E-COMMUNICATION IN KNOWLEDGE MANAGEMENT

Where e-Communication Could

Take Organisations

Sipho Lombo

DLitt in Communication Science

University of Zululand

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First External Examiner: Prof J.A Smit
University of KwaZulu-Natal

Second External Examiner: Dr S.P Zulu
Durban Institute of Technology

ETHICAL STATEMENT BY RESEARCHER

With the signature below I, Sipho Lombo, hereby declare that the work that I present in this thesis is based on my own research, and that I have not submitted this thesis to any other institution of higher education to obtain an academic qualification.

Student number: 23471

S. Lombo

Wednesday, 2 March 2005
Date

University of Zululand

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By Sipho Lombo

Promoter: Prof. R.M. Klopper
Department of Communication Science

Abstract

This dissertation focuses on the contribution of electronic communication (e-Communication) to knowledge management. It is based on an empirical survey of knowledge management practitioners in the private, public and NGO sectors in KwaZulu-Natal, South Africa. The major findings of this study are (1) that many knowledge management practitioners have not received any formal training in knowledge management, (2) that for most of them their practices are not informed by explicit knowledge management policies, (3) that there is no culture of sharing knowledge established within particular organisations, and finally (4) that knowledge managers are not using e-learning facilities to keep their knowledge of knowledge management current.

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Chapter 1

STATEMENT OF PROBLEMS, RESEARCH METHODOLOGY AND OVERVIEW

INTRODUCTION
In this introductory chapter the background to the study is given. This will be followed by amongst other things, the statement of the problem, critical questions, research methodology, chapter overview and a summary.

BACKGROUND TO THE STUDY
This study came about as a result of the researcher's interest in knowledge management and how organisations employ technologies to manage it. It was also an interest in understanding the difference in and application of terms such as information and information systems, data and data management, best practice, intellectual capital, corporate memory, knowledge as well as wisdom management. All these terms are related to knowledge management and are an endeavour to define, capture and manage the essence of this study.

Organisations generate, store and share knowledge in different forms. The number of meetings, virtual or person-to-person, workshops, seminars and conferences that take place in many organisations attest to this. Communication takes place every day through informal talks in the passages and in tearooms. Circulars and notices are used as everyday communication strategies. Mersham and Skinner (1999:140) agree that if we look at the sheer volume of information stored by organisations today including reams of printed information such as computer documentation, procedures, specifications and reference documents we quickly see the argument for taking information on-line. People can no longer afford to wade through a

shelf full of documentation and companies can no longer justify the time and cost of printing all this information without any guarantee that others will actually have access to it. Observing the above scenario the researcher hypothesised that we are information rich but knowledge poor.

De Villiers and Michel (2004:22) believe that knowledge is the fundamental element of competence within an organisation through which it achieves its future objectives. The application of knowledge solves business problems and makes the utilisation of business opportunities a reality. They continue that managers today drown in data and information, yet lack significantly in knowledge and wisdom.

Drucker (2002) states that knowledge has become the key economic resource and dominant and perhaps even the only source of competitive advantage. In government offices one witnesses thousands of personnel files, containing extremely important information and knowledge. Many of these files have been turned into digital formats for easy retrieval.

STATEMENT OF PROBLEMS
Globalisation activated an unprecedented digital revolution. It has added to the information explosion. This brought about a new challenge in the management of knowledge in organisations. One of the characteristics of the present and future organisations is the increased availability of information and its effective use (Mersham and Skinner 1999: 154). Therefore the knowledge economy should have workers who are multi-skilled and flexible to learn new skills.

Successful people in the South African workforce will have skills in the areas of computer communications, data analysis and data interpretation.

Information sharing will be very important in sustaining such performances (Mersham and Skinner 1999:155). Organisations would therefore have to unlock the intellectual capital of their knowledge workers (Dlamini 2004). In the modern economy, companies and countries are as good as their ability to generate, use and manage knowledge and their knowledge workers. Building a company that makes outstanding use of knowledge or intellectual assets will always depend on the right format, to the right people. Therefore neither technology nor money is a sustainable source of competitive advantage (Dlamini 2004).

