Complex problem-solving on behalf of their customers

From the above it is clear that knowledge-based organisations recognise the importance of knowledge, knowledge creation and knowledge sharing. Knowledge-based organisations are flexible and creative with open management styles. They focus on how to manage the relationship between employees and customers in the development of unique solutions.

3.6 Driving forces behind knowledge management

Malhotra (1998), Nonaka (1998a), Skyrme (1997) and Wiig (1995) argue that the driving forces behind knowledge management are: the realisation of the changing role of knowledge, cost avoidance, the leveraging of knowledge to enable corporate success, value and measurement of intangible assets, globalisation of business and international competition, sophisticated customers, competitors and suppliers. A summary of the views of the four authors is given in the sections below:

3.6.1 Realisation of the changing role of knowledge

Knowledge is seen as an important asset in a wide variety of business activities. Knowledge is the "know-how" that is needed to keep organisations ahead in a competitive marketplace, for example:

- A capability to identify market opportunities.

- Using customer knowledge to improve existing products and create innovative new ones.
- Reusing knowledge from customer call centres.
- Continuous learning through stimulating the use of internally and externally generated knowledge.

3.6.2 Cost avoidance

By improving knowledge flows and understanding where an organisation's knowledge resides, it is often possible to avoid the costs associated with finding or regenerating it, by reusing what already exists.

3.6.3 The leverage of knowledge in enabling corporate success

This driver builds on the first. Two key themes have emerged:

- That of creating and applying new knowledge
- That of exploiting existing knowledge

The value of knowledge creation is one of the key themes explained by Nonaka. His research concludes that: "Successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation and quickly embody it in new technologies and products" (Nonaka,1998a: 31).

Less easy to identify, is the knowledge that is used day in and day out during the normal business operations of an organisation – the knowledge that is in people's heads. This knowledge is used to inform decisions, such as marketing decisions, company strategy, customer service and new product development. By properly managing the environment where this knowledge exists, Malhotra (1998) has reported the following benefits:

- Faster time-to-market (better internal knowledge flow).
- Better quality products (better knowledge flows from customers).
- More efficient processes (using best in-house knowledge).
- Improved customer service/problem solving (applying knowledge at point of action).
- Reduction of risk (application of wider range of expertise to specific problems).

3.6.4 Value and measurement of intangible assets

Stock market analysts have traditionally often linked the value of companies to their tangible assets. The difference in book value that is based on traditional financial recording of tangible assets, and market value is 10 to 1 for knowledge-intensive companies. According to Skyrme (1997: 13) several trends are driving this focus on intangible value, including:

- A company's intellectual assets can serve as a focal point for management action;
- The recognition of the loss of value caused by key personnel leaving a company;
- The value placed by the open market on certain tradable intangibles, such as patents, brand names and intellectual property.

3.6.5 Globalisation of business and international competition

International commerce has increased. Products that were created within one company or country are now assembled from parts from multiple sources worldwide. Production and service capabilities that were available from limited sources in advanced countries are now frequently found in countries that were formerly considered developing countries incapable of sophisticated work. These developments have led to cutthroat competition, where only the most effective will survive by being effective in operations, marketing and creation of products and services (Wiig, 1995b: 11).

3.6.6 Sophisticated customers, competitors and suppliers

Customers have become more demanding. They increasingly desire customised products and services that support their success and in turn are needed to serve their own customers better. To survive in this environment, enterprises must perform in the same way, or better than their competition by improving their understanding of customer needs and capabilities (Wiig, 1995a).

Competing organisations are constantly implementing innovations in products, services and practices. To keep up, these changes require constant learning to build expertise.

Suppliers continue to improve their capabilities and can participate in creating and supporting innovations to deliver sophisticated products. To take advantage of these opportunities, enterprises must understand new supplier capabilities and how to integrate them with internal efforts, directions and organisational culture.

3.7 Principles of knowledge management

Many companies already know that the knowledge of their employees is their most valuable asset. Davenport (2001) is of the opinion that knowledge management has thus far been addressed at either a philosophical or a technological level, with little discussion of how knowledge can be managed and used more effectively on a daily basis.

According to Davenport (1997b) the most appropriate form of dialogue is not detailed tactics, but high-level principles. When an organisation decides what principles it agrees upon with respect to knowledge management it can then create detailed approaches and plans based upon those principles. There are ten principles that summarise many of the challenges that are faced by knowledge-based organisations, managers and employees. They are discussed below.

3.7.1 Knowledge management is expensive

Knowledge is an asset, but its effective management requires investment of money and labour, including the following:

- Knowledge capture, e.g. creation and moving of documents onto computer systems.
- Adding value to knowledge through repackaging and editing.
- Developing information technology infrastructures for the distribution of knowledge and educating people on the creation, sharing and use of knowledge.

3.7.2 Effective knowledge management requires hybrid solutions of people and technology

While computers and communications help with the capture and flow of knowledge, humans come into their own in interpreting it within a broader context for problem solving and decision-making.

3.7.3 Knowledge management is highly political

"Knowledge is power" and thus a highly political undertaking. Davenport (2001) argues that if knowledge is associated with power, money and success, then it is also associated with lobbying, intrigue and backroom deals. If there are no politics going on, then the organisation does not perceive the value of knowledge.

3.7.4 Knowledge management requires leadership

Knowledge will not be well managed unless some senior person or group is given responsibility for it (as with other resources like finance and human resources). Managing knowledge and learning necessitates a type of leadership that differs fundamentally from the customary view of leader as central actor.

The new type of leaders are seen as facilitators that promote knowledge sharing and learning by their own personal action and behaviours (Davenport, 2001).

3.7.5 Knowledge management benefits more from maps than models, more from markets than hierarchies

Until recently many organisations' approach to structuring knowledge was hierarchical, rather than thesaurus-based. However, both clients and knowledge analysts found it difficult to navigate through the tree; and new terms also tended to be added at inappropriate levels of the tree. Organisations found the thesaurus approach to be much more satisfactory. It has mapped the knowledge world rather than modelling it.

Letting the market work means that knowledge managers try to make knowledge as attractive and accessible as possible, and then observe what knowledge gets requested by clients, and specific terms they use. Clients who call for expert referrals are unlikely to always use the same terms as those the experts use in describing their work. The function of connecting a client's needs to available expertise is performed by using online search retrieval systems. Each technical term has a preferred usage and several possible synonyms. The goal is to have these terms as well as those used by clients in the same database.

3.7.6 Sharing and using knowledge are often unnatural acts

If knowledge is a valuable resource, why should people share it? If an employee's job is to create knowledge, why should he/she put their job at risk by using someone else's knowledge instead of their own (Nonaka, 1998a: 21).

To enter knowledge into a system and to seek out knowledge from others is threatening and employees have to be highly motivated to undertake such work. Davenport (2001) suggested that encouragement for individuals to share knowledge can solve the problem.

3.7.7 Knowledge management means improving knowledge work processes

Improvements must be made to those processes that involve the creation, use and sharing of knowledge. While is important to address and improve the knowledge process, it should be kept in mind that knowledge is generated, used and shared intensively in a few specific processes. According to Davenport (2001), the specific processes vary from organisation to organisation and can include market research, product design, and transactional processes. If real improvements are to be made in knowledge management, improvements must be made in these key business processes.

3.7.8 Knowledge access is just the beginning

Knowledge access is important, but successful knowledge management also requires attention and engagement. In order for knowledge customers to pay attention to knowledge, they must become more than passive recipients. More active involvement with knowledge can be achieved through reporting it to others, through activities based on usage of the knowledge, and receiving the knowledge through close interaction with other providers of knowledge. This is particularly important when the knowledge to be received is tacit, as Nonaka (1998a: 21) has long noted.

3.7.9 Knowledge management never ends

The tasks of knowledge management are never-ending. Like human resource management or financial management, there is never a time when knowledge has been fully managed. It is not a once-off initiative: it is an ongoing management task. One reason that knowledge management never ends is that the required knowledge is always changing. New technologies, management approaches, regulatory issues and customer concerns are always emerging. Companies change their strategies, organisational structures and product and service emphases. New managers and new professionals have new needs for knowledge (Wiig, 1995b: 22).

Davenport (2001) noted that this rapid change in knowledge environments means that organisations should not take considerable time in mapping or modelling a particular knowledge environment. By the time they have finished, the environment will no longer be the same or will no longer exist.

3.7.10 Knowledge management requires a knowledge contract

With much knowledge in employees' heads, and increasing mobility, companies must clarify who owns and who has rights to employee knowledge.

Many organisations have held employee knowledge (at least that developed between nine and five) to be the property of the corporation. Many environmental changes make such an approach difficult. Employees move more often to new jobs and new organisations and the distinction between home life and work life has become blurred. As knowledge become a more highly valued resource, organisations can expect to see more attention to the legalities of knowledge management (Davenport, 2001).

3.8 Advantages of knowledge management

In this study it has so far become clear that the challenges of knowledge management lie in making information productive, in handling the uncertainty of knowledge in a globalise world and in coming to terms with the growing importance of consumers and their individual needs. In the knowledge-based-economy, organisations increasingly have to deal with such matters as:

- an increasing complexity of products and processes;
- a growing reservoir of relevant knowledge;
- increasing competition in an economy with shorter product life cycles, in which learning processes have to be quicker; and
- the fact that companies will increasingly have the work done by a flexible workforce e.g. outsourcing, which makes holding on to knowledge and transferring knowledge all the more difficult (Beijerse, 1997: 15-20).

According to Beijerse (1997) knowledge management can enable companies to face the complexities accompanying the emergence of the knowledge-based economy. By managing the knowledge environment organisations can:

- improve efficiency;
- operate more intelligently on the markets;
- enhance the continuity of the organisation;
- enhance the profitability of the organisation;
- improve the relevant individual and group competencies;
- make professionals learn more efficiently and effectively;
- provide a better foundation for making decisions e.g. new knowledge and technology;
- improve communication between knowledge workers; and
- make the company focus on the core business and on critical company knowledge.

Research by Beijerse (1997) showed that the average company only used 20% of the knowledge that was potentially available in the organisation and that huge amounts of money were spent on a yearly basis on reinventing things that already existed. These figures emphasise the importance of dealing intelligently with the knowledge-based economy. As has already been stated: one way of doing this is through the management of knowledge environments to enhance knowledge sharing.

3.9 Barriers to knowledge management

According to research findings of Ndlela and du Toit (2001: 159) people-related issues, for example, people's unwillingness to share their knowledge and lack of leadership commitment as well as time and resource constraints could be barriers when one is trying to implement a knowledge management programme. According to Ndela and du Toit people do not like change and one has to understand that it takes time and effort to get people to accept and learn new methods so that they are able to apply them with ease and the practices are embedded in their behaviours.

Senior leaders in the organisation should understand the value of investing in knowledge management and the benefits of allowing people time for knowledge sharing.

Bonfield (1999: 27) argues that a knowledge-sharing environment can be created by:

- Identifying organisational barriers.
- Persuading people that they can gain from knowledge sharing.

According to Bonfield (1999: 28) four areas can be identified as potential organisational barriers when implementing a knowledge management initiative, namely, cultural, technological, economic, and marketplace barriers.

- **Cultural barriers:** Bonfield (1999) argues that three-quarters of knowledge management initiatives fail because of cultural issues. People tend to focus on their own targets and see their department as separate from – and in competition with – others. In such a culture, it is a sign of weakness to ask another department for advice. Cultural concerns are addressed by demonstrating that while knowledge sharing sometimes takes quite a lot of time, lack of collaboration takes even more time.
- **Technological barriers:** People need access to and have to be able to use and feel comfortable with technologies for knowledge sharing**.** Demonstrating that each single unit has a great deal more to gain by accessing all other units' information can alleviate technological concerns.
- **Economic barriers:** People reason that if knowledge provides the organisation's source of competitive advantage, then it also provides the individual's competitive advantage in the organisation. The latter is true if people are willing to share the knowledge that earns them the position they hold, and their hope of financial reward. According to Bonfield (1999) economic barriers can largely be addressed by linking a reward system to collaboration. Managers can be rewarded as a team, with bonuses dependent on the achievement of group as well as individuals goals.

- **Marketplace barriers:** Knowledge sharing has to be relevant to the business. The team must understand the source of competitive advantage and the critical knowledge needed to deliver that advantage. Marketplace barriers are addressed by giving every employee a mission to transform the perception that "information is power" into one that "information-sharing is power".

According to Murray (in Depres and Chauvel, 2000: 171-194) there are structural, cultural and managerial barriers to knowledge management as well as the usual issues of knowledge sharing and the time and costs involved in implementing such initiatives. There is a correlation among the findings of Bonfield, Murray and Ndela and du Toit. It is clear that people and culture issues often dominate, both as necessary means and barriers to sharing and exploiting knowledge. Murray (in Depres & Chauvel, 2000: 189) describes the barriers in Table 3.1.

Table 3.1 Knowledge management barriers (adapted from Murray, 2000: 189)

People	Management	Structure	Knowledge
Inertia to change	The fear of giving up power	Inflexible company structures	Extracting knowledge
To busy - no time to learn	The difficulties of passing on power	Fragmented organisations	Categorising knowledge
No discipline to act	Challenging traditional company style	Functional silos still exist	Rewarding knowledge
Lack of motivation	Imposed constraints	Failure to invest in past systems	Understanding knowledge management
Constant staff turnover	Lack of under-standing about formal approaches		Knowledge sharing between key knowledge groups
Transferring knowledge to new people			Making knowledge widely available
Teaching older employees new ideas			

It appears that there are still issues to resolve in organisations in regard to sharing knowledge between key groups and making some of it widely available inside and outside the company among partners, suppliers or even customers.

3.10 Knowledge management activities

According to Willard (1997: 32) the scope of knowledge management is potentially very broad. However, research by Wiig (1995b: 15) indicates a reasonable degree of understanding of what can be interpreted as knowledge management activities. These include:

- Identification of where knowledge resides within the organisation, and mapping it, so it can be more fully utilised.
- Enhancing the intellectual capital of an organisation to improve the company's capacity to add value through the effective accumulation and use of intellectual capital.
- Measuring the value and performance of knowledge assets.
- Creating environments that promote innovation and the creation of new knowledge.
- Creating intelligent capabilities, where useful knowledge that is external to the organisation is harnessed and used to inform strategic decision-making.
- Promoting "learning" cultures, where people are encouraged to create and share knowledge.
- Developing an understanding of the knowledge capabilities that the organisation will need to compete into the future.
- Unlocking and sharing the skills and know-how of the people in the organisation and sharing across organisational boundaries.
- Protecting knowledge that is property and has significant value to the organisation.
- Developing an overall knowledge management architecture that sets frameworks, standards and processes for good knowledge management practice.

3.11 Approaches to knowledge management

In this section various approaches to knowledge management will be discussed.

Firstly, the middle-up-down style for successful knowledge management will be examined, followed by the people-centred approach versus the technology-centred approach.

According to Remeikes (1996: 1-5) knowledge management can be a "grassroots effort" without the involvement of senior management or their support (although she does mention that top-level support is the ideal). This contrasts with Davenport's (1997b) view that assuming that knowledge management can thrive without support from senior executives can be a major barrier for knowledge management. Grayson (1995) explains it very plainly: "If knowledge management is not central to the strategy of an organisation it is not likely to go anywhere."

When surveying 25 organisations that had attempted to improve knowledge work processes Davenport (2001) found that: "…in general, the most effective improvement approaches struck a middle ground between top-down management of the process and bottom-up design by knowledge workers".

According to the above-mentioned ideas it seems that it is necessary to find the golden mean way where most of these approaches are combined. Nonaka and Takeuchi (1995: 127) proposed a new model of management called "middle-up-down" management in contrast with "top-down" management and "bottom-up" management. This middle-up-down management model is suitable for promoting the efficient creation of knowledge in business organisations. Much emphasis is placed on the role of top, middle and bottom management for knowledge creation, which has been almost neglected in traditional managerial structures.

In middle-up-down management, top management gives the conceptual framework and support (Nonaka, 1991: 96-104) and "encourage, recognise and reward openness and creativity" (Malhotra, 1998: 3). Middle-up-down is based on teamwork where teams are largely self-governing in interpreting the strategy of top management, with top management acting more as a catalyst than a leader.

Moving from the bottom to the top of the organisation, information is processed selectively so that the people at the top get simple, processed information only. Moving in the reverse direction, information is processed and transformed from the general to the particular. According to Nonaka (1991) it is this deductive transformation that enables human beings with limited information processing capacity to deal with a mass of information.

Unlike the top-down and bottom-up models, the middle-up-down model regards all members as important actors who work together horizontally and vertically. There is a cooperative relationship between top, middle and lower managers. No one major department or group of experts has the exclusive responsibility for creating new knowledge.

While top management articulates the dreams of the organisation, lower managers look at the reality. The gap between the two perspectives is narrowed by and through middle management. In this sense, the knowledge creation process is taking place simultaneously at top, middle and lower management levels.

Middle managers synthesise the tacit knowledge of both bottom-line employees and top management, make it explicit and incorporate it into new technologies and products. They are the true “knowledge engineers” of the knowledge-creating organisations.

Other approaches are the people-centred approach versus the technology-centred approach. The people-centred approach focuses on human intellectual capital (people management) whereas the technology-centred approach focuses on structural intellectual capital in terms of process management (embedded knowledge) and information management (recorded knowledge).

Knowledge cannot be directly managed but only indirectly through the carriers of knowledge – the people (through human resource management) and the technology (through information management) and the interaction between them (information flows and communication). Of the two branches in the management of knowledge the

study sides with the management of people, since people are the primary source of knowledge and technology as secondary (as storage medium of knowledge transferred from people).

Placing technology first is certain to invite failure for knowledge management. But although people possess the knowledge, technology is necessary for the orderly storage, retrieval and sharing of knowledge. A balance between these two approaches is the ideal and each organisation must determine where this balance lies in its specific situation.

3.12 Summary

Knowledge management involves the identification and analysis of available and required knowledge assets and knowledge-related processes and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organisational objectives. Knowledge management helps an organisation to gain insight and understanding from its own experience.

Knowledge management thinking is evolving into a second generation. First-generation thinking was all about delivering information to support a task and focused on individual performance in the field. Nowhere was there any discussion of the importance of knowledge, knowledge creation and organisational learning.

Second-generation knowledge management thinking is more segmented – for example, professional segments have been created such as knowledge management for marketers, technologists and engineers and for special sectors such as storytelling and intranets. Second, knowledge management thinking now embraces and integrates many other activities that once stood alone, such as organisational learning.

Knowledge management is also becoming more widespread and continues to mature. Knowledge and its management cannot replace information and data management, because knowledge can only follow on information and information can only follow

on data. The integration and management of data, information and knowledge within an organisation is needed for a successful knowledge management initiative.

A knowledge-based organisation focuses on the importance of knowledge as an asset and is flexible, innovative and creative with open management styles.

The driving forces behind knowledge management are: the realisation of the changing role of knowledge; cost avoidance; the leverage of knowledge to enable corporate success; value and measurement of intangible assets; globalisation of business and international competition; and sophisticated customers, competitors and suppliers.

The principles of knowledge management summarise many of the challenges that are faced by knowledge-based organisations. Knowledge management is expensive, requires hybrid solutions of people and technology, is highly political, requires knowledge leadership, and benefits more from maps than models and more from markets than from hierarchies. The sharing of knowledge is often seen as an unnatural act. Knowledge management means improving knowledge work processes and the activities are never-ending tasks.

Knowledge management can enable organisations to improve efficiency, operate more intelligently on the markets, enhance the continuity and profitability of the organisation, improve individual and group competencies, make professionals learn more efficiently, provide a foundation for making better decisions, improve communication between knowledge-workers and make the company focus on critical organisational knowledge.

Different areas can be identified as potential organisational barriers when implementing a knowledge management initiative, namely cultural, technological, economic, marketplace and structural barriers.

Knowledge management activities include the identification of where knowledge resides within the organisation, the enhancement of intellectual capital, the measurement of the value and performance of knowledge assets, the promotion of

learning cultures where people are encouraged to create and share knowledge, the development of capabilities that the organisation will need to compete into the future, the protection of knowledge that is property and the development of an overall knowledge management programme.

The different management styles are top-down, bottom-up and middle-up-down. The last one is the preferred style, because it regards all members of the organisation as important actors who work together horizontally and vertically.

Finally, the underlying approaches to knowledge management, people-centred versus technology-centred are considered. The study side with the management of people, since people are the primary source of knowledge and technology is seen as a secondary source and as a storage medium of knowledge, transferred from people.

CHAPTER 4

ORGANISATIONAL LEARNING AND KOWLEDGE MANAGEMENT

4 ORGANISATIONAL LEARNING AND KNOWLEDGE MANAGEMENT

" We have achieved and will continue to achieve dramatic progress through people who are perpetual learners, people who are skilled in the application of that learning, people who are committed to the application of those skills in the improvement of their company." John Towers

4.1 Introduction

As argued in the previous chapters, many organisations have clearly entered the "knowledge era"- the new economy. Knowledge provides the key for wealth creation and is an organisational as well as a personal power. Brainpower has become a company's most valuable asset.

Knowledge is seen as the main resource used in performing work in an organisation. According to Stuart (1997a: 168) successful organisations of the future (those offering high value), will have only one asset that will grow more valuable as it is used - the knowledge and skills of people. The knowledge and insights that come from the learning of employees increase in value when used and practised.

Knowledge resides in various sources, for example the organised record of human experience in documents, and in the minds of individuals within the organisation. As Senge (1990a: 13) puts it, "*it should be shared openly through communication with colleagues without fear or criticism or punishment*". This point is also emphasised by Mohanti and Desmuchk (1999: 308) in a statement that read: "*knowledge as intellectual capital should be fostered and further developed in…organisations"*.