The problem is that because of the advent of technology and the role technology plays in transporting information, technology is seen as a panacea for all problems in the organisations. Knowledge is fundamentally a human creation; no technology or information technology system, however, sophisticated, can generate it. What technology can do is facilitate a flow of information to enable people to be as creative as they can, and to simplify human choices by giving structure to overwhelming quantities of data.

Organisations such as the private sector became early adaptators of technology, converting their manual systems into virtual systems. The Internet, intranet, emails and cell phones communicate messages, information and knowledge to millions of people per day, in the process adding to corporate and institutional memory.

The speed at which government is turning to technology is slower than the private sector. Systems such as PERSAL and recently BAS in government are supposed to process personnel finances quicker and easily. In that regard organisations both private and public have invested hugely into technology.

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All problems that humans can solve with knowledge and wisdom acquired from the past, are thrown to technology.

Witschger (2003:14) proposes that the primary role of a technology creator should not be to recreate or replace the human being, however, challenging that task may be, but to offer tools that optimise human ability and brainpower. The idea is not that man becomes the slave of his own creation. Instead a combination of human and user interface computer capabilities is needed. Witschger (2003:15) argues that any company can throw technology at a business problem but successful companies will provide a combined technological/human-interfaced solution that treats the customer as a person and not as a number.

This study therefore will focus on the contribution of electronic communication in knowledge management and where this is taking organisations.

AIM OF THE STUDY

The five aims of the study are:

- To contribute to the understanding of knowledge management as distinct from information technology.

- To understand the history and use of knowledge management as part of the indigenous knowledge systems.

- To show how e-communication impacts on knowledge management.

- To determine which knowledge management technologies are used by organizations.

- To investigate future trends in knowledge management.

CRITICAL QUESTIONS
- How did early communities manage knowledge?

- How do organisations manage knowledge?

- What electronic communication tools are used in the organizations to attain, synthesize, process, store, disseminate and share knowledge?

- What are the taxonomies of organisations that are using e-communication for knowledge management and wisdom management?

- What are the benefits of these technologies to organizations?

RESEARCH METHODOLOGY
The project is of a qualitative nature and entails the following

- The research will consist of a literature survey on data, information, knowledge and knowledge management.

- An overview of the practice of knowledge management as part of the indigenous knowledge systems from Nomadic period till today will be studied.

- The impact of electronic communication using case studies from the public, private and non-governmental organisation sector will be used.

- A survey questionnaire will be sent out to select organisations representing the public, private and non-governmental organisations.

- This will be followed by a quantitative and qualitative analysis of results.

- The research will focus on how these organisations converge the use of electronic communication and human capital to leverage best practice in knowledge management.

ENVISAGED VALUE OF RESEARCH

The research will clarify the definition and the role of knowledge management as a relatively new field in South Africa. The empirical nature of the research will document the paradigm and progress that has been attained by selected South African organisations in respect of electronic communication and knowledge management in KwaZulu-Natal. The most important value will be to indicate the trend that knowledge management tools are playing within organisations and what this means for future knowledge management.

CHAPTER OVERVIEW

Chapter 1

Background to the study, statement of problems, research methodology and overview.

Chapter 2
Literature survey

Chapter 3
The origin and development of knowledge management

Chapter 4
Knowledge management in organisations

Chapter 5
Electronic communication in organisational knowledge management

Chapter 6
Advantages and disadvantages of information management systems and technology in government

Chapter 7
The future of electronic communication in organisations

Chapter 8
Fieldwork and data processing

Chapter 9
Results

Chapter 10
Conclusion and recommendation

LIMITATIONS OF THE STUDY

The study would be limited by the experience of the knowledge managers to answer practical questions on the implementation of knowledge management. This was manifest in the way many assumed knowledge managers called the researcher to get clarity on terms like 'learning organisations, best practice'

and others. The researcher believes that limitations would be covered by other questions in the survey questionnaire that are non-technological, which would reveal the extent of implementation in the organisations.