Organisations realise that the key resource of business is not capital or facilities, but rather the management of knowledge, information and ideas. Many new ways of viewing organisations have emerged. Companies are seen as changing, restructuring, creating integrated organisations, global networks and learner corporate centres.

Organisations have become more fluid, ever shifting in size, shape and arrangements. To change, organisations must put to use what they have learned (knowledge and skills) and not forget the valuable lessons learned from success or failure. Only when organisations are successful in these activities, will they be able to survive in the knowledge economy.

An organisation "learns" when it adapts to deal competently with challenges through internal discoveries and knowledge obtained from external sources. This means that an organisation makes its employees continually capable of dealing intellectually with routine work, new challenges, procedures, infrastructure and organisational arrangements to incorporate both internal and external changes.

Organisations where knowledge is managed and learning is encouraged and supported are increasingly seen in the literature as two sides of the same coin - as people learn they gain knowledge, which is applied and more knowledge is gained. Therefore knowledge management and organisational learning can work best as inter-related and overlapping concepts, rather than being assumed to be synonyms for the same process. Learning in organisations creates an organisational environment that combines organisational learning with knowledge management. An inherent feature of learning in organisations as well as knowledge management is the sharing of information and ideas to create and develop new knowledge.

Chapter 4 explores the ideas of learning, arguing that the culture, structure and infrastructure of an organisation are integral elements that facilitate and nurture learning. Firstly a clear link between learning, knowledge and change is discussed. Then an overview of organisational learning will be provided, covering the following aspects: definitions of organisational learning, principles of organisational learning, the organisational learning context and learning in organisations. The fourth section covers the learning organisation with specific reference to the characteristics of a learning organisation, learning organisations vs traditional organisations, advantages of a learning organisation and learning organisation frameworks and models. The distinction and relationship between organisational learning and learning

organisations are discussed in the fifth section. Finally, organisational learning and the learning organisation are placed within a knowledge management context.

4.2 The relationship between learning, knowledge and change

Learning, knowledge and change are inseparable. Learning changes people, change requires learning, and learning is the process of gaining knowledge and developing skills, which empower people to understand.

Learning, knowledge and change are three aspects of the same continuum:

- Learning is knowledge obtained by self-directed study and/or experience; the art of acquiring knowledge, skills, competencies, attitudes and ideas retained and used; a change of behaviour through experience (Gilley & Eggland, 1989: 92).
- Knowledge is what one knows, knowing, all that is or may be known (Little Oxford dictionary of current English, 1987: 296).
- Change is to become different, another way of thinking or acting (Little Oxford dictionary of current English, 1987: 83).

The learning process itself promotes continuous organisational change, renewal and improved performance capacity. Without learning, individual, team and organisational growth, development and change cannot occur. Gilley and Maycunich (2000: 125) agree that true learning occurs when an overt or clear action results and is demonstrated when knowledge changes. Individuals reflect upon experiences and effects, consider results of actions and learn lessons accordingly.

The term “learning”, perhaps because of early experiences, has come to mean “thorough grasp what an expert knows” (Pedler, 1995: 20). No longer is learning seen as something that only happens to children or in classrooms.

According to Hawkins, cited in Burgoyne, Pedler & Boydell (1996: 9) learning is a process that influences not only individuals' lives but can also be seen as a process, which is critical for the lives of teams, organisations and communities. Each individual or group produces new outcomes, new knowledge, while growing, development and change occur.

Pedler (1995: 22) argues that there is no universally agreed definition of learning, but one way of putting it is that learning is about " how people change". After learning, people are more knowledgeable than before.

Knowledge is the result of learning and is transitory and short-lived if not constantly revised and updated. Learning is sense making, it is a process that leads to knowledge (Burgoyne, Pedler & Boydell, 1996: 12). Knowledge that is created through learning allows people to change their environment, whether by reframing it, by physically altering it or both. According to Dixon (1999: 3) the two factors, learning and change, support each other.

The faster the rate of change the more new knowledge must be created to deal with the change. Friedlander (1983: 194) says, "*Learning is the process that underlies and gives birth to change. Change is the child of learning.*" Friedlander (1983: 196) also argues that it is possible for change to occur without its being preceded by learning. For example, a takeover or new government regulations can necessitate change. When such change occurs, it is followed learning, even if it was not preceded by learning.

Change is preceded by learning when, for example, employees learn from customers that a product change is needed. Thus, learning can lead to change, which can lead to more learning; and more learning can lead to more knowledge, because knowledge is the result of learning.

Dixon (1999: 5) argues that such a change is not the familiar one-step process of moving from state A, which has been deemed insufficient, to state B, the better way. Learning does not define an end of a state, but is seen by Dixon as the process that allows people to continually generate new states, as in A to B to C to D, and so on (see Figure 4.1). No problem stays solved for long, because each problem gives rise to new problems. Learning is about redefining problems, instead of just solving them. Thus, learning is the ability to change and obtain knowledge not once, but continuously.

Figure 4.1: Planned versus continuous change

Planned change: A → B

Change through learning: A → B → C → D→ and so on…

(Adapted from Dixon, 1999: 4)

Learning and knowledge have a cognitive or intellectual dimension, both of which are intricately intertwined and assessed to the needs of change. Learning, knowledge and change therefore mutually reinforce each other as part of the same continuum.

4.3 Organisational learning

The concept of organisational learning was introduced into organisations and management more than 30 years ago and is still relevant to knowledge management today, given the complexity and uncertainty of the global business environment (Fulmer, 1994: 21). To be a leader in today's competitive environment, organisations must deal with continuously increasing pressures for performance.

With the rapid pace of business developments and the many complex challenges facing organisations – sometimes with no relevant experience on which to draw – it is the "degree of excellence" of human resources in the organisation, which serves as the

success factor. Given this reality, many organisations have taken a different approach to achieve competitiveness.

Many organisations have realised that competitive advantage is rooted in the quality of their people – their know-how and ability to be flexible and change rapidly. As a result, in leading organisations, organisational learning is playing a more important role than ever before (Fulmer, 1994: 20-24; O'Reilly, 1998: 37-40).

In this section the following aspects are discussed:

- Various definitions and principles of organisational learning;
- The organisational learning context, which includes organisational culture, structure and infrastructure; and
- Learning in organisations, which includes levels of learning and types of learning.

4.3.1 Definitions of organisational learning

Organisational learning has been defined in a number of ways ranging from the generation of new knowledge, to the creation of knowledge systems, to a change in organisational actions (Fiol & Lyles, 1985: 803-813). Organisational learning has also been defined as existing at multiple levels within the organisation. Specifically, there is likely to be a hierarchy of learning extending from individuals to the group and finally to the overall organisation (Garavan, 1997: 1-16).

Organisational learning can be defined as: "*The ability of an organisation to gain insight and understanding from experience through experimentation, observation, analysis and a willingness to examine both successes and failures"* (McGill et al., 1995: 7).

Marquardt (1996: 230) defines organisational learning as the way in which learning occurs on an organisation-wide basis. According to Watkins and Marsick (1993: 152) organisational learning is changed organisational capacity for doing something new.

Organisational learning is also conceptualised in the literature as being concerned with the development of new knowledge or insights that have the potential to influence behaviour. There is also a perception that learning facilitates behavioural change, which in turn leads to improved performance (Garvin, 1993; Senge, 1990a).

Rather than focusing on one of the above-mentioned definitions of organisational learning, this study takes an integrative approach to the definition of organisational learning. Consequently, in this study, organisational learning is conceptualised as the generation of new knowledge leading to changes in actions at the individual, group and organisational levels.

4.3.2 Principles of organisational learning

Having defined organisational learning, various principles can be identified.

Kline and Saunders (1998: 16-18) have identified a set of principles they regard as underlying organisational learning. These principles, when embraced by an organisation's leadership team, influence employees' inner belief systems, becoming implicit in the organisational culture and structure. Klein and Saunders believe that organisational learning encourages individuals at every level to be self-directed and to view mistakes as stepping-stones to continuous learning and essential to further business growth. However, there must be a willingness to rework organisational culture, systems and structures to encourage organisational learning.

These include creating an organisation that is supportive of continuous growth and development and that embraces the belief that ideas can best be developed through dialogue and discussion.

Kline and Saunders (1998: 17) also believe that organisations need to transfer as much knowledge and power from person to person as possible, and to encourage and teach employees to structure their own learning, rather than structuring it for them. Furthermore, organisations need to acknowledge that different learning preferences are alternative tools for approaching and accomplishing learning.

Hillgard and Bower (1997: 10-11) argue that organisational learning is most effective when a cognitive approach is adopted. This approach is appropriate where:

- Learners see relationships between all elements in a situation.
- It starts from related elements and builds into a more complex whole.
- It involves understanding rather than rote learning.
- It test assumptions.
- There are clear goals to learning.

The major principle of learning in organisations is to create a motivated and energised work environment that supports the continuous creation, collection, use and reuse of both personal and organisational knowledge in the pursuit of business success.

According to Stonehouse and Pemberton (1999: 132) learning is dependent on the learning arrangements that exist within the organisation, either accelerating or slowing down the learning process. The two authors refer to the arrangements for learning as the *"organisational learning context"*, an important element of both individual and organisational learning.

4.3.3 The organisational learning context

The organisational learning context consists of three elements – organisational culture, structure and infrastructure – and is the means by which an organisation continuously increases the effectiveness and the efficiency of its learning and knowledge management processes and systems (Stonehouse & Pemberton, 1999: 137).

4.3.3.1 Organisational culture

The most important component of the organisational learning context is the organisational culture. Among the different views of culture, the most commonly accepted organisational view refers to culture as a system consisting of the values, attitudes and beliefs that steer the actions and behaviour of the individuals making up the organisation (Schein, 1992: 9-11). Organisational culture is reflected in the visible aspects of the organisation, such as its mission, vision and goals. It is embedded in the way people act, what they expect of each other, and how they make sense of each other's actions.

Organisational culture can create an atmosphere of trust within which individuals feel empowered to experiment with new approaches to business (Stonehouse and Pemberton, 1999: 136). Following this description, in an organisation with a knowledge-sharing culture, people would share ideas and insights because they see it as natural, rather than something they are forced to do. They would expect it of each other and assume that sharing ideas is the right thing to do.

According to Gilley and Maycunich (2000: 113), *"A learning organisation's culture emphasises the critical importance of continuous learning – at all levels, functions and divisions throughout the firm."*

Thus, learning is everyone's responsibility and serves as a key component of each and every job, an integral part of all organisational operations. A culture of learning encourages individual and team growth and development by valuing creativity, teamwork, continuous improvement and self-management.

Evidence has provided increasing support for the claim that the strength of an organisation's culture is predictive of its performance. Denison (1990: 12-15) believes that organisations with coherent, homogeneous, stable and pervasive belief systems have been shown to outperform those organisations with relatively weaker cultures as measured by financial measures such as "return on investment" and growth in assets. Cultures that enable organisations to do things for employees, customers, suppliers, the community, and other influential interest groups that could not be done without these cultures have a positive economic value to organisations.

Christensen and Gordon (1999: 397- 402) find that a strong culture that emphasises "the wrong things" may not be an asset but a detriment or be harmful to promoting organisational survival and growth. For example, a strong belief in not overextending oneself will most likely hinder rather than boost an organisation's performance. Therefore, strategists must influence both the content and the strength of an organisational culture.

4.3.3.2 Organisational structure

Organisational culture and structure are interdependent in creating an organisational learning context. According to Daft (1995: 15), structure refers to such elements as work, specialisation, departmentalisation, chain of command, span of control and centralisation. Daft argues that these dimensions of structure establish normative (for example, values and roles) and behavioural (for example, individual and group activities) expectations. Organisations differ on these dimensions because they have different organisational structures.

From Marquardt's (1996) perspective organisational structure operates as a powerful directive force on a company's life and people. It determines the amount of internal control, performance monitoring, lines of communication and the decision-making process that will exist in the organisation.

Marquardt (1996: 82-83) believes that the structure of many organisations prevents them from ever beginning the journey toward corporate-wide learning. He argues that "*rigid boundaries, bulky size, disjointedness of projects and tasks and bureaucratic restrictions, all help to kill rather than to nourish learning.*"

There is considerable evidence in the literature that traditional hierarchical and bureaucratic organisational structures, heavily reliant on rules and procedures, hinder the learning process and knowledge transfer. Rigid, tall hierarchies with unbreachable, impregnable departmental silos ruin organisational learning as they prevent the necessary free, fast and unimpeded flow of knowledge essential to being competitive.

To maximise the flow of knowledge and learning, a flatter streamlined organisational structure with team collaboration and few modes of control work best (Quinn, 1992: 51-60). Quinn (1992: 62) also argues that there is no single structure that uniquely supports learning, but empowerment of the individual together with flat network structures, which foster cross-functional communication and where functional barriers are low, appear to facilitate organisational learning more effectively.

When people build an organisational culture and structure that are focused on maximising the learning capability of the organisation, they are able to build learning that crosses all boundaries – time, vertical, horizontal, external and geographic boundaries. There is also integration, intimacy, and closeness between management, employees, customers, competitors and the community.

4.3.3.3 Organisational infrastructure

Technology, particularly information and communications technology, plays a vital role in providing the infrastructure needed to support flatter network structures and organisational learning.

According to Quinn (1992) the media and channels of communication that assist in the creation, storage, sharing and transfer of knowledge are an integral part of building a learning environment. The infrastructure of an organisation comprises the techniques and technologies that underpin its learning and knowledge management activities. Techniques and technologies will be discussed in detail in see Chapter 5.

In summary, the culture and structure of the organisation have a significant influence on learning in the organisation, and the technological infrastructure helps make possible the sharing of knowledge, which is a result of learning. The technological infrastructure presents new strategic opportunities for organisations to learn on a corporate-wide basis. Technological infrastructure permits the redistribution of power, function, and control to wherever they are most effective. The technological infrastructure is a powerful enabling tool for improving organisational communication and therefore knowledge flow and learning.

4.3.4 Learning in organisations

Learning in organisations refers to levels of learning and types of learning, which are crucial for organisational learning. There are three levels of learning present in learning organisations, namely individual learning, team or group learning and organisational learning.

4.3.4.1 Individual learning

Individual learning refers to the change of skills, insights, knowledge, attitudes and values acquired by a person through self-study, technology-based instruction, insight and observation (Marquardt, 1996: 21). Individual learning is needed for organisational learning since individuals form the units of groups and organisations. Senge (1990a: 236) asserts: *"Organisations learn only through individuals who learn. Individuals do not guarantee organisational learning, but without individual learning no organisational learning occurs."*

Argyris and Schon (1996: 20) agree with Senge that there can be no organisational learning without individual learning. They further suggest that it is necessary for individuals to embed their discoveries, challenges and results of their enquiries into the organisation's memory, which encodes the theory-in-use. Individual learning in the organisation is constantly encouraged, supported and rewarded through an organisational system that promotes continuous self-development. Techniques include courses, workshops, seminars, self-learning materials, development groups, coaching, mentoring and data banks.

According to Marquardt (1996: 33-35), employees are expected to learn not only skills related to their own jobs, but also the skills of others in their unit. Therefore each person's commitment and ability to learn is essential.

Every employee should be aware of and enthusiastically accept the responsibility to be a learner and support the learning of others. Individuals should also understand how these learning responsibilities benefit the organisation. The entire workplace should be filled with innovative, creative and accountable learners.

4.3.4.2 Group or team learning

Group or team learning refers to the increase in knowledge, skills and competencies, which is accomplished by and within groups. Although the principles of individual learning cannot be directly applied to groups, it appears that group learning can only take place through individual learning.

According to Senge (1990a: 238), it is the collaborative effect of multiple individuals learning together that creates group learning. As organisations must deal with increasingly complex problems, they are discovering that they must become skilled in group/team learning. Work teams must be able to think, create and learn as an entity. Team learning should occur every time a group of people in the organisation are brought together.

According to Pearn, Roderick and Mulrooney (1995: 23), employees may have learning needs as individuals, but there is also another sense in which an employee, as a member of a group, may have a need for team based learning to occur, which transcends the learning needs of the individual.

With the increasing recognition of the benefits of cross-functional and customer-focused teams and also self-directed or self-managed teams, attention needs to be given to the process and outcomes of learning as a team and not just the learning of individuals who make up a team.

Marquardt (1996: 35) argues that teams should be able to generate knowledge through analysis of complex issues, innovative action and collective problem solving. Teams need to learn better from their own experiences and past history. They should experiment with new approaches and quickly transfer knowledge among themselves and throughout the organisation. Skills which are developed can be transferred to

other teams and the team's accomplishments can set the tone and establish a standard for learning for the larger organisation.

Watkins and Marsick (1993: 109-110) examined how teams learn and why they learn effectively. They suggest that various group and organisational conditions influence team learning and determine whether team learning becomes organisational learning. Team factors influencing learning included:

- **Appreciation of teamwork** – involves the receptivity of the team to different views and ideas, the degree to which the team is valued over the individual, and ways the team builds on the synergy of members.
- **Opportunity for individual expression** – includes the opportunity for input into mission, goals, operating procedures and ease of opportunity for members to express themselves during team activities
- **Operating principles** – includes how beliefs, values, structure and infrastructure are created, and how effectively the team balances tasks with relationships and learning.

Organisational conditions influence whether team outcomes are shared and whether team learning leads to organisational learning.

4.3.4.3 Organisational learning

Organisational learning represents the enhanced intellectual and productive capability gained through corporate- wide commitment and the opportunity for continuous improvement. Organisational learning is the increase in learning capacity of the organisation (speed, depth and breadth of learning) (Marquardt, 1996: 22).

According to Marquardt (1996: 24) organisational learning differs from individual and group/team learning in two basic respects. Firstly, organisational learning occurs through the shared insights, knowledge and mental models of members of the

organisation. Secondly, organisational learning also builds on past knowledge and experience – that is, on organisational memory, which depends on institutional mechanisms, for example, policies and strategies used to retain knowledge.

Though individual and team learning and organisational learning are interrelated, organisational learning is seen as more than the sum of individual and group learning. Organisational learning is the result of the know-how embedded in the whole group working together (Dixon, 1999: 59).

Organisational learning focuses on learning *within* the organisation. According to Pearn, Roderick and Mulrooney (1995: 23-25) the emphasis is placed on learning and adaptation is highly valued within the organisation. All opportunities are taken to ensure that sustained learning and adaptation occur in the interests of the organisation's quest for efficiency and competitive edge.

4.3.5 Types of learning

There are various types of learning or ways in which organisations learn namely: adaptive learning, deutero learning and action learning. These types of learning are not exclusive of each other, and an organisation or individual may employ more than one type of learning at the same time (Argyris & Schon, 1996).

4.3.5.1 Adaptive learning

According to Marquardt (1996: 38) adaptive learning occurs when an individual or organisation learns from experience and reflection. Marquardt believes the process in adaptive learning is as follows:

- The organisation takes an action intended to further an identified organisational goal.

- The action results in some internal or external outcome.
- The resultant outcome is analysed for congruence with the goal.
- A new action or a modification of the previous action is initiated based on the outcome.

Adaptive learning may be either single-loop or double-loop learning. Marquardt (1996: 38) argues that single-loop learning is focused on gaining information to stabilise and maintain existing systems. The emphasis is on error detection and correction. Single-loop learning is concerned with obtaining direct solutions to immediate problems encountered by an individual or organisation.

Double-loop learning is more in-depth and involves questioning the system itself and why the errors or successes occurred in the first place. Double-loop learning looks at deeper organisational norms and structures. It raises questions about their validity in terms of organisation, action and results. According to Argyris and Schon (1996: 128) individuals carry out double-loop learning, when their inquiry leads to change in the values of their theories-in-use and organisational theory-in-use.

Hitt (1996: 22) argues that an individual operating at the single-loop level will focus "on the fixing of the problem…fixing the problem…fixing the problem", and the individual operating at the double-loop level will "redesign the system, not to encounter the problems again". According to Hitt (1996: 23) the traditional organisation is more aligned with single-loop learning and the learning organisation with double-loop learning.

4.3.5.2 Deutero learning

A concept of particular significance is that of deutero learning. Deutero learning is the capacity to learn to learn, and this ability of individuals must precede any affective

learning, either by individuals or groups. Argyris and Schon (1996: 128), call deutero learning " learning about learning".

Mumford (1995: 10) argues that learning can either be explicit or implicit. Deutero learning is the mechanism which forces learning to become explicit, and it is the platform for organisations to leverage a continuing commitment to learning.

4.3.5.3 Action learning

According to Marquardt (1996: 39), one of the most valuable tools for organisational learning is action learning. Action learning involves working on real problems, focusing on the learning acquired and implementing solutions. Action learning enables people to learn better and to handle difficult situations more effectively. Marquardt argues that if it is used as a systematic process, it increases learning in an organisation so that the organisation can effectively respond to change.

Marquardt has built upon the concepts of Reginald Revans. Revans (cited in Marquardt, 1996: 39) believed that "there is no learning without action and no action without learning". Thus, the learning equation is: Learning = Programmed Instruction, for example knowledge in current use + Questioning, for example new insights into what is not yet known. Marquardt argues that, "action learning builds upon the experience and knowledge of an individual or group and the skilled, fresh questioning that results in creative, new knowledge" (Marquardt, 1996: 41).

According to Senge (1990b: 14), action learning transforms organisations into learning environments. Watkins and Marsick (1993: 21) believe action learning captures the power of incidental learning and helps promotes application on the job. Thus, action learning enables people to effectively learn and to simultaneously handle difficult, real-life situations.

By questioning existing knowledge and reflecting on actions engaged in during and after problem solving, individuals, teams and organisations begin to learn and think critically and are thus better able to respond to change.

According to Marquardt (1996: 41) groups of people normally use action learning to examine a difficult task or problem in the organisation, act to change it and review the results for learning. Action learning can be employed to address a wide variety of problems in different sections of the entire organisation. Several key organisational skills are gained through the action learning process:

- Employees' self-awareness and self-confidence are increased due to new insights and feedback.
- Communications and teamwork and can be improved and shared learning enhanced throughout the organisation.
- New ways of thinking about the organisation can be created by addressing unfamiliar problems.
- Teamwork skills can be developed by examining the way teams/individuals function during group meetings and by having to work through the resolution of the problem.

In comparing the different types of learning in organisations it is noted that adaptive learning is more a coping form of learning. Deutero learning is about learning how to learn – new strategies to learn are invented and the results become reflected in the organisational learning processes. Action learning involves working with real problems, focusing on the learning acquired and implementing solutions. When using the latter two types of learning, an organisation is greatly empowered since employees are more proactive, reflective and creative in their learning.

In summary, organisational learning is important because it represents a new way of doing things and is believed to be fundamental to the new wave of thinking in organisational development and in human resource development. Learning is influenced by organisational culture, structures and infrastructure.

Various levels of learning are present in learning organisations, namely individual learning, group or team learning and organisational learning. There are also various ways in which organisations learn – adaptive learning, deutero learning and action learning. Adaptive learning is more a coping form of learning, deutero learning is about learning how to learn and action learning involves working with real problems, focusing on the learning acquired and implementing solutions. When using the latter two types of learning, creativity and innovation are encouraged.

4.4 The learning organisation

The learning organisation is becoming an increasingly widespread philosophy in modern companies. Most of today's successful businesses can be considered learning enterprises. Learning organisations learn about learning, and understand the processes by which individual, group or team and organisational learning take place (Quinn, 1992: 55).

The term learning organisation is the label which is used for an integration of a set of ideas that have emerged from organisational research and practice over the past three or four decades on ways of organising work so that the demands of organisational effectiveness and individual job satisfaction are simultaneously met.

The learning organisation is, in many ways, a natural evolution of older participatory management themes of the 1970s and more recent emphasis on empowerment and self-managed work-teams. A learning organisation is recognised by its altered structure (flatter and less hierarchical), redesign of work (emphasis on teams), by the

transformation of the relationship of the organisation to the individual and increased capacity to adaptation and change. The previous overriding concern for control is replaced by a concern for learning by all organisational members on behalf of the organisation (Quinn, 1992).

A learning organisation expects its members to act as learning agents for the organisation, responding to changes in the internal and external environment of the organisation by detecting and correcting errors in organisational theory-in-use, and embedding the results of their inquiry in private images and shared maps of the organisation (Argyris & Schon, 1996: 16).

In the next section the following aspects will be addressed: definitions and characteristics of learning organisations, learning organisations versus traditional organisations and learning organisation frameworks and models.

4.4.1 Definitions and characteristics of learning organisations

According to Gilley and Maycunich (2000: 106) a learning organisation can be defined as a company that learns powerfully and collectively, continually transforming itself to more effectively manage knowledge and empower its people to learn as they work, utilising technology to maximise learning and production. Sharing and transfer of knowledge is also evidence of a learning organisation, one that can analyse, reflect, learn and change, based on experience.

Garvin (1993: 80) suggests that a learning organisation is an organisation skilled at creating, acquiring and transferring knowledge and at modifying its behaviour to reflect new knowledge insights. The goal is to create a “community of commitment” among the members of an organisation so they can function more fully and more openly to achieve the goals of the organisation.

According to Dixon (1999), " *learning organisations make use of learning processes at the individual, team/group and organisational system level to continually transform the organisation in a direction that is increasingly satisfying to its stakeholders"*.

These definitions are a direct reflection of the organisation that knowledge management aims to cultivate. In the same way that the theory surrounding the learning organisation explains that the interaction between the organisation, learning, people, knowledge and technology enables a learning organisation, knowledge management considers the integration between strategy, people, processes and technology (see Figure 4.2).

Marquardt (1996: 180-191) believes that the evolution from the traditional to the learning organisation requires a company to change its environment to:

- Support learning;
- Align learning with business operations;
- Communicate learning's importance;
- Demonstrate commitment to continuous learning and improvement, and
- Establish organisation-wide learning strategies.

According to Marquardt (1996: 193), to become a learning organisation, enterprises need to eliminate organisational bureaucracy, encourage employee involvement and embrace continuous, improvement-oriented learning approaches throughout the organisation.

Watkins and Marsick (1993: 10) argue that most learning organisations share the following attributes:

- They develop structures and systems to ensure that knowledge is captured and shared for use in the organisation's memory and also supported, facilitated and rewarded.
- They have leaders at all levels, who think systematically about the impact of their decisions and work within the total system.
- They build learning into work structures, policies and practice.
- They use measurement systems to benchmark current knowledge and culture.
- They monitor progress towards becoming a learning organisation.

Chalofsky (cited in Gilley and Maycunich, 2000: 108) believes that in order to become learning organisations, companies need to shift from learning that is:

- Based on minimal competence to learning based on continual improvement.
- Based on fear for failure to learning based on risk taking.
- Based on individual performance to learning based on team and collective performance.
- Based on competition to learning based on cooperation and collaboration.
- Formal to learning that is informal.
- Based on one right answer to learning based on discovery of possibilities.
- Based on outcome (the destination) to learning based on process (the journey).

Thus, Chalofsky implies that learning is the result of organisational systems and structures that encourage members to learn and develop together.

Marquardt (1996: 2) believes that learning organisations learn more effectively from their mistakes, make more organisational use of employees at all levels of the organisation, shorten the time required to implement strategic changes and stimulate improvement in all areas of the organisation. Organisations that learn faster than their competitors are able to adapt more quickly and thereby achieve significant advantages in the global world of business.

4.4.2 Learning organisations versus traditional organisations

Learning organisations differ from traditional organisations in critical areas. In traditional organisations the strategic structure was a hierarchy. This resulted in lots of layers, followers everywhere, low productivity and impersonal relationships between the layers. Traditional organisational structures have been characterised by distrust, apathy, lack of hope, and a feeling of not belonging. At each layer of the organisation, one or more managers "stand in" for one manager or executive at the next higher level (Alfonso, 1998: 5-9).

In traditional organisations, managers would be expected to be competent to represent the work group in all organisational processes traditionally considered managerial.

Both Senge (1990a: 9-16) and Hitt (1996: 16-25) have drawn a comparison between a traditional organisation and a learning organisation.

Senge (1990a) identified five "core learning disciplines" that represent learning organisations and, thus, separate them from traditional organisations: personal mastery, mental models, shared vision, team learning and systems thinking. Hitt adapts the McKinsey 7-S framework to provide a systems view of the learning organisation.

According to Senge the comparison between a traditional and a learning organisation is as follows:

- **Personal mastery:** Personal mastery is the process of continually clarifying and deepening an individual's personal vision. This is a matter of personal choice for the individual and involves continually assessing the gap between their current and desired proficiencies in an objective manner, and practising

and refining skills until they are internalised. This develops self-esteem and creates the confidence to tackle new challenges (Senge, 1990a: 139).

In traditional organisations this process of deepening an individual's personal vision is only related to the product or services of the organisation. In learning organisations personal mastery also includes such areas as enhancing interpersonal competence, personal awareness, emotional maturity and an enlarging understanding of the moral/ethical dimensions of organisational life.

- **Mental models:** Each individual has an internal image of the world, with deeply ingrained assumptions. Individuals will act according to the true mental model that they hold, not according to the traditional individual mental model theories, which they claim to believe.

  If team members can constructively challenge each other's ideas and assumptions, they can begin to perceive their mental models, and to change these to create a shared mental model for the team. This is important as the individual's mental model will control what the team think can or cannot be done.

  In a learning organisation mental models are freely shared, critically examined and revised as necessary at a personal, team and organisational level. By promoting a collective responsibility for organisational decision-making, the learning organisation reduces the barriers to sharing critical information. If an organisation is to become a learning organisation it must overcome the traditional fear that prevents its members from challenging established ways of thinking and doing (Senge, 1990a: 174).

- **Shared vision:** To create a shared vision, large numbers of people within the organisation must draft it, empowering them to create a single image of the

future. In traditional organisations many leaders have personal visions that never get translated into shared visions that foster commitment.

All members of the organisation must understand, share and contribute to the vision for it to become reality. With a shared vision, people will do things because they want to, not because they have to, as in traditional organisations.

A shared vision produces a much higher level of sustained commitment than is possible when the vision is imposed from top management. Goals, values and missions will have the most impact on behaviour in an organisation if they are widely shared and owned by persons throughout the organisation. (Senge, 1990a: 205).

- **Team learning:** Virtually all important decisions occur in groups. Team learning focuses on the learning ability of the group. Adults learn best from each other, by reflecting on how they are addressing problems, questioning assumptions, and receiving feedback from their team and from their results. With team learning, the ability of the group becomes greater than the learning ability of any individual in the group (Senge, 1990a: 233).

In traditional organisations individual learning is important however, in learning organisations the processes by which individual, team and organisational learning take place are highly valued.

- **Systems thinking:** The cornerstone of any learning organisation is the fifth discipline – systems thinking. According to Senge (1990a) this is the ability to see the bigger picture, to look at the interrelationships of a system; allowing continuous processes to be studied rather than single ones, as in traditional organisations.

The fifth discipline shows that the essential properties of a system are not determined by the sum of its parts, but by the process of interactions between those parts. This is the reason why systems thinking is fundamental to any learning organisation; it is the discipline used to implement the other disciplines. Without systems thinking, as in traditional organisations, each of the disciplines would be isolated and therefore not achieved. The fifth discipline integrates the other disciplines to form a whole system, a system whose properties exceed the sum of its parts.

According to Senge (1990a: 117) the converse is also true – systems thinking cannot be achieved without the other core disciplines: personal mastery, team learning, mental models and shared vision. All of these disciplines are needed to successfully implement systems thinking, again illustrating the principal of the fifth discipline: systems should be viewed as interrelationships rather than traditional isolated parts.

In summary, systems thinking involves, examination of and reflection upon all aspects of organisational life, such as mission, strategy, structure, culture and managerial practices. Employees in learning organisations engage in systems thinking as they view their role in their work team, the work of their work team in the organisation and the organisation's relationship to the larger environment.

According to Hitt (1996: 17) a learning organisation is an organisation that is striving for excellence through continual organisation renewal. Hitt adapts the McKinsey 7-S framework to provide a systems view of the learning organisation. The seven Ss are: shared values, leadership style, strategy, structure, staff skills and a measurement system. Hitt found that the McKinsey 7-S frame was lacking an important link. He therefore added an eighth S, namely synergistic teams. Hitt (1996: 18) argues that these eight elements are sufficient to describe a learning organisation.

The eight elements that represent a learning organisation according to Hitt (1996: 17-19) are discussed in greater detail below:

- **Shared values:** Shared values are the core beliefs and values of the learning organisation. The traditional organisation has two primary values: efficiency (doing things right) and effectiveness (doing the right things).

  For an organisation to thrive in a rapidly changing environment with ever-increasing competition it will be necessary "to move to higher ground" (Hitt, 1996: 19). This higher ground is witnessed in the learning organisation's two core values, namely excellence (e.g. on time delivery, conformance to specifications, zero rejects and customer satisfaction) and organisational and self-renewal (e.g. team working, working with customers and other organisations, staff development, continuous improvement).

- **Leadership style:** According to Hitt (1996:19) the leadership style can be inhibiting and threatening (the traditional way) or it can be encouraging and supportive. Each leader makes his/her own choice and the consequences of the choice have a profound impact on the staff. The leader's role in a learning organisation has shifted from controller to catalyst. As a catalyst, the leader empowers staff. To empower is to enable others to act.

- **Synergistic teams:** According to Hitt (1996: 20) synergistic teams are the "flywheel" of the learning organisation. In synergistic teams members learn together and provide a greater value than the sum total of individual contributions, as in traditional organisations.

- **Strategy:** Planned change contributes substantially more to the overall success of the enterprise than unplanned change. Hitt (1996: 19) views this course of action as a "map" – a map for moving from present reality towards

the vision of the organisation. The traditional organisation views the plan as a "road map", included in the written plan are goals and objectives, action steps and resource allocations. The learning organisation views the plan as a "learning map". De Geus (cited in Hitt, 1996: 21) views planning as an opportunity for the members of a management team to come together to share individual mental models and arrive at a collective mental model. As new knowledge is acquired, the collective mental model is revised. According to Senge (1990a) and Hitt (1996) planning is not in a written document but in the heads of the planners – in their shared mental model.

- **Structure:** In traditional organisations, activities have been systematically arranged and systematically carried out in a hierarchical organisation structure. Today, however, many managers realise that orderliness is necessary, but not sufficient. Orderliness is not flexible. According to Hitt (1996: 21) the learning organisation incorporates stability and flexibility by establishing dynamic networks within a flatter and vertical organisation structure. Stability is provided by the vertical structure and flexibility is provided by the dynamic networks (all members of the organisation working together in teams).

- **Staff:** The traditional organisation has focused on selecting people on the basis of their knowledge and experience. The learning organisation focuses on selecting people on the basis of their ability to learn, people who want to learn and prefer to do so throughout their careers.

- **Skills:** The traditional organisation is more involved with both single-loop learning, and the learning organisation with single and double-loop learning (Argyris & Schon, 1996). As discussed in section 4.3.5.1, Marquard (1996: 38) refers to these two types of learning as adaptive learning. Hitt (1996: 22) argues that an organisation needs both types of learning, because double-loop learning provides guidance for single-loop learning.

A staff development programme in a learning organisation restricted to single-loop learning focuses on such topics as organisational policies, job mastery and problem solving skills. Hitt (1996: 23) argues that a staff development programme that is designed to enhance single-loop and double-loop learning might focus on the five core learning disciplines highlighted by Senge.

- **Measurement system:** The measurement system of the traditional organisation focuses almost exclusively on financial matters. According to Kaplan and Norton (cited in Hitt, 1996: 23) managers need a balanced presentation of financial and operational measures. The balanced scorecard approach, for example, complements the financial measures with operational measures. Operational measures "focus on customer satisfaction, internal processes, and the organisation's innovation and improvement activities". Hitt argues that a learning organisation strives for excellence through organisational renewal, and that is what should be measured.

From the discussion it seems apparent that the learning organisation is substantially different from traditional organisations. Senge (1990a) describes the blueprints for building a learning organisation in terms of disciplines. Senge (1990a) maintains that these disciplines must be practised; otherwise nothing will be learned. His philosophy behind incorporating these disciplines lies in an understanding that the way in which organisations are structured, is a product of how people think and interact; organisations cannot change in any fundamental way unless people can change their basic processes of thinking and interacting.

Hitt (1996) argues that the learning organisation reflects a process rather than an end state. He emphasises the purpose of a learning organisation as an organisation that is striving for excellence through continual organisation renewal. Hitt has adapted the McKinsey 7-S framework to provide his view of the learning organisation. According to Hitt (1996), Senge's five disciplines might easily be incorporated in a learning

programme. Critical success factors include excellence, organisational renewal, change and continuous improvement.

4.4.3 Advantages of learning organisations

The advantages of learning organisations have been identified in the literature by authors such as Garratt (1990), Gerard (2001) and Reynolds (1994).

Garratt (1990: 19) has identified three core advantages of learning organisations:

- They encourage people at all levels of the organisation to learn regularly and continuously from their work.
- They have systems for capturing the learning and moving it where it is needed.
- They value learning and are able to continuously transform themselves

According to Gerard (2001: 1-3) learning organisations enable people to develop, teams and groups to work better and the organisation to improve its techniques, methods and technologies to enable continuous learning. These advantages are described as follows:

People develop: A learning organisation encourages its members to improve their personal skills and qualities, so that they can learn and develop. They benefit from their own and other people's experience. People are appreciated for their own skills, value and work. All opinions are treated equally and with respect. By being aware of their role and importance in the whole organisation, the workers are more motivated. This encourages creativity and free thinking and leads to new solutions.

Teams and groups work better: Gerard (2001: 3) argues that learning organisations provide the perfect environment for high-performing teams to learn, grow and develop. These teams can then perform efficiently for the organisation to produce positive results. Within learning organisations in general, and teams in particular, information and knowledge flow more freely. The result is higher productivity within teams and between teams as they build on each other's strengths. Trust between team members increases and they value each other's opinions more.

Organisations benefit: According to Gerard (2001: 3) an active learning organisation will encourage continuous learning. Therefore it will always be improving in its techniques, methods and technology. The old hierarchical communication barrier between manager and workers has changed into more of a coach and team scenario. Leaders support teams. All workers have an increased awareness of the company's status and what happens in other departments. Communication between and across all levels of the organisation gives a sense of coherence, making each individual a vital part of the whole system.

Reynolds (1994: 23-30) identifies the following advantages for learning organisations:

- Improved job satisfaction.
- Improved team communication.
- Sharing of knowledge and best practices.
- Dramatic improvement in teamwork.
- Increased confidence in the management.
- Commitment to individual, team and organisational learning.
- Involvement in identification of issues and improvements.

In summary, the advantages of a learning organisation are: People develop by improving their skills and qualities and benefit from their own and other people's experience. This produces a very flexible learning organisation where people will

accept and adapt to new ideas and changes through a shared vision. Teams and groups work better and communication between and across all levels of the organisation makes each individual a vital part of the whole system.

4.4.4 Learning organisation frameworks and models

Various models and frameworks exist for learning organisations. While all have similarities to other models, no two models or frameworks are the same. The frameworks and models for a learning organisation involve a holistic integration of the strategic, process, people and technology dimensions of the organisation. Not all the dimensions are always included in a framework or a model.

Stuart (1997a: 172) identifies five "core" elements in his framework of a learning organisation. Stuart argues that without a shared understanding of all the elements, outlined below, an organisation is unlikely to achieve its learning potential. The elements include:

- **Organisation strategy:** A dynamic strategy, incorporating a shared vision (learning team), which is crafted and emerges as the environment changes, and particularly, if and when the organisation changes. Strategy also includes learning to change and learning to learn.
- **Knowledge and learning:** Knowledge and learning become an explicit component of the organisational culture. Measures are taken to facilitate learning, and to develop, create, store and disseminate knowledge. Innovation, creativity and participation by all members of the organisation are necessary.
- **People**: People include leaders, employees, customers, alliance partners and the community. Learning in organisations begins with the leaders learning to learn.

- **Technology:** Technology is the supporting, integrated technological networks and information tools that allow access to and exchange of information, knowledge and learning. It includes collaboration, coaching, coordination and knowledge skills. It encompasses electronic tools as enablers and advanced methods for learning and creating knowledge freeways.

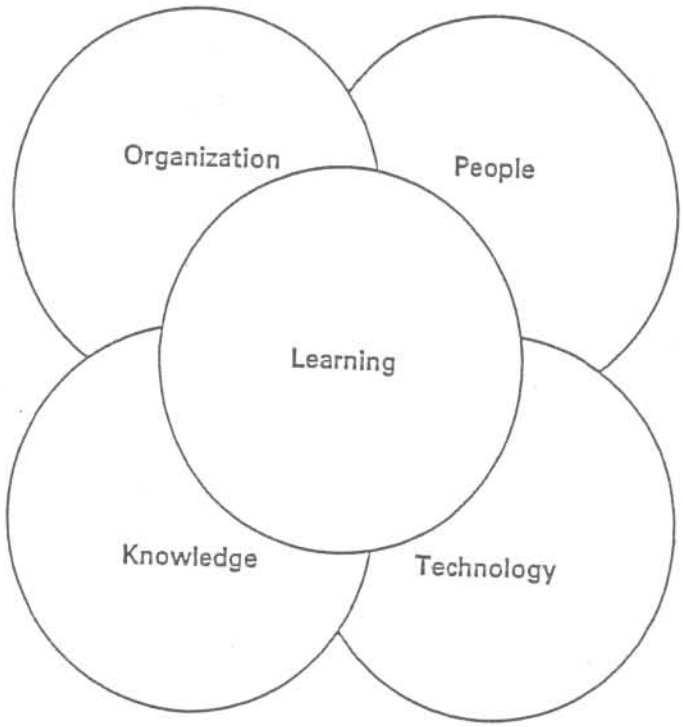

Figure 4.2: Marquart's (1996: 21) systems-linked learning organisation model

Marquardt's (1996: 21) systems-linked learning organisation model is made up of five closely interrelated sub-systems that interface and support one another, illustrated in Figure 4.2. The core subsystem of the learning organisation is learning, and this dimension links and overlaps the other four subsystems.

Learning takes place at the individual, group and organisational levels. According to Marquardt (1996) the skills (or disciplines as Senge refers to them) of systems thinking, mental models, personal mastery, team learning and shared vision are necessary to maximise organisational learning. Each of the other sub-systems – organisation, people, knowledge and technology – are necessary to enhance the quality and impact of the learning and are dynamically interrelated and complement each other.

Mumford (1995: 15) proposed a pyramid model of the learning organisation in which he emphasises learning, shown in Figure 4.3. According to Mumford it is an issue of levels of learning in the sense of participants in the learning process that is important to become a learning organisation. He recognises the significance of individual learners, one-to-one learning relationships and that of group learning. The learning organisation is the final level in the pyramid.

Figure 4.3 Mumford's (1995: 15) learning organisation pyramid.