SUMMARY

In this chapter the researcher discussed the statement of problems. This was followed by the aim of the study, research questions, research methodology, envisaged value of research and chapter overview. The next chapter will focus on the literature survey.

Chapter 2

LITERATURE SURVEY

INTRODUCTION

In this chapter the researcher will introduce the literature survey regarding electronic communication in knowledge management. He will thereafter define the terminology related to knowledge management and indicate the continuum link among them.

THE CASE FOR TECHNOLOGY IN KNOWLEDGE MANAGEMENT

Since time immemorial man has had to manage knowledge for survival's sake. Knowledge management has ensured the survival of the human species, peoples' cultures, and language and allowed the preservation and improvement of indigenous knowledge against dangerous diseases, animals plants and practices. With the advent of technology knowledge management has been confused with the purchasing and implementation of knowledge management projects of an information communication technology nature.

Knowledge management has two main aspects to it:

- The first is the technology aspect that concerns the technicalities of capturing, storing, accessing and disseminating knowledge.

- The second is the human management aspect or how we encourage a knowledge-sharing culture within an organisation (Mersham and Skinner 1999: 139).

The sweeping changes and the lure of new technologies have brought more attention to computers than the power of tacit knowledge in peoples' heads.

Tuomi (Fried 2004) argues that many knowledge management projects have a high orientation of information technology. These have a success rate of only 25%. The reason is that knowledge management is always seen as a technological issue. Tuomi (Fried 2004) emphasises the point that technology is a relatively small part of any successful knowledge management programme but continues to get more attention than organizational practice.

This leads to Tuomi's second observation, that tools and technologies cannot be utilized without a corresponding practice. In this view, it is not essential that single individuals know and act based on their knowledge. A conceptualisation of knowledge in organisations has to emphasize the link between knowledge and action as the basic constraint of social systems. Knowledge in organisations – corporate knowledge – is socially and culturally embedded, and it can only be generated through changes in organisational activities and practices. Tuomi (Fried: 2004) argues that,

> *researchers often have been too quick in pointing out that*
>
> *organisations don't have real memory, sense making capability and*
>
> *intelligence, and that, of course, human beings are the unique hosts of*
>
> *these cognitive faculties.*

The central idea of Tuomi's (Fried:2004) deals with the concept that organisations are collective entities where it is possible to find similarities to intelligence as manifested in humans. Above all the researcher would stress the link between knowledge and action spotted by Tuomi (Fried: 2004), because these considerations are important for the discussion of information technologies. They highlight the fact that information technologies are only

adopted when users integrate them in meaningful ways into existing social practices. This makes a long story short but it encourages us to reconsider a long tradition that leads us to believe that knowledge management is more or less a technological issue. With Tuomi's work we have to put social practices and meaning processes alongside knowledge management. In this sense, we find a very practice-oriented aspect in Tuomi's work (Fried: 2004).

Tuomi (Fried: 2004) prepares the theoretical groundwork for the third generation of knowledge management that links knowledge and action/ practice to a more effective access to information. Consequently, Fried (2004) pursues questions concerning what role information systems play in knowledge management; how people create shared understandings about the world; what theoretical approaches enable us to understand how to connect information and communication into action; and how organisational knowledge actually emerge.

This conclusion is also supported by the industry-wide analysis of information technology investments by Strassmann (1997) who strongly argues that there is no relationship whatsoever between computer expenditures and company performance. On a similar note Brown, (Strassman 1997) underscores that in the last 20 years, U.S. industries had invested more than $1 trillion in technology but had realized little improvement in the efficiency or effectiveness of its knowledge workers. Brown attributes this failure to organisations' ignorance of ways in which knowledge workers communicate and operate through the social processes of collaborating, sharing knowledge, and building on each other's ideas. The researcher strongly identifies with this view. The money spent on buying computers in the government sector is not aligned nor assessed according to the outputs or performance of the work

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done. There is little sharing of skills and knowledge obtained from education workshops. Instead of enriching the organisation memory, it becomes an individual's ammunition for the next advertised employment opportunity.

This disconnection between information technology expenditures and the organisational performance may be attributed to an economic transition from an era of competitive advantage based on information to one based on knowledge creation. The earlier era was characterized by relatively slow and predictable change that could be deciphered by most formal information systems. During this period, information systems based on programmable recipes for success were able to deliver their promises of efficiency based on optimisation for given business contexts.

Today's business world does not put a premium on playing by pre-defined rules but on understanding and adapting as the rules of the game as well as the game itself-keeps changing. Examples of such changing business rules, conventions and assumptions are suggested by the emergence of virtual corporations and business ecosystems. As noted by Strassmann (1997) elevating computerization to the level of a magic bullet may diminish what matters the most in any enterprise: educated, committed, and imaginative individuals working for organisations that place a greater emphasis on people than on technologies. The lack of correlation of information technology spending with financial results has led Strassman (1997) to conclude that it is not computers that make the difference, but what people do with them.

Some technology experts and academic scholars have observed that there is no direct correlation between information technology investments and knowledge management. Strassman (1997) quotes Brynjolfsson who argues

that the same dollar spent on the same system may give a competitive advantage to one company but only expensive paperweights to another. Hence, a key factor for the higher return on the information technology dollar is the effective utilization of information as it relates to organisational performance.

How industry executives should go about deciphering the mantra of effective utilization remains an illusive issue. This argument is strongly supported by SAMDI (2003:20) who believe that organisations often fail to derive full benefit from newly implemented information technology systems because they inadequately manage the risks associated with the people who use them. He continues to mention that research has shown that companies typically unlock only between 30% and 40% of the total functionality and power inherent in an information technology application. The rest remains unutilised because the users have not taken ownership of the system and don't understand the business case for having implemented it. They were never made to understand why the system was being introduced and what value it was expected to add to the organisations.

If employees cannot understand the vision behind a system rollout and do not share in the wealth they create for the company through its use, then the system has no legitimacy within the organisation and its true value cannot be realised. Wiig (2003:20) proposes that a new system rollout must be accompanied by a thorough examination of the people risks involved. These could include:

- Improper communication of the case for change;

- A low level of information technology sophistication within the company;

- Insufficient capacity to implement the change;

- Poorly managed training and little management sponsorship of the system implementation.

Unless the risks are properly managed, the changeover could be severely hampered. The best computer technologies will always add unnecessary costs to a poorly managed firm. Elevating computerization to the level of a magic bullet of this civilization is a mistake that may only find correction after huge expenditure. To solve the problems of delivering and assimilating new technology into the workplace, we must look to the way humans act and react. Hence knowledge management must look at the skills of human capital and not the product of the organisation.

According to Mersham and Skinner's model (2001) there is a need to understand knowledge management as a people-based knowledge-sharing culture. This will reveal to us a few questions such as:

- How do people learn?

- How do people share information?

- What do people learn?

- When do people learn?

THE CONCEPT OF KNOWLEDGE MANAGEMENT

There are many definitions of the term 'knowledge'. According to Davenport (1998) knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of those who have knowledge. This definition indicates the source and the danger of the personalisation of knowledge. It points to the possible accumulation and hoarding of knowledge, as knowledge can become a source of power.

Some researchers stratify knowledge according to its development from 'data, information to knowledge'. Knowledge is a slippery concept and is easily confused with data and information.

DATA

Data serves as the essential nucleus, which when combined yield meaningful information (Lim: 2001). Data comprises raw unformatted information. It is easily manipulated, updated, edited, copied and reused. Data lacks context and structure and is therefore meaningless on its own. Smith (2001) makes a congenial link in the string involving data, information and knowledge, "Data is the raw material of information, information is the raw material of knowledge, and knowledge is the raw material of wisdom".

A collection of data is not information.

A collection of information is not knowledge.

A collection of knowledge is not wisdom.