Mumford strongly emphasises on the people and learning dimensions, but strategy, knowledge and technology are not seen as part of the pyramid model. This can lead to only a partial appreciation of the principles and processes necessary to move from a traditional to a learning organisation.

Section 4.4.2 described Senge's representation of the learning organisation, based on his five disciplines. The fifth discipline, systems thinking, represents the learning organisation:

- Personal mastery (learning individual)
- Mental models (learning individual)
- Shared vision (learning team)
- Team learning (learning team)
- Systems thinking (learning organisation)

According to Senge (1990a) learning organisations take these powerful ideas and pursue them simultaneously. Because the simultaneous pursuit of these ideas is difficult, Senge calls them "disciplines" in the sense that one has to deliberately and studiously attend to them in the course of functioning as a member of an organisation.

The exercise of the five disciplines contributes to increased organisational effectiveness in carrying out the organisation's primary mission, greater capacity for organisational adaptation to changing internal and external environmental demands, a fuller utilisation of the members' abilities and motivation, and higher level of job and personal satisfaction by organisational members.

Systems thinking clarifies many aspects of the learning organisation – the new way in which individuals perceive themselves and their world. At the heart of a learning organisation is a "shift of mind" – from seeing oneself as separate from the world to connected to the world, from seeing problems as caused by someone or something

"out there" to seeing how one's own actions create the problems one experiences. According to Senge a learning organisation is a place where people are continually discovering how they create their reality and how they can change it.

In summary, the learning organisation incorporates five distinct subsystems-learning, organisation (structure), people, knowledge and technology. Attempting to understand or become a learning organisation without all five these dimensions will lead to only a partial appreciation of the processes and principles necessary to move from a non-learning to a learning organisation.

The core subsystem of a learning organisation is learning – at the levels of individual, group and organisation, with the skills (or disciplines as Senge refers to them) of systems thinking, mental models, personal mastery, team learning and shared vision. Each of the other subsystems – organisation, people, knowledge and technology – are required to enhance the quality and impact of learning on a corporate-wide basis.

4.5 Organisational learning versus learning organisation

Based on the discussions in Sections 4.3 and 4.4 a distinction has been suggested in the literature to differentiate between the two terms organisation learning and learning organisation.

In order to become a learning organisation, individual, team/group and organisational learning are basic prerequisites. As argued in the abovementioned sections "organisation learning" occurs on an organisation-wide basis. Conversely the term "learning organisation"denotes the systems, principles and characteristics of organisations that learn as a collective entity.

The learning actions and activities, which are needed to lead to a learning organisation, are summarised in Table 4.1:

Table 4.1: Actions which are needed to lead to a learning organisation

Organisation Learning (Action)	Leads to	Learning Organisation
Ability of organisation to gain insight and understanding from experience through experimentation, observation and analysis.	Learning within the organisation.	Learn about learning and understand the processes by which individual, group/team and organisational learning take place.
Change organisational capacity for doing something new.	Capacity to adapt and change.	Improved organisational performance.
Development of new knowledge/insights.	Generation of new knowledge.	Changes in actions at individual, group/team and organisational level.
Potential to influence behaviour.	Changes in actions at individual, group/team and organisational level.	Self-managed teams, product innovations and new technology development.
A cognitive approach is adapted.	Learners see relationships between elements in a situation.	Learning occurs through shared mental models, sharing of relevant knowledge, learning based on continuous improvement.
Learning influenced by organisational culture, structure and infrastructure.	Transforming and change to manage learning and knowledge more effectively.	Altered flatter, less hierarchical structure, shared values, a supportive culture; failures are faced and frankly discussed. Utilise techniques and technologies to maximise learning and to create and share knowledge.

Change from old organisational paradigm to new paradigm.	Change and improvements.	Strategic learning capacities are widespread, leaders at all levels, empowered employees, open communication, operational and financial measurement system in place.
Create/adapt learning organisational models.	Implementation of learning organisation models.	Learning organisation models incorporates five distinctive subsystems; learning, organisation, people, knowledge and technology.

In summary, a learning organisation responds to changes in the environment by proactive organisational learning; moreover, it deliberately aims at improving its ability for learning. In order to learn on an organisational level a learning organisation makes use of every employee; therefore, it strives to create a work environment which supports learning.

4.6 Organisational learning and the learning organisation in the knowledge management context

Organisational learning and the learning organisation intersect with knowledge management in several ways. As Senge (1990a) explains it, organisational learning anchors the process of knowledge management in the core phenomenon of how new knowledge is generated. The fundamental unit for generating knowledge in any enterprise has always been regarded as a working team. Thus, working teams create knowledge in the sense of capacity for effective action. It is teams who collectively have to do something to produce a desired outcome.

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Organisational learning also emphasises the enhancement of learning capabilities, particularly the quality of interpersonal relationships, dialogue, collective understanding of interdependence and common vision. All these capabilities tie into qualities that make internal networks effective – and knowledge diffuses and intermingles through internal networks. Like knowledge generation, knowledge diffusion is also a learning process (Gilley & Maycunich, 2000: 103-104).

Knowledge management also adds something new to organisational learning. In Senge's (1990b) view one of the main things which is achieved through knowledge management, is to get people to think about "the larger scale" for example to look at interrelationships of the system. Organisational learning has been focused on relatively small groups, which is a powerful starting place for catalysing significant change. Many times important learning fails to spread beyond a group or team to the larger organisation. Knowledge management forces people to pay attention to the actual processes that expand the diffusion of new learning or new knowledge.

According to Ahmed, Kok and Loh (2002: 112) the type of benefits that can be derived by managing knowledge and learning are:

- Improved efficiency.
- Improved market position by operating more intelligently.
- Professionals learn more efficiently and more effectively.
- Improved communication between knowledge workers.
- The organisation focuses on the core business and critical company knowledge.

Regardless of how people understand the concepts knowledge management and organisational learning in a learning organisation or whether they consider it a fad or the next wave, it has done much to get people thinking about how they can support

large-scale change in their organisations. Change and knowledge sharing that spread to the outermost boundaries of organisations may be the most important waves of all times.

4.7 Summary

Learning, knowledge and change are inseparable. Learning changes one, change requires learning, and learning is the process of gaining knowledge. Learning leads to change, which can lead to more learning, and more learning can lead to more knowledge, because knowledge is the result of learning. Such a change is not the familiar change from state A, to state B, the better way, but the process that allows people to continually generate new states. Learning is the ability to change and obtain knowledge continuously.

Organisational learning is where learning takes place that changes the behaviour of individuals or groups/teams within the organisation. A learning organisation is an organisation that is continually expanding its capacity to create its future, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together. Learning organisations make intentional use of learning processes at individual, group and organisational level to transform the organisation in ways that are increasingly satisfying to all stakeholders. The learning organisation is one where learning is taking place that changes the behaviour of the organisation itself.

Learning takes place in a variety of environments, at different levels, and utilises many approaches. In any organisation, learning can be both organisational and individual and the former relies heavily on the latter.

The organisational learning context consists of three elements – organisational culture, structure and infrastructure. Culture is the most important component of the

organisational learning context, consisting of the values and beliefs that steer the actions and behaviour of the individuals making up the organisation. Culture and structure are interdependent in creating an organisational learning context.

Flatter networked structures are the most appropriate structures for supporting a learning culture. Technology, and particularly information and communications technology, plays a vital role in providing the infrastructure needed to support network structures and organisational learning within and between collaborating companies.

There are three levels of learning present in learning organisations: individual learning, group or team learning and organisational learning. Though individual and team learning are interrelated, organisational learning is seen as more than the sum of individual and group learning.

There are various ways in which organisations learn: adaptive learning (single- and double-loop learning), deutero learning (learn how to learn) and action learning (involves working on real problems and implementing new solutions). They are not exclusive of each other and an organisation or individual may employ more than one type of learning at the same time.

Learning organisations differ from traditional organisations in critical areas. Senge (1990a) identified five core disciplines or skills that represent characteristics of learning organisations and thus separate them from traditional organisations: personal mastery, mental models, shared vision, team learning and systems thinking. The fifth discipline, systems thinking, is the cornerstone of any learning rganisation.According to Senge this is the ability to see the bigger picture, to look at the interrelationships of a system; allowing continuous processes to be studied rather than single ones.

Learning organisations work because people develop, teams and groups function better and the organisation benefits from it. Learning organisations provide the perfect environment for high-performing teams to learn, grow and develop.

There are many different models of the learning organisation in the literature, each with similarities to other models, yet no two are quite the same. Five core elements or subsystems are identified by most authors in their frameworks or models of a learning organisation: organisation strategy, knowledge and learning, people and technology.

Marquardt's (1996) systems-linked learning organisation model is made up of five closely interrelated subsystems that interface and support one another. According to Marquardt, learning is the core subsystem and each of the other subsystems, viz. organisation, people, knowledge and technology, are necessary to enhance the quality and impact of the learning in the organisation.

Mumford (1995) proposed a learning pyramid model of the learning organisation. The learning organisation is the final level in what he describes as a learning pyramid.

Senge (1990a) proposed a representation of the learning organisation, based on his five disciplines. The fifth discipline, systems thinking represents the learning organisation.

Hitt (1996) adapts the McKinsey 7-S framework to provide his view of the learning organisation. He emphasises the purpose of the learning organisation as an organisation that is striving for excellence through continual organisational renewal.

Distinctions have been suggested in the literature to differentiate between the two terms organisational learning and learning organisations. A learning organisation responds to changes in the environment by proactive organisational learning.

The organisation aims at improving its ability for learning. To learn on an organisational level, a learning organisation makes use of all employees; therefore, it strives to create a work environment which supports learning.

Knowledge management and organisational learning can work best as inter-related and overlapping concepts, rather than being assumed to be synonyms for the same process. An inherent feature of both learning in organisations and knowledge management is the sharing of information and ideas to create and develop new knowledge. To share and distribute information and knowledge in a learning organisation, a well-developed and well-planned technology infrastructure is needed.

Chapter 5 will study various knowledge management technologies and techniques as enablers to transfer and share relevant knowledge in learning organisations.

CHAPTER 5

TECHNIQUE AND TECHNOLOGY SUPPORT FOR KNOWLEDGE MANAGEMENT

5. TECHNIQUE AND TECHNOLOGY SUPPORT FOR KNOWLEDGE MANAGEMENT

"We are in the middle of the networked society. Technology has given us new ways to keep in touch with each other and share information; we have to take advantage of that technology to get better faster." Bill Baker

5.1 Introduction

In the domain of a knowledge management initiative no constructive knowledge sharing technique or technology can be developed, decided on, or implemented in an organisation without a sound theoretical foundation. The previous three chapters can be described as giving the necessary theoretical background to the basic understanding of what knowledge management is, as well as the benefits and challenges that organisations can expect from knowledge management.

In Chapter 2 an overview of the existing theory of the knowledge concept is provided in an attempt to define the key aspects of knowledge management, namely the knowledge asset, tacit versus explicit knowledge, the value of knowledge and the knowledge organisation.

In Chapter 3 knowledge management is defined and is seen as a business process, integrating knowledge, people, processes, strategies, techniques and technologies. It is the process through which organisations create and use their institutional or collective knowledge assets. Knowledge management is not only about managing knowledge assets but also about managing the processes that act upon the assets. These processes include developing knowledge, preserving knowledge, using knowledge and sharing knowledge within organisations, including learning processes and the management information systems.

The previous chapter closely linked knowledge management with the concepts of organisational learning and learning organisations. As argued, organisational learning is the generation of new knowledge leading to changes in actions at the individual, group/team and organisational level. Learning organisations have a culture conducive

to knowledge creation and sharing, manage people as assets and support structures and processes that facilitate, rather than hinder, knowledge management initiatives.

The objective of this chapter is to provide an outline of the general and specific techniques and technologies that can be applied to knowledge management and to assess their actual or potential contribution to the basic processes of knowledge creation and sharing within organisations in order to create a learning organisation.

Emphasis will be placed on the notion that information technology and human-related techniques can bring to knowledge management the ability to carry out knowledge management processes, quickly, efficiently and cost-effectively, making it an enabling solution.

Instead of warehouses full of filing cabinets and filing clerks organisations use computers and databases with search engines. These are much faster and generally more efficient. Organisations realise that information technology is essential in certain situations, such as codification of large amounts of data – where speed is important, where geographical diversity makes other means of sharing knowledge impractical or where input from many parties is required to refine ideas.

Knowledge management techniques have actually been around for a long time and are fairly well understood, but until recently in most cases people have applied them. Faced with an idea, an opportunity or a problem, the first thing organisations do is to pull together a group of people to pool their experiences and ideas. While information technology to support knowledge management processes is therefore a great enabler, it is not the only tool or solution available.

The first section of this chapter is based on the theory of organisational learning, which focuses on the conversion processes of knowledge between tacit and explicit knowledge, introduced by Polanyi, (cited in Nonaka & Takeuchi 1995). Because all four conversion processes which aim to foster knowledge creation are important in knowledge management, techniques and technologies ought to support these conversion processes. The second section gives an overview of the role of knowledge

management techniques in supporting knowledge management processes and activities.

Thirdly some of the current and future technologies for enabling knowledge management are described. Finally there is a brief overview of technology considerations. It is not the scope of this study to explore the technical aspects of the technology in detail, but rather to concentrate on the important role which current techniques and technologies can play to support knowledge management.

5.2 The role of knowledge management techniques and technology to support knowledge management processes and activities.

The use of techniques and technology in knowledge management is not new, and early pioneers, such as Wiig (1994, 1995a) and Sveiby (1993), have built up considerable experience. Even before the availability of solutions such as Lotus Notes on which many contemporary knowledge management solutions are based, companies were deploying intranets, based on early generations of networking and computer technology that improved online access to knowledge. Face-to face techniques are also well known and have been used for many years in different organisations (Davenport & Prusak, 1998: 17).

To structure the discussion of the role of techniques and technology in knowledge management, it is helpful to classify both enablers by reference to the notions of tacit and explicit knowledge introduced by Polanyi in the 1960s and used by Nonaka and Takeuchi in the 1990s (Nonaka & Takeuchi, 1994). Nonaka and Takeuchi formulated a theory of organisational learning that focuses on the conversion of knowledge between tacit and explicit knowledge.

As discussed in Chapter 2 (Paragraph 2.5), tacit knowledge is what the knower knows, which is derived from experience and embodies beliefs and values. It is embedded in the human brain. Tacit knowledge is the most important basis for the generation of new knowledge. Explicit knowledge, which can be easily codified, is represented by some artefact, such as a document or a video, which has been created

with the goal of communicating with another person. Both forms of knowledge are important for organisational effectiveness (Nonaka & Takeuchi, 1994: 14).

As shown in Figure 2.3 the underlying phenomena, the SECI model of Nonaka and Takeuchi's (1995) model divide the knowledge creation processes into four categories: socialisation (tacit to tacit), externalisation (tacit to explicit), combination (explicit to explicit) and internalisation (creation of new tacit knowledge from explicit knowledge). The value of this model in the present knowledge management context is that it focuses attention on tacit knowledge (which is featured in three of the four processes) and thus on people and their knowledge.

Because all four processes in Nonaka and Takeuchi's model are important in knowledge management, which aims to foster organisational knowledge creation, techniques and technology should support all four processes as shown in Table 5.1.

Table 5.1 Conversion of knowledge between tacit and explicit forms – tools and techniques (Nonaka & Takeuchi, 1994: 98)

Tacit to tacit	**Tacit to explicit**
e.g. Team meetings & discussions	e.g. dialogue within teams, answering questions
Explicit to tacit	**Explicit to explicit**
e.g. learn from others, a report, a document	e.g. e-mail a report, intranet

Although early generations of knowledge management solutions (solutions typically integrate several techniques and technologies) focused on explicit knowledge in the form of meetings, documents and databases, there is a trend to expand the scope of the solutions to integrate techniques and technology that can also foster the use of tacit knowledge (Davenport and Prusak, 1998: 96).

Organisational learning takes place as individuals participate in the above-mentioned four processes, since by doing so their knowledge is shared, articulated and made available to others.

Creation of new knowledge takes place through the processes of combination and internalisation. As shown in Table 5.1, the processes by which knowledge is transformed within and between forms usable by people are tacit to tacit, tacit to explicit, explicit to explicit and explicit to tacit. For a discussion of the technique and technology examples mentioned in the next four paragraphs see 5.3 and 5.4.

- **Socialisation (tacit to tacit)** is the process of acquiring tacit knowledge through sharing experiences e.g. in meetings. Knowledge sharing takes place between people who have a common culture and can work together effectively (Davenport & Prusak, 1998: 96).

  A typical activity in which tacit knowledge sharing can take place is a team meeting during which experiences are described and discussed. Erickson and Kellogg (2000: 59) argue that an increasing proportion of meetings and other interpersonal interaction also use on-line tools known as groupware. According to Ackerman (2000: 179) new expertise location systems hold out the promise of being able to identify individuals with the right knowledge. Even without identifying a person, unrestricted bulletin boards and chat-rooms have shown that they can be effective in knowledge sharing both from experts as well as the broader community.

- **Externalisation (tacit to explicit)** is the process of converting tacit knowledge into explicit concepts. The externalisation of tacit knowledge is a knowledge creation activity and is most often seen during the concept creation phase of new product development (Davenport & Prusak, 1998: 3). By its nature, tacit knowledge is difficult to convert into explicit knowledge because it is held in the heads of knowledge workers.

According to Nonaka and Takeuchi (1995) typical activities in which the conversion takes place are in dialogue among team members (face-to-face and online), in responding to questions or through the elicitation of stories.

- **Combination (explicit to explicit)** is the process of creating explicit knowledge by bringing together explicit knowledge from a number of sources. Individuals exchange and combine their explicit knowledge through telephone conversations, meetings and memos, using various techniques and technologies. Explicit knowledge can also be shared via e-mails, intranets, education and training. The use of technology to manage and search collections of explicit knowledge is well established. Thus, the phase of knowledge transformation best supported by information technology is combination, because it deals with explicit knowledge.

- **Internalisation (explicit to tacit)** is the process of embodying explicit knowledge into tacit knowledge, internalising the experiences gained through the other modes of knowledge creation into individuals' tacit knowledge bases in the form of shared mental models or work practices (Hansen, Nohria and Tierney, 1999: 106). In order to act on information, individuals have to understand and internalise it, which involves creating their own tacit knowledge. By reading documents, employees can to some extent re-experience what others previously learned. Thus, by reading documents from many sources people have the opportunity to create new knowledge by combining their existing tacit knowledge with the knowledge of others. A typical activity would also be to read and study documents retrieved from a number of different databases and search engines.

According to Nonaka and Konno (1998: 41) the abovementioned four processes do not occur in isolation, but work together in different combinations in typical business situations.

Although individuals as well as groups of practice, experience each of these four processes from a knowledge management and therefore an organisational perspective,

the greatest value occurs from their combination since, as already noted, new knowledge is thereby created, disseminated and internalised by other employees who can therefore act on it and thus form new experiences.

Once an idea is created by an individual or group and put into practice, it goes through a period of evaluation and refinement. The idea or solution is then stored for future use by that individual or others, at which time that knowledge can be accessed and retrieved (Martiny, 1998: 71). Using different collaborative efforts of everyone involved in the new project, innovation occurs producing new knowledge, new solutions and new products.

Since all the processes of Table 5.1 are important, it seems likely that knowledge management solutions should support all of them, although it must be recognised that the balance between them in a particular organisation would depend on the knowledge management strategy used in the organisation. The result of correct application of the four processes described above is an incredibly knowledge-rich organisation, using and re-using the knowledge and experiences of its people.

According to Frappaolo and Toms (1997) there are three essential components of knowledge management that are necessary to trigger the processes described by Nonaka and Takeuchi (1995), which transform knowledge, namely:

- **People** to relay past experience and generate new ideas (innovation).
- **Processes** for sharing and distributing that information; and
- **Techniques** and technologies to make it all work in an efficient manner.

5.2.1 People as an essential component of the knowledge transfer process

People are necessary for brainpower, innovation, creativity and the experiential knowledge to solve problems. Knowledge sharing – the free, unprompted sharing of knowledge and experiences among fellow employees – happens every day at the water cooler, in meetings or in the elevator. This is a critical component of any knowledge management architecture.

In some cases, direct contact between people cannot be replaced with technology in order to transfer knowledge (Davenport & Prusak, 1998: 100). Technology can never substitute for the rich interactivity, communication and learning that is inherent in personal dialogue (Fahey and Prusak, 1998: 265).

Davenport (1999: 10) states that empirical research indicates that people prefer information and knowledge that is timely and rich in contextual cues, is presented with humour or given a unique interpretation and clearly has relevance for their work and lives. According to Davenport, most executives still rely on verbal information as their most important source.

According to Dowling, Welch and Schuler (1999: 121) developments in worldwide communication systems, such as e-mail and videoconferences, can speed up knowledge transfer, but for developing and retaining expertise it cannot fully substitute for face-to-face contacts. Martiny (1998: 76) agrees that technology is an enabler, not a driver of knowledge management.

As people are the heart of a knowledge management initiative, the success of knowledge management very much depends on the organisations' employees and the transfer of their knowledge and experience.

5.2.2 Processes as an essential component of the knowledge transfer process

Knowledge processes and routines refer to the methods and systems for generating, gathering, analysing, organising, disseminating and applying experiences, information and understanding for the benefit of an organisation or society (Marchand, Davenport and Dickson, 2000).

Without a clear understanding of the organisational and human processes through which information becomes transformed into insight, knowledge and action, an organisation is unable to tap into the real value of its information resources and information technologies (Choo, 1998: 14-18).