A collection of wisdom is not truth (Sheenagh: 2002).
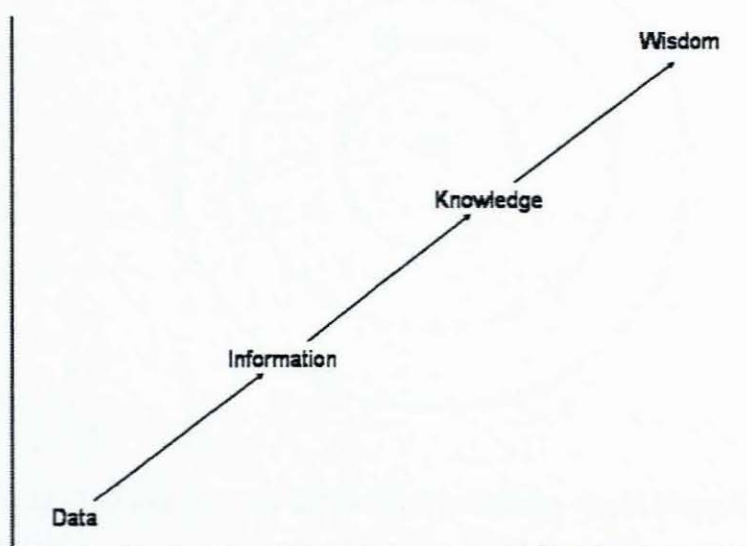
Figure 1 shows a linear upward development from data to wisdom adapted from Lim (2001)

It is this combination that makes information [Lim 2001], which can then be either stored or transmitted in a multitude of ways. Technology is an enabler in this equation. From using the Internet to intranets, and from e-mails to live chats, the transmission of information has led to a whole new section of commerce and industry. They herald an evolutionary step for transmitting information. Technology and electronic software are just the enablers for information transfer. Once information is transferred, it is the ability to act on it that is referred to as knowledge. (Lim 2001) This dynamic interrelationship is shown in Fig. 2.
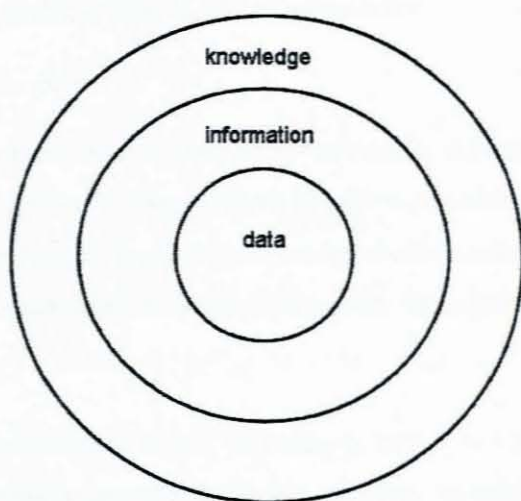
Figure 2 shows the data-information-knowledge ripple adapted from Lim (2001).

RELEVANT INFORMATION LEADS TO KNOWLEDGE

Meaningful data becomes information. Drucker (2002) defines information "as data endowed with relevance and purpose". She points to the following features about information:

- Needs consensus on meaning

- Requires human interaction and can be created by people and computers

- Can be used by anyone anytime

- Can be easily linked

- Often static

- Easier to understand and communicate

- Large quantity – there is tons of information

- Linked to data

An interesting point that is raised by 'consensus meaning' indicates the importance of correct communication as well as variables like culture and language background by those that are communicating information. If one of them does not understand the information given, the information may remain 'data'.

To be useful, information should be accurate, timely, complete and relevant. Accurate information provides a reliable reflection of reality (SAMDI 2003: 14). Tsuchiya (2002:102) further says, "information is knowledge expressed by means of metaphors". It carries its sender's knowledge articulated through his (or her) interpretative framework. To become knowledge of its receiver, the information needs to be interpreted through the framework of the receiver. Each person has his or her own framework, which functions in a similar manner to a filter. When the sender's framework is quite different from the receiver's in terms of culture, background and experience, the receiver seldom acquires the knowledge the sender intended to transfer (Tsuchiya: 2002).