Organisational knowledge is not only embodied in people or embedded in documents or repositories, but also in organisational routines, processes, practices and norms (Davenport & Prusak, 1998). Clearly, organisational processes are not independent of structure and culture.

To create a sharing, collective atmosphere and culture, an organisation must have effective and efficient business processes in place. A Meta Group study states that: *" …while all business processes can benefit from better knowledge management techniques and technologies, organisations that redefine specific core processes to exploit knowledge management opportunities will become the future market leaders"* (Meta Group, 1997: 4).

Working in a knowledge-based economy, it is vital for organisations to implement and facilitate process changes, for example cultural changes, to encourage knowledge sharing. Greengard (1998: 90-101) argues that organisations must implement the appropriate processes and technologies to share and not hoard knowledge.
Once a knowledge-sharing process has been established, an intelligent process for filtering the inevitable "glut" of information into applicable knowledge is required.

5.2.3 Techniques and technology as an essential component of the knowledge transfer process

Knowledge management is not an application sold in a box or downloaded from the Web. It consists of all the business strategies, processes and human interaction that have been discussed in this study so far.

Knowledge management does, however, require a technological spine supported by knowledge retrieval architecture. Knowledge retrieval returns information that is accurate and relevant to the query so it can be immediately applied to the problem. Implementing knowledge technology and technique solutions can help organisations to initiate collaboration and innovation, facilitate knowledge sharing and increase the organisation's competitive advantage and time to market (Frappaolo, 2000: 13).

In addition to the power of knowledge technology, an organisation must have an enterprise-wide infrastructure for sharing explicit and tacit knowledge. Workgroups must be able to rapidly distribute necessary information back and forth to each other over client/server architecture.

Finally, an organisation must possess and be able to use its repositories of information containing the collective knowledge of the enterprise. There needs to be a technological solution where employees can access all forms of information. Having the ability to acquire new knowledge is crucial to an organisation's survival.

According to Frappaolo (2000: 10) this is best represented by the ability to search networks outside (such as the Internet) and inside (such as Groupware and Intranet) quickly, safely and accurately, without adding significant time and labour to find the relevant information. Figure 5.1 illustrates Frappaolo's view of the navigation and search process.

Figure 5.1: Navigation and search (Frappaolo, 2000: 6)

Searching ↓ Navigating ↑ Monitoring

Structured Data

Structured /Unstructured Text

Executable Knowledge

E-mail/Internet/ Intranet

People

↑↓

Internal/Enterprise Information | External/Network Information

In summary, the role of techniques and technologies that contribute to knowledge management solutions have been discussed using Nonaka and Takeuchi's model of organisational knowledge creation as a framework.

The extent to which knowledge transformation within and between tacit and explicit forms can be supported by techniques and technologies is reviewed. The strongest contribution to current solutions is made by techniques and technologies that deal largely with explicit knowledge.

Contributions to the formation and communication of tacit knowledge, and support for making it explicit are currently weaker than explicit contributions, although some encouraging developments have been highlighted, such as text-based chat and unrestricted bulletin boards.

In some cases, direct contact cannot be replaced in order to transfer knowledge. Technology can never substitute for the interactivity, communication and learning that are inherent in personal dialogue. Developments in worldwide communication systems (such as e-mail) can speed up information and knowledge transfer, but in developing and retaining expertise it cannot fully replace face-to-face contacts. Three elements of knowledge management, namely people, business processes and suitable techniques and technology, need to be in place to trigger the knowledge transfer process.

In the following section of this chapter the techniques that support the processes of Table 5.1 are described in more detail and illustrated with examples drawn from current research articles.

5.3 Techniques to support knowledge management

At the centre of all successful knowledge management strategies reside applications and solutions that enable the organisation to capture, access, browse, search, retrieve and share what is already known or possessed. Any organisation that can disseminate its information assets quickly and easily across its enterprise infrastructure can start managing its knowledge assets (Bender & Fish, 2000: 125-137).

The key to knowledge management is to get the required relevant knowledge to the person(s) concerned within a specified workgroup and across the enterprise. It is the

goal of knowledge management to help people work better together, using and managing increasing amounts of information and knowledge.

In the knowledge management literature a distinction is made between knowledge transfer that occurs naturally or informally, and that which takes place in more formalised routines. Davenport and Prusak (1998: 89), when reviewing knowledge management programs in practice, highlight the difference between the more formalised transfer mechanisms such as documents, databases, intranets and informal exchanges which are more casual events that usually take place face-to-face, for example in conversation. These unstructured exchanges are vital to an organisation's success and one of the essential elements of knowledge management is to develop special techniques to encourage such spontaneous exchanges. Various techniques exist, of which only a few are discussed.

5.3.1 Talk rooms and knowledge fairs

Evidence of such efforts can be seen in Japan, where "talk rooms" are deliberately established in which people meet to converse when and how they wish as well as in "knowledge fairs", notably at Ernst and Young, which are deliberately unstructured events where employees are encouraged to share their knowledge. Knowledge is transferred through the process of externalisation by converting tacit knowledge into explicit knowledge (Nonaka & Konno, 1998: 42).

5.3.2 Mentoring

The word mentor can be traced back to Homer's myth of Odysseus. The King left his son Telemachus in the care of a mentor, who guided and taught the youth for ten years while his father was away fighting the Trojans. A mentor, therefore, has always been considered as one who draws upon a deep knowledge base to teach and guide. The recognition of mentoring as an important transfer mechanism for knowledge within organisations has grown significantly in the past couple of decades. However, the mentoring literature focuses primarily on how to structure the mentor-protégé

relationship (Noe, 1988: 65), on the desired behaviour of mentors (Benabou, 1999: 7) and on identifying mentoring functions (Kram, 1995: 110). In the three articles reviewed, none tested the relationship between mentoring and an increase in organisational knowledge. A number of studies have found that individuals who are mentored perform better and are promoted more rapidly (Benabou, 1999: 11), presumably because they have learned and absorbed knowledge from their mentors. Mentors serve as informal teachers, and knowledge is being transferred by means of internalisation and externalisation processes. In recent years, the concept of mentoring has been extended to include peer-to-peer help and protégé-to-mentor learning.

5.3.3 Stories and storytelling

Swap and Leonard (2001: 103) define an organisational story as "A *detailed narrative of past management actions, employee interactions, or other intra- or extra-organisational events that are communicated informally within the organisation.*"

Normally these stories will originate from within the organisation and will therefore reflect organisational norms, values and culture. Mentors from outside the company may use stories from their past experiences and norms and values common to many organisations.

Because of the rich contextual details encoded in stories, they are ideal carriers of tacit dimensions of knowledge which are transferred informally through processes of socialisation (acquiring tacit knowledge through sharing experiences) and internalisation (embodying explicit knowledge into tacit knowledge). However, stories do not lend themselves equally well to transferring different kinds of knowledge. As a strategy for building core capabilities within an organisation, the use of stories to transfer critical skills and managerial systems would probably be misguided. Critical skills, including deep knowledge of a content domain, will be very difficult to transfer via stories. For such concrete forms of knowledge, people will rely on mentoring or training programmes (Boyce, 1996: 5).

Story telling helps people to discover new knowledge and help employees who share the story to develop a common outlook or shared mental model.

5.3.4 Breakfast chatting

Seely and DuGuid (2000: 3) found that a quick breakfast could be worth hours of training. Employees talk about work and talk about it continually, while eating and gossiping. According to Seely and DuGuid, employees pose questions, raise problems, offer solutions, construct answers, laugh at mistakes and discuss changes in their work and customer relations.

Both directly and indirectly, they keep one another up to date about what they know, what they have learned and what they were doing. The group breakfast demonstrates that a job that seems highly independent on paper is in reality remarkably social.

Employees get together not only during official meetings but also in their own time for breakfast, lunch, coffee or the end of the day – and sometimes at all those times. This sociability is not just a retreat from the loneliness of an isolating job but the constant chatting is similar to the background updating that goes on all the time in any ordinary work situation.

In the course of socialising employees develop a collective pool of practical knowledge that any one of them can draw upon. Each employee contributes to the pool, drawing from his or her own particular strengths, which the others recognise and rely on. Collectively the local groups constitute a community of practice.

5.3.5 Communities of practice

According to Wenger, McDermott and Snyder (2002: 2) informal groups known as communities of practice is the latest technique for getting employees to share what they know. New members bring in new interests and may pull the focus of the community in different directions. Changes in the organisation influence the relative importance of the community and place new demands on it. For example, an

information technology community that was only marginally important to an organisation suddenly became critical as the organisation discovered the potential of a few e-business pilots.

Thomas, Kellogg and Erickson argue (2001: 867) that an effective community of practice is built on the collective experience of community members. Only an insider can appreciate the issues of the domain, the knowledge that is important to share, who the real players are and their relationships.

Wenger, McDermott and Snyder (2002) found that employees participate in communities for different reasons. Three main levels of community participation are seen. The first is a small core group of people who actively participate in discussions. As the community matures, this core group takes on much of the community's leadership. At the next level outside this core is the active group. These members attend meetings regularly and participate occasionally in the community forums, but without the regularity or intensity of the core group.

A large number of community members are peripheral and rarely participate. Instead, they keep to the sidelines, watching the interaction of the core and active members. In a traditional meeting or team, managers would discourage such half-hearted involvement, but according to Thomas, Kellogg and Erickson (2001) these peripheral activities are an essential dimension of communities of practice. According to the authors, the people on the sidelines often are not as passive as they seem; they gain their own insights and knowledge from the discussions and put them to good use.

Finally, outside those three main levels, are people surrounding the community who are not members but have an interest in the community, including customers, suppliers and "intellectual neighbours".

The key to good community participation, and a healthy degree of movement between levels, is to design community activities that allow participants at all levels to feel like full members.

According to Wenger, McDermott and Snyder (2002) participation must never be forced, but opportunities must be in place for private interaction through discussion rooms, on the community's website, at a community event or in a face-to-face conversation.

5.3.6 Suggestion schemes

According to Dunn and Lloyd (cited in Cooley, Helbling and Fuller, 2001: 47) a suggestion scheme is "a formal mechanism, which encourages employees to contribute constructive ideas for improving their organisation".

Suggestion schemes draw out suggestions from employees, classify them (for example according to Nonaka and Takeuchi's four tacit and explicit forms of knowledge) and send them to "experts" to evaluate them.

Suggestions can then either be adopted or rejected by the experts. Suggestion schemes rely on employees to make their tacit knowledge explicit by posting suggestions in a "suggestion box" or by entering it in a database. The distinction between explicit and tacit knowledge, and the role of knowledge within organisations is of obvious significance to suggestion schemes.

Cooley, Helbling and Fuller (2001: 53) argue that suggestion schemes as they are currently used, can play a distinctive role in a knowledge management strategy because they are often based on either an intimate knowledge of detailed procedures, or of the reactions of customers to an organisation's behaviour.

5.3.7 Face-to-face conversations

Turning to a technique that is so common as to go unnoticed, namely conversation concludes the review of practical techniques for supporting a socially informed approach to knowledge management.

Conversation is viewed as essential. It is used as a medium for decision-making and it is through conversation that we create, develop, validate and share knowledge. According to Clark (1996: 10-15) the vital characteristic of conversation is that it is a deeply interactive intellectual process as well as a superb method for eliciting, unpacking, articulating, and applying and recontextualising knowledge. Externalisation, the process of converting tacit knowledge into explicit concepts can be triggered by conversation.

During face-to-face conversations people share the same physical environment, are visible to each other, communicating by speaking and the receiver receives the message at roughly the same time as when the sender produces it. The result is that knowledge is immediately available to everybody involved in the conversation.

Apart from the techniques that have been discussed, different technology considerations also play an important role in supporting knowledge management processes and activities.

5.4 Technology to support knowledge management

Technology to support knowledge management can be defined as the tools, which enhance and enable knowledge generation, knowledge codification or knowledge transfer (Ruggles,1997: 5). As with many tools, they are designed to ease the burden of work, allow resources to be applied efficiently to the tasks for which they are most suited and promote and enable the knowledge process in order to improve decision-making.

Information and communication technologies are essentially enabling mechanisms for the transfer of information, and this permits many ways of acquiring and sharing knowledge. Information technology has had an immense impact on industrial

development. For example, it is responsible for the automation of routine tasks and for the coordination of several activities through better communications. In many organisations, it is necessary to take into account their integrated computer systems – and related databases and applications – to analyse and understand there core business processes (Gery, 1995: 512).

Technology enables collecting, defining, storing, indexing and linking data and digital objects in order to process them and to obtain information with sufficient flexibility to render it meaningful. However, the electronic distribution of explicit knowledge electronically plays a significant role in the context of organisational structure and capabilities. The more the employees share their knowledge and professional experience, the more effectively knowledge can be communicated via electronically mediated channels. Carneiro (2001: 359) argues that information technology makes possible concentration and diffusion of knowledge, and permits employees to obtain information more quickly and accurately. According to Carneiro (2001) the existing information technology infrastructure supports the knowledge management architecture.

Tyndale, cited in Carneiro (2001: 360) also divides knowledge management architecture as either “established information technology based tools borrowed from other disciplines that have entered into the knowledge management arena as information technology tools with extended functionality” or “information technology based tools that have been designed as knowledge management tools from the inception”.

Technology is a powerful enabler of knowledge management goals, but with the onus on humans to conduct knowledge activities. According to Tyndale (2001: 362) organisations are not exploiting the full potential of the technology they already possess. He argues that organisations need to consider a number of critical design goals when selecting or developing technologies for knowledge management. This suggests that “old tools” as well as “new tools” can be applied in combination in a knowledge management environment.

According to Davenport (1999: 12), technologies must be evaluated in the organisational context and implemented as a part of the overall effort to leverage organisational knowledge through integration with the business strategy, the culture, the current processes and the existing technologies.

The technology considerations of a knowledge management initiative include:

- Assessing the need for effective knowledge management technology.
- Understanding the knowledge management technology architecture.
- Differentiating key characteristics of knowledge management technology architecture.
- Considering current and future technology.

5.4.1 The need for knowledge management technology

The volume of available data sources has increased exponentially over time, whilst knowledge workers' capacity to internalise information has remained the same. This brings with it yet another business concept namely attention management, i.e. managing the relevance of information that a knowledge worker encounters. This information overflow emphasises the need for technology to enable the user to interact with and quickly access only that information which is relevant to his/her specific requirements (Pieterse**,** 1998).

5.4.2 Knowledge management technology architecture

The following section identifies a knowledge management technology solution in terms of the conceptual architecture. Pieterse (1998: 62) identifies the following layers:

- The **underlying layer** of the knowledge management system includes a knowledge repository as well as unstructured and structured data sources;

- The knowledge **retrieval layer** entails a search engine that categorises and indexes all available sources of information;
- The **collaboration layer** enables sharing and communication between employees in connection with the retrieved information;
- The following layer includes **intelligent agents** that distributes relevant sources to knowledge workers, according to their personal interest, in the right format;
- The **administration layer** provides the functionality to organise and maintain the usefulness and redundancy of the knowledge sources in the repository; and
- The user **interface layer** provides universal access to any authorised user through his/her required interface or portal.

5.4.3 Characteristics of knowledge management technology architecture

According to Morey (2001) the key characteristics of knowledge management technology architecture in the organisation include that the system must:

- Provide complete access for all users.
- Provide for effective navigation and high-speed retrieval.
- Utilise the appropriate mainstream knowledge management technology.
- Be standardised across the organisation.
- Provide an open, flexible, easy to use, transparent environment with optimal connectivity between users.
- Be effectively supported and its effective working must be a high priority in the organisation.
- Have an organised database with accurate and secure information.
- Be scalable to incorporate a wide range of data types in different physical locations; and
- Contain sufficient “help” functionalities.

5.4.4 Current and future technologies

No single technology architecture solution exists to support all the requirements of a knowledge management project. A wide range of technologies can be utilised to support knowledge management. The challenge is to combine a variety of available technologies and products to fit a unique environment. A list of enabling technologies, technologies currently available in the market and technologies to consider in the future is discussed below.

5.4.4.1 Enabling technologies

- **Socialising process:** Discussion databases, groupware, interactive intranet/web pages, collaboration software, videoconferencing.
- **Externalisation process:** Knowledge repository, workflow, e-mail, artificial intelligence.
- **Internalisation process:** Help line, retrieval ware, distribution ware such as intelligent agents (push technology).
- **Combination process:** Document management systems, imaging.

5.4.4.2 Technologies available in marketplace

The mature technology alternatives that are currently available in the market place include:

- **E-mail** to facilitate different-time, different-place communications between employees, which is an important factor for knowledge exchange.
- **Groupware** to support different forms of collaboration between several individuals on the development of new ideas.
- **Internet and intranet** to provide powerful information exchange platforms and a repository in support of knowledge management practices.
- **Videoconferencing** to allow individuals, although geographically separated to interact through verbal communication.
- "**Yellow pages"** to allow individuals and groups to advertise their expertise in support of the development of networks of expertise.

- **Corporate knowledge map** to facilitate navigation when searching for special expertise by providing an easy-to-grasp overviews or more detailed of "who knows what" and where it can be found.
- **Corporate memory** database to provide a structured repository and retrieval environment for important enterprise knowledge and information.
- **Distance learning systems** provide opportunities for employees no matter where they are located, to develop their own understanding and knowledge.
- **Knowledge-based systems/ artificial intelligence/ expert systems** to automate and deploy structured and less complex knowledge so that it is available to practitioners "at their fingertips"
- **Knowledge mining** to identify complex and valuable information and important trends hidden in databases.
- **Intelligent agents** to access multiple, large databases automatically to search for, acquire, organise and summarise information on specified topics.
- **Search and retrieval engines** used for indexing, searching, recalling data with natural language, semantic search and pattern recognition.

5.4.4.3 Technologies to consider in future

Other technologies that are becoming available in the market place but that have not yet reached full maturity include:

- **Collaborative filtering** – the ability of people to hear personal recommendations from parties with the same interest.
- **Passive group memory** – automatic capturing and indexing of information in meetings and discussions.
- **Profile and personalise** – customise search and dissemination of information to the personal needs of the employee.

5.5 Summary

The purpose of this chapter was to provide a brief overview of techniques and technologies that can be applied to knowledge management. Knowledge management techniques and technologies play an important role in supporting knowledge management processes and activities.

Nonaka and Takeuchi have classified the role of techniques and technologies in knowledge management according to the notions of tacit and explicit knowledge. Because all four processes in Nonaka and Takeuchi's model are important in knowledge management, techniques and technology should support all four processes.

Three essential components of knowledge management need to be in place to trigger the processes which transform knowledge, namely, people, processes and techniques and technologies. People are necessary for brainpower, innovation, creativity and problem solving. Knowledge processes refer to the methods and systems for generating, gathering, analysing, organising, disseminating and applying experiences, information and understanding for the benefit of an organisation. Developments in worldwide communication systems can speed up information and knowledge transfer, but in developing and retaining expertise it cannot fully replace face-to-face contacts.

Various techniques, such as talk rooms, mentoring, storytelling, breakfast chatting, communities of practice, suggestion schemes and face-to-face conversations have been identified.

Technologies to support knowledge management and enable knowledge sharing have been identified as: electronic mail, groupware, intranet, internet, videoconferencing, yellow pages, knowledge-based systems, artificial intelligence, expert systems, knowledge mining and search and retrieval engines.

Any knowledge management initiative requires an equal amount of attention to the different components of knowledge management, namely, strategy, people, processes and techniques and technology.
Technology can never substitute for the rich interactivity that is inherent in personal dialogue. Developments in worldwide communication systems can speed up

knowledge transfer to accelerate business, but in developing and retaining expertise it cannot fully substitute for face-to-face contacts.

In summary, organisations may use an informal approach in knowledge management or may use technologies, but to sustain long-term competitive advantage, a firm needs to create a balance between its technological and social systems. Technologies can be used to increase the efficiency of the people and enhance the information flow within the organisation, while social systems such as communities of practice improve on interpretations, by bringing multiple views on the information.

If management is serious about making knowledge management as a priority in the organisation, it will require reconsidering and analysing the balance between the technological and social facet of the organisation. Putting to much emphasis on people or technologies is not sufficient; rather, management must revisit the interaction pattern between techniques, technologies, people, and the strategies people employ in using these techniques and technologies.

CHAPTER 6

KNOWLEDGE MANAGEMENT IMPLEMENTATION

6. KNOWLEDGE MANAGEMENT IMPLEMENTATION

"*A knowledge strategy should not be managed parallel with the business strategy, but should be an integral part of the business strategy.*" Retha Snyman and Neels Kruger

6.1. Introduction

As argued in Chapter 5, the literature revealed that when organisations first initiate a knowledge management effort, many of them tended to over-emphasise the enabling role of information and knowledge technology at the expense of the human factor when it comes to knowledge management. However, there has been lately an indication that there is now more consensus across organisations about how important people are to the organisation than about information and knowledge technology (Sunassee, 2001). In this light the literature recommends that knowledge management implementation initiatives should focus on people, organisational processes and on technology, if they want to succeed in the future (Andrews, 2000; Holland, 1998; Nonaka, 1998a, Takeuchi, 1998, Tiwana, 2000, Wiig, 1999): This study subscribes to this point of view.

To get knowledge management implementation initiatives off to a good start, executives must first evaluate whether their organisation has a strategic need for knowledge management. Then it is necessary to decide whether the current processes of dealing with corporate knowledge is effective and if the culture is ready for procedural changes. Once executives have resolved these issues, management can evaluate the existing technique and technology infrastructure to determine whether it is adequate for a knowledge management initiative or whether new collaboration methods and systems are needed.