Wiig (1993) gives this example to illustrate when information becomes knowledge

> *You cannot drink milk within one hour of taking those*
> *antibiotics" Tom was told. "Oh. I didn't know that. Do you know*
> *why?" It is because the antibiotics will react with the lactose and break*
> *down into inert components." After having received this information,*
> *Tom thought for a moment and said: "That makes sense, I see why.*

In this episode, Tom quickly related the new information to what he already knew about milk, what takes place in the stomach, and the effects and functions of medicines. In this process he did two things. He compared the received information with his prior knowledge and ascertained that it was acceptable. He also internalised the new information by remembering the episode itself; in addition, he formed associations and other links with prior knowledge. He even added the aspect of 'potential changes that can take place in the stomach' to his mental model or schema for the functioning of ingested medicines. Tom had changed the information into knowledge that he now held (Wiig 1993). This confirms how SAMDI (2003:74) states the difference between information and knowledge,

> *Information must communicate insight in a matter or predict*
> *something that would not otherwise become known. Information*
> *is the basis from which knowledge originates, and knowledge is*
> *the basis form which insight originates.*

A manager who has insight in a matter is of value to the enterprise since the insight is necessary to take sound decisions.

Different types of information

Information can be classified on different bases: Internal or external information has bases. Internal or external information has as a base whether information originates for decision makers inside the organisation or outside it. Information classified on a time basis can be classified into historical information, current information and future information. Strategic, tactical or operational information indicates the information that is needed by the different management levels (SAMDI 2003: 75).

Functional information indicates that which the different functional areas in the institution or organisation need. For knowledge management to succeed information must first be managed. The primary objective of information management is to secure relevant information in time, in the correct form and at an acceptable cost, and make it available to decision makers. The objectives of information management are as follows (SAMDI 2003):

- Data must be recorded in a suitable medium. The internal and external activities that have an influence on the continuation of the enterprise must be recorded and processed. Daily transactions must be recorded and the information made available to decision makers. Suitable forms must be designed to record the necessary data.

- Certain source documents and data must be retained in the most effective way.

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- The most suitable means for and methods of administration must be identified and used in information management.

- Information must be available to the decision-maker in the most suitable form, such as paper, computer screen, and telephone or fax machine.

KNOWLEDGE

Two mainstream approaches to differentiating between information and knowledge exist (SAMDI 2003:73):

- A linear progression: Data that is received will progress into becoming information after where knowledge is created. Knowledge thereafter progresses to wisdom.

- A non-linear progression: assumes that information arises from data, but knowledge does not, but forms information. Rather, knowledge is regarded as the sense-making capability through which information is created from data. The researcher used the linear progression approach as the basis of this study.

Weggemann (1997: 135) characterized knowledge as justified true belief, a characterization that still plays an important role in the demarcation between science and common sense. Essers and Schreinemakers (Weggeman 1997) attribute to the term knowledge a number of distinguishing characteristics in relation to the reference term information. Knowledge is (more) durable, objective and, to a certain extent, not bound by the context.

This definition is, to a large extent, in agreement with that of Akkermans (Wiiggemann 1997:136) who sees knowledge as a source for solving problems. Giddens too (Wiiggemans 1997), approaches knowledge as a phenomenon that can only be made accessible through people, and which forms the basis of their actions. Nonaka and Takeuchi (Weggemans 1997: 136) emphasize, amongst other things, the social character of knowledge and the learning processes in organisations.

Without an effective system of collecting data and generating information, effective knowledge management is unlikely (Trivedi: 2002). Indeed, there will be little to manage. Knowledge is valuable information embedded in the brain. According to Stewart (2002) knowledge is a non-subtractive resource....it can be used without being consumed. Knowledge is mobile, exists independent of space and can be transferred around the world cheaply, easily and quickly. Knowledge differs from other assets in that it is abundant. Knowledge is the action-orientated meaning that shows you understand the information. "It's 32° C outside.... ice cream is going to sell well today". The emphasis is on the action:

- Knowledge is focused innovation.