Chapter 6 describes a basic approach to the implementation of a knowledge management initiative. A number of short-term success indicators and long-term benefits are mentioned. The interdependency between organisational strategy and knowledge management strategy is discussed. Different approaches for classifying the implementation of a knowledge management initiative are considered. A summary of the findings of the literature survey of current knowledge management

implementation strategies to acquire, develop, enhance and retain knowledge in the organisation is given.

To develop a knowledge management implementation strategy for an organisation, a theoretical framework based on the findings of the literature survey is then put forward. The framework consists of four main interlinked sub-systems, namely: management of the organisation, people, processes and infrastructure. The framework focuses on the importance of aligning the knowledge management strategy of the organisation with the overall business strategy of the organisation, in order to fully realize its potential for enhancing organisation performance. Furthermore, the framework recommends a holistic approach to manage knowledge.

6.2 Success factors of a knowledge management implementation initiative

According to Davenport, de Long & Beers (1998: 44) management has to anticipate in advance in the desired outcomes of a knowledge management implementation initiative. The visible short-term success indicators as well as the possible long-term benefits of an initiative must be visualised ahead of the actual implementation plan.

6.2.1 Visible short-term success indicators of knowledge management implementation initiatives:

- An increase of organisational capital, i.e. intellectual and financial.
- Growth in the resources involved with the project, i.e. people.
- Growth in and higher utilisation of organisational knowledge resources, and
- The degree to which the project is an organisationwide initiative.

6.2.2 Possible long-term benefits of knowledge management implementation initiatives:

- Higher productivity of knowledge workers.
- Reduced costs.

- Better decision-making.
- Faster response times.
- Accelerated rate of innovation.
- Shared best practices – across different business units, and
- Higher knowledge retention.

Skyrme (2002) argues that as a result of a realistic and effective implementation plan for a knowledge management initiative, an organisation will typically achieve the following benefits:

- Ready access to relevant knowledge for employees.
- Faster and better solutions to customer problems.
- Minimisation of duplication effort.
- More effective sharing of best practices across the organisation.
- Improved innovation and new product development.
- Minimising the impact of loss of experienced knowledge workers.
- Early warning of potential market changes.
- Identification of new business opportunities available through better knowledge management.
- Reduced costs.

These benefits give a clear indication that successful knowledge management implementation initiatives comprise numerous potential benefits for the organisation, namely, improved innovation leading to improved products and services, quicker problem solving and fewer mistakes, reduced product development time, improved customer service and satisfaction and reduced development costs. The Chief Knowledge Officer involved in the knowledge management implementation project should steer and motivate employees with these indicators and results in mind.

6.3 Interdependency between business strategy and knowledge management strategy

A knowledge management implementation effort is not a project that is undertaken on its own without any link to the overall business strategy. The literature consistently emphasises the importance of the link between the business strategy and knowledge management strategy (Duffy, Jooste & Whittaker 1999; Snyman & Kruger 2002; Tiwana, 2000; Zack, 1999a, 1999b).

According to Zack (1999a: 126) a business strategy can be defined as" a high-level, flexible plan that oversees the birth and development of a business initiative".
To ensure the success of the business objectives, any business development within the organisation must be aimed at furthering the goals of the organisation. A knowledge management implementation strategy must be a function of the business strategy, or else the knowledge management initiative will fail to accomplish goals that are tangible to the organisation (Snyman & Kruger, 2002).

A knowledge management strategy can thus be defined as a high-level plan that aims at supplying the organisation with the knowledge resources that it needs to carry out its mission, vision, goals and objectives.

As a result, the knowledge management strategy must be closely linked to the overall business strategy, and must produce a tangible result to the organisation as a whole. When such a link between the knowledge management strategy and the business strategy is clearly established, the knowledge management initiative is moving in a direction that holds promise for long-lasting and enduring competitive advantage (Tiwana, 2000: 104). According to Snyman and Kruger (2002: 269): " *A knowledge management strategy should not be managed parallel with the business strategy, but should be an integral part of the business strategy.*"

Zack (1999a: 30) states that a knowledge management strategy expresses the overall approach an organisation intends to take to align its knowledge resources and

capabilities to the intellectual requirements of its strategy. Tiwana (2000) argues that knowledge management strategies are unique to the organisations which devise them.

According to Saint-Onge (cited in Chatzkel, 2000) a knowledge management strategy provides the framework within which an organisation manages new initiatives aimed at leveraging the intangible assets of the organisation. Furthermore, the strategy outlines the processes, the techniques and technology required for knowledge to flow effectively.

In summary the business strategy guides the development of a knowledge management strategy and both strategies should be linked to development plans, business plans or future projects. The Chief Knowledge Officer heading the knowledge management implementation initiative needs to be fully acquainted with all aspects of the business strategy, whether it is the vision, mission or goal of the company, the flow of internal or external information, employees that represent the tacit knowledge of the organisation or the explicit knowledge assets of the company.

6.4 Findings of a literature survey of current knowledge management approaches

In order to develop and constitute an appropriate strategy to implement a knowledge management project an international literature survey has been conducted of the different approaches to knowledge management implementation frameworks taking the classification of Rubenstein-Montano et al. into consideration.

Rubenstein-Montano, et al. (2000) classify knowledge management implementation frameworks in three different categories: descriptive, prescriptive, and hybrid.

- **Descriptive frameworks** describe knowledge management, and identify attributes of knowledge management that can influence the success or failure of the initiative.
- **Prescriptive frameworks** provide direction on the different types of knowledge management procedures without providing specific details of how these procedures can or should be carried out.

- **Hybrid frameworks** are a mixture of both the descriptive and prescriptive frameworks.

Rubenstein-Montano et al. (2000) also recommend that a knowledge implementation management framework should comply with the following attributes:

- Be both prescriptive and descriptive and consistent with systems thinking.
- The organisational goals and strategies must be linked to knowledge management strategies.
- Planning should take place before any knowledge management implementation activities.
- The cultural aspects of the organisation must be acknowledged and must be compatible with knowledge management strategies.
- Knowledge management must be directed by learning and feedback loops, both single and double.

An analysis of current knowledge management implementation frameworks reveal that four can be classified as descriptive (Bhatt, 2000; Carlson, 1999; Skyrme, 1998b; Skyrme, (1999); three as prescriptive (Liebowitz, 2000; Macintosh, 1999; Wiig, 1999) and one as a hybrid framework (U.S. Army, 1999).

While analysing these frameworks, three main characteristics were observed:

- The four descriptive frameworks do place emphasis on the alignment of the knowledge management strategy with the business strategy (Bhatt, 2000; Carlson, 1999; Skyrme, 1998b; Skyrme, 1999).
- The three prescriptive frameworks do not place any emphasis on the alignment of the knowledge management strategy with the business strategy (Liebowitz, 2000; Macintosh, 1999; Wiig, 1999).
- The hybrid framework, which is a mixture of descriptive and prescriptive frameworks, places a very high emphasis on the alignment of the knowledge management strategy with the business strategy (U.S. Army, 1999).

What is suggested by the authors in two of the framework categories is that the hybrid framework is in line with what other authors (Duffy, 1999; Snyman and Kruger, 2002; Tiwana, 2000 and Zack, 1999a) agree upon: that a knowledge management strategy should be closely linked with the overall business strategy, and provide the organisation with a competitive and innovative edge.

All of the descriptive frameworks (Bhatt, 2000; Carlson, 1999; Skyrme, 1998b; Skyrme, 1999) also emphasise the importance of people and their contribution towards the knowledge management initiative

In only one of the prescriptive frameworks analysed (Macintosh, 1999) was the focus on technology extremely high in comparison with the focus on employees of the organisation. In three of the descriptive frameworks (Carlson, 1999; Skyrme, 1998b; Skyrme, 1999) the emphasis was strong on both the technological and human factors.

In the hybrid framework (U.S. Army, 1999) the emphasis was strong on the technological and human factors as well as on the alignment of the knowledge management strategies with the overall business strategy.

The literature survey also revealed that when organisations first initiated a knowledge management effort, some of them tended to over-emphasise the role of technology at the expense of the human factor. However, many of the same organisations, at a later stage, focused on the human factors as well as the technology factors. This change of focus has forced organisations to rethink the way they manage business since the focus in no longer on tangible assets but on people's abilities and experience.

This study proposes a hybrid framework that will address a focus on the human factor, address technology as an enabler to manage and share knowledge, the management of business processes as well as the alignment of the knowledge management strategy with the overall business strategy.

6.5 Proposed framework for knowledge management implementation

Currently, there are a number of different types of organisations mentioned in the literature for their unique approaches to knowledge management implementation, for example British Airways, BP Amoco, Celemi, Chevron, Honda, and IBM. In Chapter 7, a case study will be presented on three well-known South African financial institutions' knowledge management activities.

Notwithstanding the fact that various knowledge management initiatives emerge, no best practice, standard methodology, or plug-in solution will solve every organisation's knowledge management needs. Knowledge uniqueness within different organisations and the knowledge management discipline demand a steep learning curve from organisations to refine the art of managing the intangibles.

Based on the conducted literature survey and on the recommendations of Rubenstein-Montano et al. (2000), a theoretical framework has been constructed to address knowledge management implementation strategies of an organisation.
The proposed framework consists of four main interlinked subsystems:

- Management of the organisation.
- Management of the people.
- Management of the processes, and
- Management of the infrastructure.

Rubenstein-Montano et al. (2000) proposed a framework with three main interlinked components, namely management of the organisation, management of people and management of infrastructure and processes. Infrastructure and processes have been combined in one subcomponent.

This study adapted the framework from Rubenstein-Montano, et al. and their recommendations; however, the three components have been split to four interlinked subsystems. The fourth subsystem consists of the infrastructure (techniques and technologies) for enabling knowledge sharing. The organisation needs to achieve a

balance between these four subsystems in order to achieve a successful knowledge management implementation initiative, as shown in Figure 6.1.

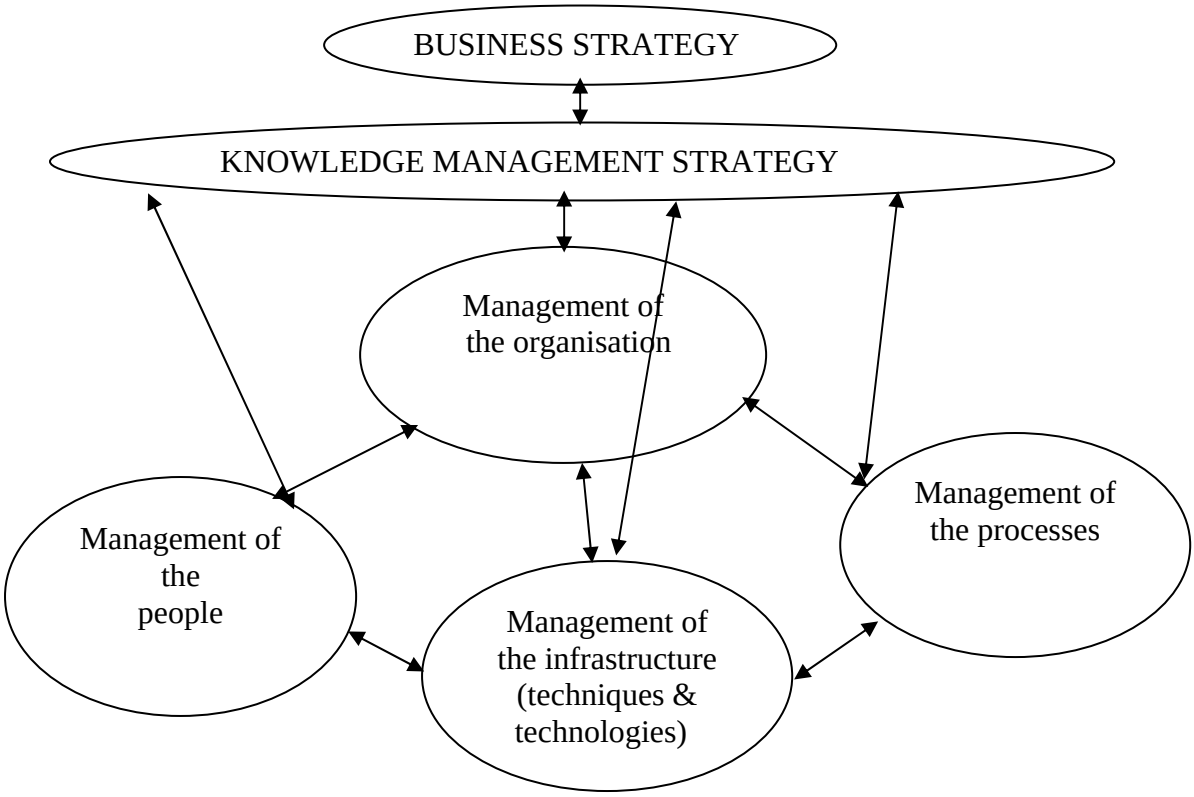

Figure 6.1 Framework for knowledge management implementation
(Adapted and modified from Rubenstein-Montano et al., 2000)

6.5.1 Management of the organisation

Management of the organisation in the framework deals with the overall activities that need to be performed in the organisation during the knowledge management effort. At this level, the organisation needs to carry out the following high-level activities:

- Perform a knowledge-based SWOT analysis of the organisation (strengths, weaknesses, opportunities, threats). According to Tiwana (2000) and Zack (1999a), using the SWOT analysis to identify the organisation's knowledge gap and help it define its knowledge strategy is the best way to achieve a clear

strategy for the business. It is important to identify the knowledge gaps in terms of tacit and explicit knowledge.

- Create a vision for the knowledge management initiative and identify a Chief Knowledge Officer. The vision is the long-term strategy that will drive the knowledge management initiative and provide the scope within which the knowledge management initiative and the organisation will grow. The main responsibilities of the Chief Knowledge Officer as a leader should be to help integrate the four sub-systems of knowledge management effort, namely the organisation, the people, processes and the infrastructure.

- Align the knowledge management initiative with the business strategy. The knowledge management effort is not a project that is undertaken on its own without a link to the overall business strategy (Snyman and Kruger, 2002; Tiwana, 2000; Zack, 1999a).

- Manage the organisational culture and manage change(s). This study recommends that the objective of the change is not to change the organisational culture drastically, but to modify the behaviour of people in a way that suits the demands of knowledge management in the organisation.

- Manage with a holistic approach (include stakeholders, competitors, internal environment and external environment). The organisation must take in consideration its customers, suppliers, shareholders and competitors to collect and analyse knowledge about them. This will provide the organisation with the opportunity to become proactive in meeting customer needs.

- Create and manage organisational learning. This study argues that organisational learning will generate innovative knowledge and allow the organisation to produce innovative products and business processes.

6.5.2 Management of the people

At the management of the people level in the framework, the focus is on managing people, their behaviour, their expectations, and their potential to contribute to the success of the knowledge management effort. There should also be an active effort to encourage employees to share and use knowledge in the workplace, and to reward people who do so.

The framework proposes the following activities to achieve this:

- Manage people as individuals and as part of a team. Organisational learning takes place through individual and team learning. However, management must consider each individual's opinion and input. This will ensure that employees are more willing to accept change if they feel part of that change.

- The appropriate organisational structures must be in place, so that people are motivated to share and use knowledge in the workplace. McDermott and O'Dell (2001: 76) propose three ways in which sharing knowledge can be made an important factor in a business:
    - Make sharing knowledge a direct part of the business strategy.
    - "Piggyback" sharing of knowledge onto other business initiatives.
    - Share knowledge commonly as part of normal work.

  These practices have proved their worth in the organisations that have adopted them. The study recommends using these methods to encourage people to share and use tacit as well as explicit knowledge in the workplace.

- Encourage learning and innovative thinking in the organisation. This can be done in a variety of ways, as discussed in Chapter 4. The easiest way would be to demonstrate how sharing knowledge with other employees and learning from each other can result in improved products and services and time and cost reduction.

6.5.3 Management of the processes

The process component of the knowledge management framework involves the establishment of an effective knowledge creation and retention process in the organisation. The term process is used in a variety of ways in the context of knowledge management. Knowledge processes support the flow of knowledge between business processes and between business units.

Business processes should be re-evaluated, to enable employees to create, identify, verify, capture, organise, disseminate and use knowledge easily throughout the organisation. However, sometimes business processes need to be modified to suit the knowledge management implementation effort, i.e. the sharing of knowledge.

For the abovementioned processes to be effective, a continuous feedback from the application of knowledge must exist in the framework to ensure that the knowledge is maintained and renewed. Therefore, an important aspect of managing knowledge management processes is the measurement of the impact of knowledge management on the organisation. The Chief Knowledge Officer or leader of the knowledge management initiative is responsible for devising suitable metrics to measure how effective the knowledge management effort is to the organisation (Duffy, Jooste and Whittaker, 1999).

Although it may be difficult, it is vital to measure the intangible assets of the organisation. Growth in an organisation's intellectual capital is an indication of the degree to which the knowledge management implementation initiative has been successful. In addition, these results assist in the identification of problem areas and give management an indication of the return on investment.

Knowledge management achievements cannot be quantified in monetary terms. The Chief Knowledge Officer should therefore ensure that other metrics are devised to represent progress accurately, for example, using the balanced scoreboard method.

6.5.4 Management of the infrastructure

In order to be successful, management and the Chief Knowledge Officer have to plan thoroughly what type of techniques and technologies the knowledge management effort needs. The study recommends technique and technology infrastructures, which will allow easy communication between employees, in other words the collaborative techniques and technologies discussed in Chapter 5.

It is also important that the infrastructure of the organisation should be able to link easily with that of the customers and suppliers, in order to allow a seamless flow of information between the organisation and its partners. This will allow the organisation to collect knowledge about its business partners and vice versa.

An over-emphasis on the role of information technology creates a real danger for organisations that delegate the responsibility for their knowledge assets and the ability to think to traditional information technology "databases". Despite technological advances, the company's meeting point (coffee bar) – where team members share ideas – still surpasses the information technology system when it comes to harnessing the knowledge that gives business its competitive advantage.

While it is true that the technology infrastructure allows information sharing in the modern organisation and, in fact, is essential in the codification, distribution and the storage of information, information technology falls short in the creative application of knowledge. Knowledge is about how information is applied to leverage the core competencies of the organisation, whereas technology is only an enabler of the knowledge creation process.

The application of knowledge still relies on the organisation's knowledge workers and emphasises the critical role of the human element in the knowledge management implementation initiative.

6.6 Summary

From the description of the various components of the framework it is clear that the emphasis in this framework is on the importance of aligning the knowledge management strategy to the overall business strategy of the organisation. The culture and managing the culture change when implementing knowledge management are also of the utmost importance.

There should also be a mutual agreement to make people feel part of the change when implementing knowledge management. The organisation should encourage individual and team learning, and innovative thinking from employees.

The infrastructure and business processes of the organisation cannot be neglected when implementing knowledge management. Business processes are mentioned, as they need to allow for formal as well as informal sharing and use of knowledge within the workplace. Finally, the framework also highlights the importance of techniques and technologies that will enable employees to share and disseminate knowledge throughout the organisation.

The implementation approach suggested in Chapter 6 is an example of the strategies involved when implementing a knowledge management capability in the organisation. Embarking on a knowledge management initiative implies that management has identified the need for and defined the benefits of establishing a knowledge management capability in the organisation.

Chapter 6 presented a knowledge management framework, based on the findings of a literature survey and the recommendations of Rubenstein-Montano et al. The framework addresses the alignment of the knowledge management strategy with the overall business strategy, and focuses more on people than technology. The cultural aspects of the organisation are acknowledged and the framework recommends that the knowledge management practices of the organisation should be compatible with its culture.

The framework also adheres to the systems approach, and includes both prescriptive and descriptive characteristics. It consists of four interlinked systems: management of the organisation, people, processes and infrastructure and recommends a holistic approach to managing knowledge.

Based on the theoretical background described in Chapters 2 to 6, Chapter 7 will take a closer look at the current state of knowledge management implementation in industry. Three well-known financial organisations are used in the case study to describe the practical applications of knowledge management efforts.

CHAPTER 7

KNOWLEDGE MANAGEMENT IN THREE FINANCIAL ORGANISATIONS

7. KNOWLEDGE MANAGEMENT IN THREE FINANCIAL ORGANISATIONS

"A knowledge highway – a human network supported by technology where possible." Arian Ward's vision of knowledge management

7.1 Introduction

This chapter follows on Chapter 6 in that it will take a closer look at the current state of knowledge management implementation in South African industries, with specific reference to financial institutions. Three well-known financial organisations are used in the case studies to investigate the practical applications of knowledge management. The aim of the case studies is to study knowledge management perceptions, approaches and tools and techniques used, from the viewpoint of those practitioners who are actually responsible for implementing a knowledge management initiative in the organisation. The findings of the three case studies will be discussed against the background of the literature study in Chapters 2 to 6. The organisations will be referred to as Financial Organisation A (FOA), Financial Organisation B (FOB) and Financial Organisation C (FOC), because they prefer to remain anonymous.

Over the last few years, several research studies have been carried out showing the status of awareness of managing knowledge and the implementation of knowledge management initiatives in organisations. There is also a growing body of case material identified by researchers and writers or presented by practitioners (O'Dell, 1999; Skyrme and Amidon, 1997; Wiig, 1998). All provide insights into the strategies and practices that are successful in knowledge-based businesses.

An Internet search was conducted, to identify academic and practitioner surveys reported over a five-year period. This search strategy, using the Google search engine, yielded 39 items relating to surveys on knowledge management. From this it can be deduced that research into how practitioners view knowledge management and how they are developing and implementing strategies and programmes is increasing annually.

In the retrieved documents financial services have been highly ranked amongst the leading industries implementing knowledge management activities. In a specific survey that has been conducted by the Delphi Group, 17.5% of the organisations that were busy implementing knowledge management initiatives were financial services organisations, as illustrated in Figure 7.1.

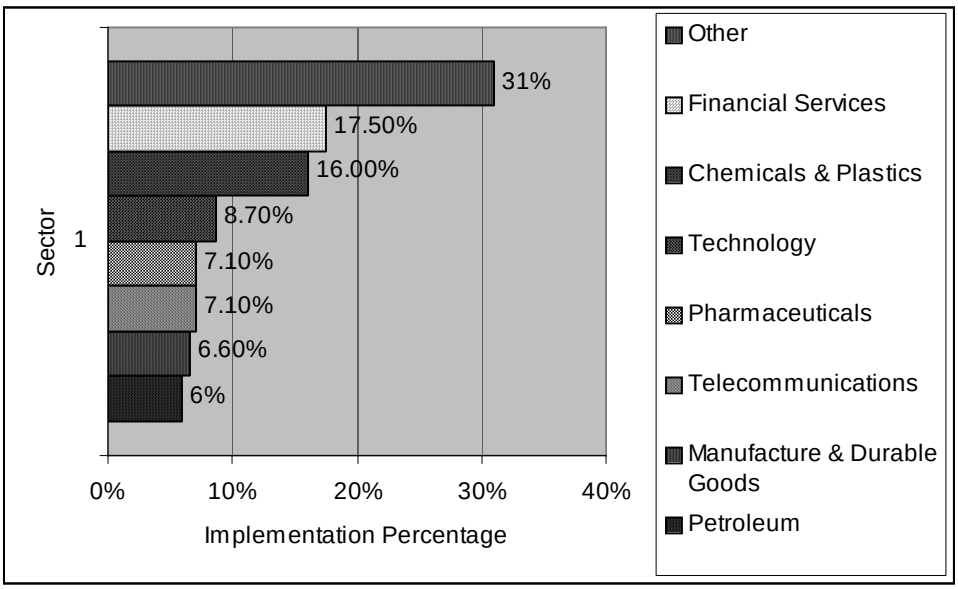

Figure 7.1: Leading companies implementing knowledge management activities
(Adapted from: Delphi Group (Boston) K.M. Survey, 1998)

As described in Chapter 1, financial organisations have been ranked first amongst the leading industries implementing knowledge management initiatives (Delphi Group Survey, 1998). Financial services organisations regard the knowledge of their employees and technological investments as major keys to generating competitive advantage.

Following critical consideration of the usual range of data collection techniques, a questionnaire (see Appendix A) and semi-structured face-to-face interviews were selected as the main form of data collection. A discussion of the case study's research approach, methodology used and data collection methods was given Chapter 1, paragraph 1.3.

A total of 24 of the 30 e-mailed questionnaires were completed and returned, which is an 80% response rate. Organisational size was evenly split with all of the organisations employing more than 2000 people. The financial organisations responding to this questionnaire were pursuing organisational excellence, and had business improvements and strategies already in place. As such these organisations are not representative of all types of financial services, but are in the front line of organisations attempting to transform themselves into knowledge-based companies.

7.2 The organisations: features, environments and functions

The organisations are introduced by outlining their features, environments and functions with particular attention to the knowledge perspectives which are already in place. Information about the features, environments and functions within the organisations was obtained through face-to-face communication sessions with a senior representative of each firm.

Illustrative features of the three financial organisations were:

- High-profile organisations.
- Business processes depended on information technology.
- Advanced information technology users.
- Knew the latest management techniques.
- Large number of employees (>2000).
- Identifiable cultures.
- Information and knowledge driven.
- Face-to-face and face-to-customer contact.

7.2.1 Financial Organisation A (FOA)

FOA offered a range of financial products and services to its borrowing member countries. Most financial products of FOA were suitable for specific investments or development programmes.

The purposes for which FOA financial products were approved comprised: agriculture, education, energy, environment, industry, population health and nutrition, transportation, urban development, water supply and sanitation.

FOA provided a wide range of client services, namely:

- Offering financial product information and training programmes.
- Offering workshops and other activities (road shows) aimed at building client-country capacity to use products.

Drawing from the lessons of experience for launching a broad knowledge management programme in a global organisation like FOA, six pillars were instrumental in support of the bank's initiative to define a clear knowledge management strategy based on the business needs of the organisation:

- Keeping small the central management unit, which oversees the overall knowledge management implementation initiative.
- Supporting the development of communities of practice.
- Keeping information technology user-friendly and responsive to its users' needs.
- Orchestrating systematic communications to explain what knowledge means and to keep everyone informed.
- Introducing new processes to accelerate the shift towards a knowledge culture
- Developing a set of metrics to measure progress.

Culture was the biggest obstacle that FOA had encountered. Management of FOA constantly urged employees to recognise the value of sharing knowledge and learning from each other within the organisation. To address the cultural barrier, FOA encouraged people to ask questions when they did not know something, to share what they did know and to recognise the value of the free flow of knowledge within the organisation.

This was an ongoing task at FOA because it takes more than five years to change the behaviour of an entire organisation, as indicated during an interview by one of the representatives. This is borne out by the analysis in Chapter 4, paragraph 4.3.3, where it is stated that the culture and structure of the organisation have a significant influence on learning in the organisation, and the technological infrastructure and knowledge management techniques help make possible the sharing of knowledge, which in turn results in learning.

According to the representative of FOA, defining a knowledge sharing strategy which senior management and the knowledge management unit would endorse, was a difficult but essential first step.

The strategy clearly articulated why the organisation should share its know-how, what the organisation would share, with whom the organisation would share and how the organisation would share. FOA's strategy correlates with the discussion in Chapter 6, paragraph 6.3, where it is stated that a knowledge management implementation effort is not a project that is undertaken on its own without any link to the overall business strategy.

Deciding why to share know-how

Given the characteristics of the global economy and the rising costs of communication and computing, FOA perceived that sharing knowledge would enhance its organisational performance, and therefore, its global impact on poverty. This was a business decision anchored in the realisation that the new opportunities were worth the shock of the cultural and technological transformations that the bank was going to introduce. Knowledge management was not undertaken for its own sake. It was motivated by a decision to increase the speed and quality of service, lower the costs of operations by avoiding rework, accelerate innovation, and widen the bank's partnerships to fight poverty.

The reasons given for FOA for implementing a knowledge management initiative correspond with the driving forces behind knowledge management outlined in Chapter 3, paragraph 3.6. Knowledge is seen as an important asset in a wide variety of business activities. By understanding where the bank's knowledge resides, it is possible to avoid the costs associated with finding or regenerating it, by reusing what already exists. Production and service capabilities that were available from limited sources in advanced countries are now frequently available in South Africa. Customers have become more demanding. They desire customised products and services that support their success and in turn are needed to serve their own customers better. In conclusion, FOA's reasons for implementing a knowledge management initiative are relevant.

Deciding what know-how to share

The knowledge-sharing programme of FOA was designed to share country and sector know-how, global best practices and research in the field of development. According to the bank's spokesperson the programme was also designed to address the knowledge of competitive intelligence, processes and clients, as the core of FOA's business. Thematic knowledge groups addressed the issue of the quality of what was being shared.

Deciding what know-how to share corresponds with Chapter 3, paragraph 3.6.1 where it is stated that knowledge is the "know-how" that is needed to keep ahead in a competitive marketplace.

Deciding with whom to share know-how

The knowledge-sharing vision of FOA was ambitious. It drove the institution to share its development know-how both internally with staff at headquarters, in the field and externally with clients, partners and stakeholders.

Internally, the audience was the members of the knowledge thematic groups and their objective was to collect and make accessible the latest and best sector and country development knowledge that existed globally, to allow operational staff to bring higher quality advice to their clients while saving time and costs. In itself, collecting this knowledge is already an endeavour.

Externally the audience included stakeholders, partners, membership countries and clients. FOA's objective was to assist research in the field of development, to help developing countries by means of grants, to finance educational, health and nutritional programmes. FOA's aim was to provide clients with highquality development knowledge, where and when it was needed. This correlates with Sveiby's comments on "the know-how company" in Chapter 3, paragraph 3.5. Sveiby stated that the knowledge-based organisation recognises the importance of knowledge, knowledge creation and knowledge sharing and manages the relationship between employees and customers in the development of unique solutions.

Deciding how to share know-how

FOA used a multitude of different channels to share various forms of knowledge. For instance, a number of thematic knowledge groups were providing a mentor for each new recruit to quickly familiarise them with sector strategies, lending procedures and key professional contacts. Every staff member could also call a helpdesk where information and referral services were available. Professionals attended and contributed to conferences and working lunches or searched the knowledge collections on the intranet.

Externally, knowledge sharing took place virtually on the Web, via electronic mail and in face-to-face interaction with clients and partners. Deciding how to share know-how corresponds with some of the enabling techniques and technologies described in Chapter 5, paragraphs 5.3 and 5.4. In these paragraphs mentoring, suggestion schemes, face-to-face conversations, electronic mail, internet, intranet,

videoconferencing and a corporate memory database have been identified as some of the important enablers and techniques for sharing knowledge.

7.2.2 Financial organisation B (FOB)

FOB was a financial organisation that was globally competitive, with the aim of deriving most of its income from South African business, while focusing strongly on competing internationally with selected product services. The bank was a customer focussed financial services group in targeted market segments.

FOB offered a wide spectrum of commercial banking products and services, ranging from off-the-shelf offerings for transactional business to complex financial solutions for sophisticated customer requirements. It's geographical focus was primarily in South Africa, but the prominent target markets in the United Kingdom, Europe, Asia and Africa were well served under its banner.

FOB recognised that its core resources, like any other financial services company, are the knowledge and skills of its employees and customers. Intensifying competition to acquire skilled staff, and also new customers in the financial services industry gave added momentum to FOB to concentrate on building its intellectual capital. The bank's intellectual capital focus was based on the management of intangibles, of which knowledge was seen as one component.

In practice, FOB used a twofold approach. The first was people – looking at how employees related to customers (customer relationship management) and to colleagues (knowledge sharing). The second was technology – how the growth of web-enabled technologies facilitated different types of learning and knowledge sharing across the new economy's extended and virtual supply chains. FOB.s approach corresponds with the discussion of learning in organisations in Chapter 4, paragraphs 4.3.2, 4.3.4 and 4.3.5, where it is stated that the major principle of learning in organisations is to create a motivated and energised work environment that supports the continuous creation, collection, use and reuse of both personal and

organisational knowledge in the pursuit of business success. Various types of learning in organisations are identified, namely adaptive learning, deutero learning and action learning as well as three levels of learning, namely individual, team and organisational learning.

Technology played a vital role in keeping the FOB community (employees and clients) together. The technology underlying the virtual communities of practice comprised web portals, the intranet, electronic mail and Internet. These tools enabled the FOB community to carry on a global conversation and work on any global project it develops. This correlates with the description of the basic technology considerations to support knowledge management in Chapter 5, paragraph 5.4 where such technologies have been identified as important enablers of knowledge sharing.

7.2.3 Financial organisation C (FOC)

FOC was a major provider of transactional banking services and credit facilities to large and medium organisations, financial institutions and government bodies. Its strong relationships with its customers give them the ideal opportunity to expose customers to the wider financial services offerings of the mother organisation.

FOC provided client access to a comprehensive range of financial services products and addressed their clients' requirements in a manner that added value to their businesses. In a market of premium financial service products it was the approach of FOC to structure solutions, as well as its access to the mother organisation specialist businesses, that elevated and distinguished FOC from its competitors.

FOC, as a business, valued knowledge, entrepreneurship, innovation and diversity. These driving principles manifested themselves in the provision of apt financial solutions that assisted their clients in realising their strategic business imperatives.

In the wake of transformation, FOC embraced a vital relevant business model that re-energised their operation in the banking arena. Original property credit models, a

knowledge management initiative and original deal-based transactions positioned the bank as the financial services partner of choice in South Africa. FOC changed its slogan recently to “be a partner, not just a client”.

According to FOC’s Chief Knowledge Officer knowledge was a very important factor in achieving competitiveness; the organisation regarded it as their most crucial success factor. FOC valued knowledge about its customers, best practices, internal competencies, own products and services, market trends and competitors. It took knowledge management seriously and were giving it a more explicit focus.

Therefore FOC’s ambition was therfore to build a high knowledge metabolism company by capturing knowledge and taking advantage of it faster than competitors, by creating an integrated “web of intellect”. FOC’s reasons for knowledge management development corresponds with Chapter 2, paragraph 2.6.2 and 2.8, where it is stated that knowledge is increasingly recognised to underlie the success of all enterprises and that it is judged to be the most valuable asset that an organisation has.

7.3 Discussion and findings of the survey outcomes

The three financial organisations studied were similar types of organisations. However their focuses differ. FOA’s financial products were suitable for specific investments and development programmes and they offered training, workshops and product information services. FOB offered commercial banking products and services to individual customer requirements. FOC provided transactional banking services and credit facilities to large and medium-sized organisations and government bodies. Their perception and interpretation of knowledge management activities corresponded when dealing with customers, gaining and sharing expertise and interacting with a variety of professional roles, techniques and technologies.

7.3.1 Functional areas and profiles of the respondents

In many of the previous knowledge management surveys IT managers formed a much larger proportion of respondents, for example 28% in the case of the 1996 Ernst and Young Business Intelligence Survey (Skyrme & Amidon, 1997). As such it could be argued that the results have emphasised the hardware/technology aspects of knowledge management. In the three case studies the views of practitioners, especially Chief Knowledge Officers were expressed.

The focus on their opinions corresponds with the findings in Chapter 3, paragraph 3.3, where it is stated that knowledge management is also becoming more widespread and is increasingly recognised by senior executives as an important dimension of the business strategy and a contributor to organisational performance. Furthermore, knowledge management is as much about human and social factors – communities, personal development and working environments – as it is about information processes and technology.

Figure 7.2 gives an overview of the respondents who took part in the survey. Numbers of people reporting to them are given in parenthesis.

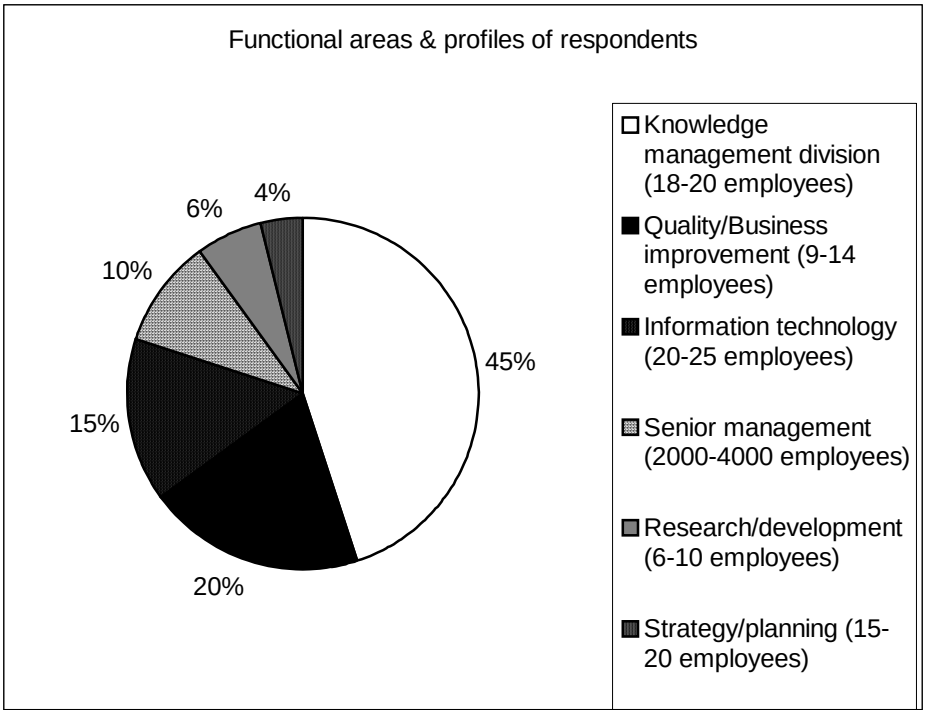

Figure 7.2: Functional areas and profiles of respondents

7.3.2 Perception of knowledge management

Some 60% of the respondents reported that the statement, which most closely described their perception of knowledge management, was that it is a major strategic imperative for staying competitive. On the other hand, 31% of the respondents reported that knowledge management was a new way to add value to information inside and outside the organisation. Only 9% stated that knowledge management was another management fad and would be replaced by another term within a few years. Most of the respondents described their perception of knowledge management as being a major strategic imperative for staying competitive. This corresponds with the literature in Chapter 2, paragraphs 2.6.2 and 2.8, where it is stated that knowledge is important for an organisation's operation, competitive advantage and continued survival. Knowledge is the factor that creates value for the organisation and it is judged to be the most valuable asset that an organisation has. In conclusion, knowledge management is important for an organisation's operation and competitive

advantage. Figure 7.3 gives an overview of the respondents' perception of knowledge management.

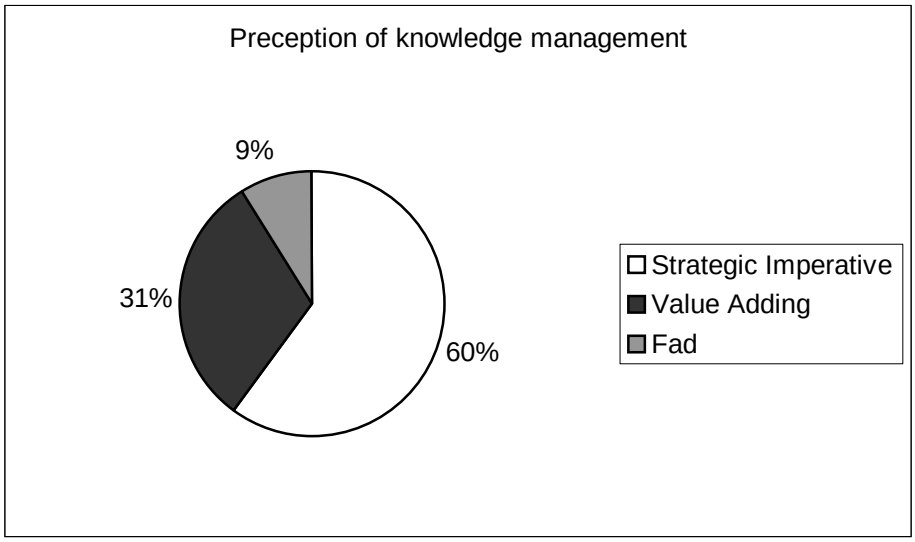

Figure 7.3: Perception of knowledge management

7.3.3 The knowledge agenda

As can be seen in Figure 7.4 some 94% of the respondents stated that they worked in a knowledge-based organisation. This figure indicated that a substantial majority of the employees of the three financial organisations viewed themselves as being in knowledge-based businesses, competing in a global knowledge economy. Only 6% of the respondents reported that their organisation was not yet a knowledge-based organisation yet. Most of the respondents viewed their organisations as knowledge-based organisations that recognise the importance of knowledge, knowledge creation and knowledge sharing. Knowledge-based organisations are flexible and creative, with open management styles as outlined in the theory in Chapter 3, paragraph 3.5.

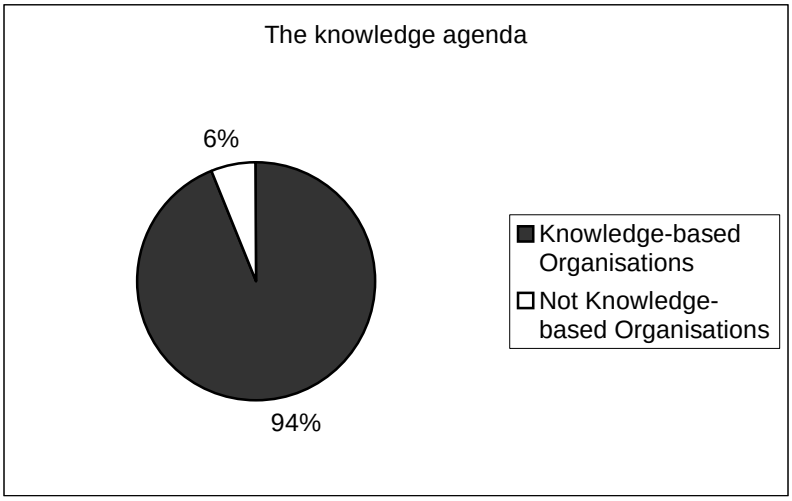

Figure 7.4: The knowledge agenda

7.3.4 Current state of engagement with knowledge management

Sixty-five percent of the respondents stated that they had implemented one or more knowledge management projects; 26% were evaluating knowledge management, while 9% of the respondents confirmed that they were in the planning phase for a knowledge management project (See figure 7.5). Thus, more than 60% of the respondents took knowledge management seriously while the rest were planning some pilot knowledge management projects. Successful knowledge management implementation initiatives as discussed in Chapter 6, paragraph 6.3, reveal that the knowledge management strategy must be closely linked to the overall business strategy, and should produce a tangible result to the organisation as a whole.

In Chapter 6, paragraph 6.5, the study proposes a hybrid framework for a knowledge management implementation initiative. A hybrid framework focuses on the human factor, the management of business processes, the alignment of the knowledge management strategy with the overall business strategy and address technology as an enabler for managing and sharing knowledge. According to the interviewed representatives, the financial organisations were all focusing, evaluating or plan to use hybrid frameworks for their knowledge management implementation initiatives.