- Knowledge is all-hands contribution.

- Knowledge is the pooled expertise and efforts of networks and alliances.

- Knowledge is the differentiator.

A further example that can be used to clearly distinguish knowledge from information is the difference between a map and a human guide. A map is a

set of data organised into a coherent and reusable form. Someone with knowledge of the territory has created the map. If I share the same culture and background as the mapmaker, then I am able to use the information. A different background may mean that the map remains data to me – useless stuff without context. The guide on the other hand is knowledgeable. He or she does not need to consult the map, takes into account recent experience and has the ability to relate my ability to his or her knowledge of the terrain. The guide is the fastest way to achieve my objective provided that I trust him or her.

Knowledge is hard to structure:

- Only exists when it is used, as it is the capacity to act;

- Difficult to capture on machines;

- Highly personal;

- Hard to transfer;

- More value;

- Intangible asset (intellectual capital);

- Created by people.

Housel (2001) argues that knowledge requires a higher understanding than information. For example, the information on how to balance on a tightrope goes only so far. It is just information. The knowledge of how to do it is held within a person, after he or she perfects the skills of balancing. It often cannot be transferred artificially and requires a rather hands-on approach if it is ever to be passed to another individual.

Another way to define knowledge is by looking where it resides; e.g. tacit knowledge is in the mind of the person with knowledge and explicit knowledge is in books. Lim (2000) quoting Hubert argues that tacit knowledge is the skills and `know-how' we have inside each of us that cannot be easily shared. `Know-how' in the corporate world is often just as important as `know-who', which can hold a competitive advantage over competitors. This is often overlooked, especially during downsizing or restructuring exercises, and by then it is too late.

Tacit knowledge comprises experience, mental models, know-how, values, beliefs, intuition, emotions hunches and perceptions (knowing what to do with the hammer and the nail). Tacit knowledge is something that we simply know without the ability to explain. We see it in craftsmen or in good sporting teams where each player instinctively knows where to pass the ball. Tacit knowledge mediates our day-to-day lives. Humans are able to take patterns from a variety of experiences, associate them with incoming data, fill in the gaps with intuition and make a decision as to the best way forward.

Those decisions are made and remade in real time, mostly at a subconscious level. Human beings are the storage medium of tacit knowledge. Where the storage medium is an individual, then it is vulnerable to loss; where it is stored in a community the vulnerability is reduced and the ability to reuse enhanced. Importantly the act of sharing tacit knowledge always creates something new. It is the engine of innovation.

Explicit knowledge, as its name suggests, is easier to identify. It can be expressed easily in language and encoded in mammals. It is reusable in a consistent and repeatable manner. It may be stored as a written procedure in

a manual or as a process in a computer system. The documented procedure of a lessons-learnt workshop, the written up comments of an economist examining a set of financial data, minutes of a meeting, a chain of e-mail correspondence. All those are explicit knowledges that we use to support or to make decisions and exercise judgement. This explicit knowledge is stored in a physical or virtual entity.

Explicit knowledge is the knowledge that can be easily captured artificially through, say, manuals and standard operations, and then shared with others either through thought courses or books for self-reading. In an organisation, tangible knowledge takes the form of job procedures as well as the company's philosophy and strategy.

Information relates to description, definition, or perspective (what, who, when, where). Knowledge comprises strategy, practice, method, or approach (how). Wisdom embodies principle, insight, moral, or archetype (why) (Sheenagh: 2002).

Blackler (2000) quotes Collins who mentions other forms of knowledge. He mentions that there is (1) embrained knowledge which is knowledge dependent on conceptual skills and cognitive abilities and (2) embodied is an action oriented and is likely to be only partly explicit called 'knowledge how'. Such knowledge depends on peoples' physical presence, on sentient and sensory information, physical cues and face-to-face discussions. It is acquired by doing, and is rooted in a specific context.