Figure 7.5 gives an indication of the current state of engagement with knowledge management in the three financial organisations.

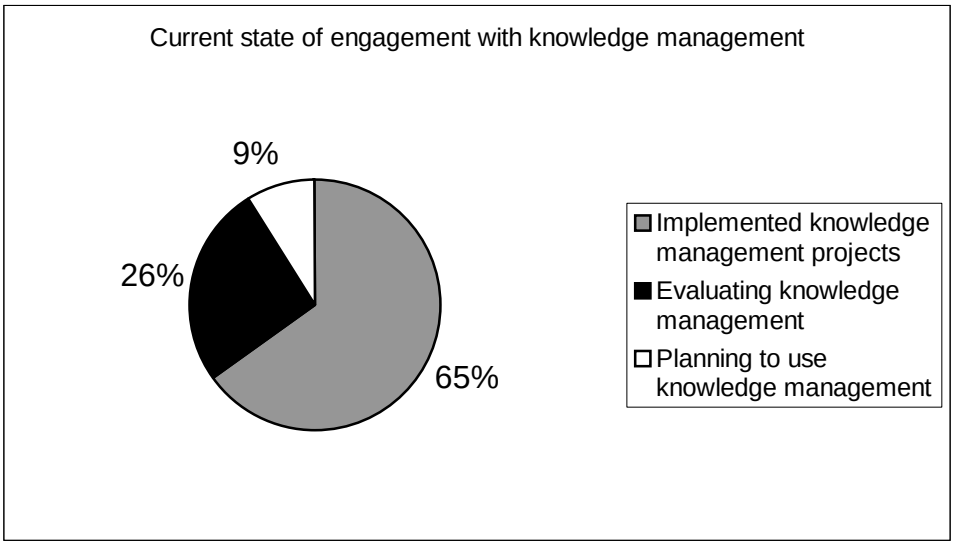

Figure 7.5: Current state of engagement with knowledge management

7.3.5 Reason for investing in knowledge management

Three-quarters of the respondents reported that their most compelling reason for investing in knowledge management was increased value for customers. Twenty-one percent stated that the reason for investing in knowledge management was to reduce costs. Only 4% of the respondents reported that they were investing in knowledge management because their competitors were doing it.

Three-quarters of the respondents (75%) expected that knowledge management would increase value for customers in areas such as: reducing the time to market for new products and services, increasing sales and increasing flexibility of the organisation to adopt and change in a competitive environment. Chapter 6, paragraph 6.2.2, reveals that successful knowledge management implementation initiatives highlighted numerous potential benefits for the organisation and can be seen as a reason for investing in knowledge management. Benefits include higher productivity of

knowledge workers, reduced costs, better decision-making and increased value for customers. In conclusion, the most compelling reason for investing in knowledge management is increased value for customers. The financial organisations different reasons for investing in knowledge management are shown in Figure 7.6.

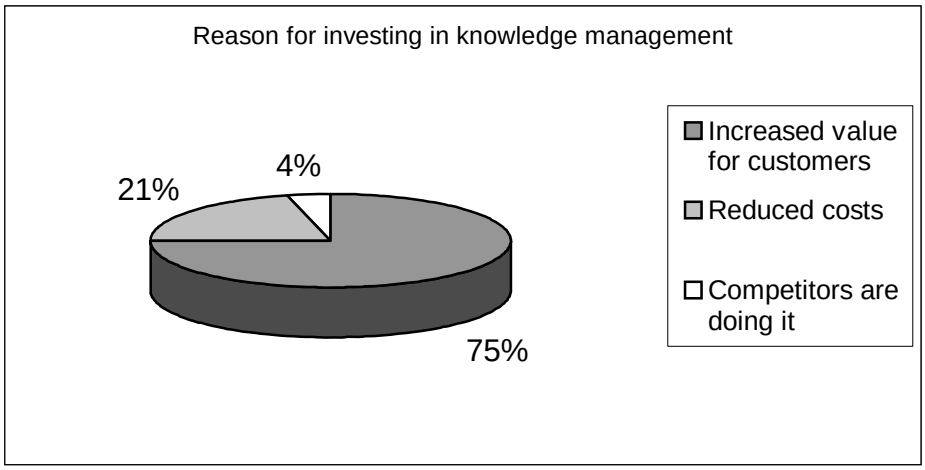

Figure 7.6: Reason for investing in knowledge management

7.3.6 The most valuable feature of a knowledge management solution

Each of the three organisations interpreted the most valuable feature of a knowledge management solution differently. Thirty-three percent of the respondents stated that the most valuable features were enhanced ways of organising corporate knowledge. Thirty three percent stated that the most valuable features of a knowledge management solution are new ways to expose tacit knowledge and 34% reported that a knowledge management solution supported research and generation of new knowledge.

As an important element contributing to the implementation of knowledge management and performance of the three financial organisations, their different perspectives can be viewed as a natural characteristic of the respondents' distinct and diverse commercial work environments. The study made allowance for different viewpoints.

CHAPTER 8

CONCLUSION

8. CONCLUSION

"So it is in travelling: a man must carry knowledge with him, if he would bring home knowledge" Samuel Johnson.

8.1 Introduction

The conclusions below are based on the findings in the literature survey in Chapters 2-6 and the case studies of the current state of knowledge management implementation in South African industries, with specific reference to financial institutions, discussed in Chapter 7.

8.2 Findings

Main findings that have been obtained during the study are as follows:

- It is clear that knowledge is an important asset in organisations in the knowledge economy. Knowledge is associated with people, money, leverage, learning, flexibility, power and competitive advantage. Knowledge - the insights, understandings and practical know-how that all possess - is the fundamental resource that allows people to function intelligently. Knowledge is internal to the human being and therefore subjective, whereas information and data remain external and objective. A symbiotic relationship exists between information and knowledge. Tacit knowledge is highly personal and hard to formulate. Explicit knowledge can be expressed in words, can be easily communicated and shared. The transfer of tacit knowledge throughout an enterprise involves complex processes including the conversion from tacit knowledge to explicit knowledge, and vice versa. Organisations that know how to give employees the organisational knowledge they need – at the time needed – can position themselves to compete more effectively and succeed much faster. Organisations that harness and manage their intellectual capital can apply that asset to business challenges and opportunities.

- For knowledge to be of value in organisations it must be focussed, current, tested, shared and managed effectively. Knowledge management is seen as a

business process, integrating knowledge, people, processes, strategies, techniques and technologies. The management of knowledge involves a systematic approach to nurturing, protecting and exploiting that knowledge, which is important to the success of the organisation. Knowledge management helps an organisation to gain insight and understanding from its own experience. Knowledge management activities help focus the organisation on acquiring, storing and utilising knowledge for problem solving, dynamic learning, strategic planning and decision-making. Knowledge management supports organisations with the identification of where knowledge resides, enhancement of intellectual capital and the promotion of learning cultures where people are encouraged to create and share knowledge. Managing knowledge effectively provides competitive advantage in an increasingly competitive and dynamic business environment.

- Organisations where knowledge is managed and learning is encouraged and supported are increasingly observed in industry. Knowledge management and organisational learning work best as inter-related and overlapping concepts. Organisational learning and knowledge management create a motivated and energised work environment/context that supports the continuous creation, collection, use and reuse of personal, group/team and organisational knowledge in the pursuit of business success. Managing a knowledge and learning context is a holistic challenge – a challenge of managing both, knowledge and learning, simultaneously and seamlessly. The most important components of the organisational learning context are its organisational culture, structure and infrastructure. Learning organisations differ from traditional organisations in critical areas, namely organisation strategy, knowledge and learning, people and technology. Learning organisations respond to changes in the environment by proactive organisational learning. To share and distribute information and knowledge in a learning organisation, a well-developed and well-planned knowledge management framework is needed. Techniques and technology support knowledge management processes and activities in a learning organisation .

- In order to implement knowledge management successfully it is clear that the following is needed:

  - Interdependency between knowledge management strategy and business strategy.
  - Knowledge management framework.
  - Knowledge management techniques and technology

  The knowledge management strategy is closely linked to the overall business strategy and provides the framework within which an organisation manages new initiatives. The business strategy guides the development of a knowledge management strategy. Both strategies are linked to development plans, business plans and future projects. The Chief Knowledge Officer heading the knowledge management implementation initiative is fully acquainted with all aspects of the business strategy, whether it is the vision, mission, or goal of the organisation.

  In order to develop a knowledge management implementation strategy a framework is needed. Different approaches to knowledge management implementation frameworks exist. The frameworks are classified in three different categories, namely descriptive, prescriptive and hybrid. Hybrid frameworks are a mixture of descriptive and prescriptive frameworks and comply with the attributes that a knowledge management implementation framework should adhere to. In a hybrid framework the emphasis is strong on the human and technological factors as well as on the alignment of the knowledge management strategy with the overall business strategy. Based on the hybrid framework the proposed framework in the study consists of four interlinked subsystems, namely management of the organisation, people, processes and the infrastructure as well as the alignment of the knowledge management strategy with the business strategy of the organisation.

  Technology and human related techniques bring to knowledge management the ability to carry out knowledge management processes, quickly, efficiently

and cost-effectively, making it an enabling solution. Knowledge management techniques and technologies support the four conversion processes of knowledge between tacit and explicit knowledge. Socialisation (tacit to tacit) is a process of acquiring tacit knowledge through sharing experiences, for example in meetings. Externalisation (tacit to explicit) is a process of converting tacit knowledge into explicit concepts, for example in dialogue among team members, thus face-to-face and on-line. Combination (explicit to explicit) is a process of creating explicit knowledge by bringing together explicit knowledge from a number of sources, for example through conversation, meetings, electronic mail, intranets, education and training. Internalisation (explicit to tacit) is a process of embodying explicit knowledge into tacit knowledge; for example, by reading documents, employees can re-experience what others previously have learned. Three components of knowledge management are necessary to trigger the conversion processes, namely people, processes and techniques and technology. Techniques and technology are applications and solutions that enable organisations to capture, access, browse, search, retrieve and share what is already known or possessed. Various techniques and technologies exist of which only a few are mentioned: talk rooms, mentoring, storytelling, face-to-face conversations and e-mail, groupware, Internet and intranet.

- Various benefits for knowledge management exist. An effective knowledge management initiative should help an organisation do one or more of the following:

  - Foster innovation by encouraging the free flow of ideas.
  - Improve customer service by streamlining response time.
  - Boosts revenues by getting products and services to market faster.
  - Recognise the value of employees' knowledge and reward them for it.
  - Streamline operations and reduce costs by eliminating unnecessary processes.

A creative approach to knowledge management can result in improved efficiency, higher productivity and increased revenues in practically any business function.

- Three financial organisations have been used in the case studies to investigate the current state of knowledge management implementation initiatives. The following conclusions were made:

  - A knowledge management implementation initiative is not a project that is undertaken on its own without a link to the overall business strategy and must produce a tangible result to the organisation as a whole.
  - Knowledge is seen as an important asset in a wide variety of business activities.
  - Knowledge is the “know-how” that is needed to keep ahead in a competitive market.
  - Knowledge-based organisations recognise the importance of knowledge, knowledge creation and knowledge sharing.
  - Techniques and technology are seen as important enablers for knowledge sharing.
  - The major principle of learning in organisations is to create a motivated and energised work environment.
  - Knowledge management is becoming more widespread and is increasingly recognised by senior executives as an important dimension of the business strategy and a contributor to organisational performance.
  - Most enterprises are recognised as knowledge-based organisations.
  - Financial organisations prefer a hybrid framework for the implementation of knowledge management efforts. A hybrid framework focuses on the human factor, the management of business processes, alignment of the knowledge management strategy with the business strategy and address technology as an enabler to manage and share knowledge.

- Successful knowledge management implementation initiatives have highlighted numerous potential benefits for the organisation and can be seen as a reason for investing in knowledge management.
- A knowledge management solution is seen as a new way to expose tacit knowledge, a more effective way of organising corporate knowledge or the generation of new knowledge.
- Financial organisations realise the value of leadership, but the role of the Chief Knowledge Officer is seen as a short-term position in the organisation.
- Culture was cited as the biggest obstacle to implementing a knowledge management initiative. Other areas that have been identified as potential barriers were structural barriers, technological barriers, economic barriers and knowledge sharing barriers.
- Many employees still suffer from costly mistakes due to the best knowledge not being accessible at the right time/format/place.
- A learning and changed environment is the kind of environment that is needed to maximise gaining, sharing and utilising of knowledge.
- There should be an even balance within organisations between techniques and technology when considering a knowledge management initiative.
- While technology can support knowledge management, it is not the starting point of a knowledge management initiative. Knowledge management decisions must be based on people (who), knowledge (what), business-objectives (why). The technology (how) can be saved for last.

- Based on the findings of the literature study as well as the case studies it is clear that organisations should keep the following risk factors into consideration or else the possibility exists that their knowledge management initiative may fail.

Ignoring people and cultural issues

The major problems that occur in knowledge management usually result because companies ignore the people and cultural issues. Employees of the organisation still believe that "knowledge is power" instead of "sharing knowledge is power". Moving to a culture that values and encourages innovation, openness, teamwork and knowledge sharing requires leadership and possibly, changes in relationships, organisational structures and the office environment.

Appraisal and reward systems

One way companies motivate employees to participate in knowledge management is by creating an appraisal and reward system i.e. an extra bonus or mid-week get-a-ways. However, there is the danger that employees will participate only to earn incentives, without regard to the quality or relevance of the knowledge they contribute. The appraisal and reward systems can be adjusted to encourage the desired behaviour from all staff. Recognition needs to be given to those who freely contribute and share expertise that is valued by their colleagues. Incorporating knowledge management activities into job descriptions reinforces the message.

Allowing technology to dominate knowledge management

Knowledge management is not a technology-based concept. Companies that implement a centralised database system, electronic message board, web-portal or any other collaborative tool in the hope that they are establishing a knowledge management initiative are wasting both their time and money.

Not having a specific business strategy

A knowledge management strategy should not be divorced from a business strategy. While sharing best practices and knowledge is a commendable idea, there must be an underlying business reason or need to do so. Without linking the knowledge

management strategy with the business strategy, knowledge management is a worthless exercise.

Neglecting to update the content of the knowledge management initiative

As with many physical assets, the value of knowledge can erode over time. Since knowledge gets stale fast, the content of a knowledge management initiative should be updated, amended and deleted. The relevance of knowledge at any given time changes, and also the skills of employees. Therefore, there is no endpoint to a knowledge management initiative. Like product development and marketing, knowledge management is a constantly evolving business practice.

8.3 Further research possibilities

Many knowledge management efforts have been initiated in South Africa and across the world. Many organisations have already succeeded in the implementation of a knowledge management initiative, but some are still in the initial phase of developing a knowledge management effort. From the abovementioned conclusions, gaps have been identified and addressed in the discussion on possible further research possibilities.

Further studies from the recommended research possibilities will provide new insights to the evolving concept of knowledge management implementation efforts. Further research possibilities in the field of knowledge management include:

- The influence of cultures in different countries on the organisational processes of knowledge creation and transfer during a knowledge management implementation initiative.

- Investigating incentives to promote innovation, effective knowledge exchange, learning and application of best knowledge for work.

- What organisational roles are needed to support knowledge management, and what are the associated competencies that both individuals and organisations need to acquire.

- External relationships and knowledge management. Organisations can develop relationships with other knowledge-based companies, to leverage their technology research, product knowledge and domain knowledge, thus strengthening their knowledge base. Such partnerships provide the advantage of a relatively faster learning cycle and a closer relationship with those who are influencing the future paradigms of a knowledge industry.

- Identifying the critical success factors of and lessons learned from implementing a knowledge management initiative in different types of organisations.

- The knowledge management body of literature should include more case studies on how companies engage in knowledge management, so that other companies can learn from them. Companies need to be guided in how to implement knowledge management to survive and grow and also to improve their products and services to their customers.

8.4 Conclusion

From this study it can be concluded that knowledge management can contribute to an organisation's success if it receives the attention and priority it deserves. Managers should gain experience on how to make knowledge management work for the organisation. Managers should not base decisions on historical knowledge and preconceived ideas. They have to be convinced that knowledge management is essential for their organisations. This will only happen when knowledge management can prove to decision-makers that they can attain better results by applying knowledge management scientifically and correctly.

APPENDIX A

Appendix A

Knowledge Management Questionnaire

Knowledge Management is concerned with the exploitation and development of the knowledge assets of an organisation with a view to furthering the organisation's objectives. The knowledge to be managed includes both explicit, documented knowledge and tacit, subjective knowledge. The identification, sharing and creation of knowledge require systems for the creation and maintenance of knowledge repositories and to facilitate the sharing of knowledge and organisational learning. Organisations that succeed in Knowledge Management are likely to view knowledge as an asset and to develop organisational norms and values, which support the creation and sharing of knowledge.

As part of my studies for a Masters Degree in Information Science, I am doing this survey in order to get your opinion as Knowledge Officer/ IT Specialist on the Knowledge Management activities in your organisation. Since the results of this questionnaire will be used in my dissertation, your response and cooperation will be appreciated. Corporate names will not be mentioned, but will only be referred to as Financial Organisation A, B or C.

Mrs. M. Squier
Department Of Information Science
University of Pretoria.

Please complete the questionnaire and return it to the following address:
E-Mail: msquier@postino.up.ac.za OR
Fax: 012-3625181
I would appreciate it if your completed questionnaire can be returned before **30/08/03**.
You can contact me at the following telephone numbers:
012-420 4223 (W) or 012-348 3087 (H).

1. Functional area: [ ]

   Number of employees reporting to you: [ ]

2. Which of the following statements most closely describes your perception of Knowledge Management?

   Please choose one:

   - ❑ The latest management fad [ ]
   - ❑ New terminology for marketing information technologies [ ]
   - ❑ A new way to add value to information inside and outside the organisation [ ]
   - ❑ A major new strategic imperative for staying competitive [ ]
   - ❑ Other, please specify [ ]

3. Do you view your organisation as a knowledge-based business competing in global knowledge economy

   - ❑ Yes, definitely [ ]
   - ❑ No, not yet [ ]
   - ❑ Sometimes [ ]
   - ❑ Other, please specify [ ]

4. What is the current stage of your organisation's engagement with Knowledge Management?

   Please choose one:

   - ❑ Evaluating Knowledge Management [ ]
   - ❑ Planning phase for Knowledge Management project [ ]
   - ❑ Have implemented one or more Knowledge Management projects [ ]
   - ❑ No plans to use Knowledge Management [ ]
   - ❑ Other, please specify [ ]

5. What is the most compelling reason for investing in Knowledge Management?

   Please choose one:

   - ❑ Reduced costs [ ]
   - ❑ Increased value for customers [ ]

- Increased levels of innovation [ ]
- Improved efficiency of people and processes [ ]
- Competitors are doing it [ ]
- Other. Please specify [ ]

6. What do you see as the most valuable features of a Knowledge Management solution?

   Please choose one:

   - Enhanced ways of organising existing corporate knowledge [ ]
   - New ways to expose tacit (difficult to convey) knowledge [ ]
   - More effective ways to share explicit (easily documented) knowledge [ ]
   - Support for research and generation of new knowledge [ ]
   - Other, please specify [ ]

7. Please indicate the status of the position Chief Knowledge officer/ Knowledge Manager in your organisation?

   Please choose one:

   - Already in place [ ]
   - Within the next year [ ]
   - Within the next 2-3 years [ ]
   - Unlikely ever to have such a position [ ]
   - Other, please specify [ ]

8. What is the single biggest obstacle/barrier to the widespread application of Knowledge Management?

   Please choose one:

   - Cultural resistance [ ]
   - Cost [ ]
   - Technology [ ]
   - Organisational structure [ ]
   - Other. Please specify [ ]

9. Have you suffered costly mistakes or inefficient operations because employees lack sufficient knowledge or experience, or knowledge was not available when and where needed?

   Please choose one:

   - ❑ Best knowledge was not accessible at the right time/format [ ]
   - ❑ Managers are unaware of the true extent of organisational cost of creating, managing and transferring/sharing knowledge [ ]
   - ❑ "Knowledge bottlenecks" exist which are the source of costly mistakes or inefficient operations [ ]
   - ❑ Other. Please specify [ ]

10. What kind of environment should your company provide to maximise gaining, sharing and utilising knowledge?

    Please choose one:

    - ❑ An Information Technique & Technology environment [ ]
    - ❑ A learning and change environment [ ]
    - ❑ An interaction and reflection environment [ ]
    - ❑ All of the above [ ]

11. Please identify on the list of component technologies below the ones you feel will make significant contributions to a Knowledge Management initiative.

    Please choose all that apply:

    - ❑ Data warehouse/ mining software [ ]
    - ❑ Enterprise application software [ ]
    - ❑ Group ware/ collaborative work software [ ]
    - ❑ Intranets [ ]
    - ❑ The Internet/ World Wide Web [ ]
    - ❑ Text search and navigation tools [ ]
    - ❑ Document management [ ]
    - ❑ Work flow [ ]
    - ❑ Decision support/ Artificial intelligence products [ ]
    - ❑ Multimedia capabilities [ ]
    - ❑ Other please specify [ ]

12. Please identify on the list of component techniques below the ones you feel will

make significant contributions to a knowledge management initiative.

Please choose all that apply:

- Mentoring [ ]
- Storytelling [ ]
- Talk rooms [ ]
- Chatting [ ]
- Communities of practice [ ]
- Suggestion schemes [ ]
- Face-to-face-conversations/Face-to-customer conversations [ ]
- Other. Please specify [ ]

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