He goes on to say there is 'encultured knowledge' which refers to the process of achieving shared understandings. Cultural meaning systems are intimately

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related to the processes of socialization and acculturation; such understandings are likely to depend heavily on language, and hence to be socially and open to negotiation. Yet there is another form of knowledge known as 'embedded' knowledge which resides in systemic routines. The notion of 'embedded' knowledge explores the significance of relationships and material resources. Embedded knowledge is analysable in systems terms, in the relationships between, for example, technologies, roles, formal procedures, and emergent routines.

KNOWLEDGE MANAGEMENT

Knowledge needs to be managed to bring together its different pockets, dispersed throughout many parts of the organisation, for the benefit of users. In the broadest possible term knowledge management is the process whereby organisations acquire, store, process and share knowledge. According to Miller (2003) it is the systematic processes by which knowledge needed for the organisation to succeed is created, captured, shared and leveraged.

AXIOMATIC STATEMENTS ABOUT KNOWLEDGE MANAGEMENT

Klopper (2002) mentions six axiomatic statements of knowledge management that form part of a theoretical framework. These statements form the basis of knowledge management and are:

Conceptual principle

KM requires a range of cognitive processes and a variety of forms of communication.

Competitive principle

The primary function of KM is to optimise the survival of the members of a group by giving them a strategic advantage over other groups.

Cooperative principle

A strategic advantage through KM is achieved by selectively disseminating knowledge to individuals inside the group that will enable them to make decisions that control management procedures and manage operations to the advantage of the group.

Persuasive communicative principle

A strategic advantage through KM is achieved by using knowledge to sell property e.g. ideas e.g. intellectual property, services, goods to clients to the advantage of the group.

Confrontational / survival principle

A strategic advantage through KM is achieved by using knowledge to protect a group against hostile actions from other groups directed at one's own group.

Expansion principle

A strategic advantage of KM is achieved by using knowledge to co-opt those competitors into one's group that could give one's group a selective advantage over other competing groups.

Internal differentiation principle

A strategic advantage of KM is achieved by differentiating KM roles and decision-making powers within one's group.

Knowledge management is a broad field of researches and applications drawing on expertise from a large variety of domains. The driving force of knowledge management could be presented as an attempt to produce

efficient and re-usable tools for the understanding and manipulation of human and machine-processable knowledge. Knowledge management could thus be described as aiming to provide a framework for anticipating the unknown. The objects of knowledge management are belief systems, models, texts, theories, and like resources.

Smith (2001) defines knowledge management as the identification and analysis of available and required knowledge assets and knowledge asset related processes, and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organisational objectives. First activities labelled as knowledge management in this sense can be identified in the late 1970s. There is not much doubt that mankind used knowledge and, thus, somehow managed knowledge already long ago.

Knowledge management is the identification, optimisation and active management of intellectual assets, either in the form of explicit knowledge or tacit knowledge possessed by individuals and communities. Sheenagh (2000) talks about the three pillars of knowledge as (a) people (b) processes and (c) technology. People are the most important aspect of knowledge management yet the most difficult to manage. Important aspects under 'people' are organisational structure, culture, networks, roles and skills. The focus is on investing in the skilling of people as intellectual capital of the organisation.

Weggemann (1997:137) adds that knowledge management concentrates on obtaining, improving, sharing, implementing and disposing of information that enables the organisation to realize its collective ambition and strategy. As such, knowledge management contains four, successive sub-processes, i.e.

- The identification of the strategic knowledge requirements given that the mission, aims and strategy of the organisation determine what is necessary;

- The determination of the knowledge gap (the difference between the quantity and the quality of the necessary versus the available knowledge);

- The specific narrowing of the knowledge gap (by developing new knowledge, the improvement of existing knowledge and/or the disposal of irrelevant or 'outdated knowledge');

- The distribution and (causing) the application of the available knowledge for the benefit of the clients and other stakeholders.

One of the important aspects of knowledge management is managing its knowledge assets, which includes market assets, technologies and organisations that a business owns, or need to own and which enable its processes to add value and facilitate improved services. However, knowledge management is not only about managing these knowledge assets but also managing the processes that act upon the assets. These processes include: developing knowledge; preserving knowledge; using (preserved) knowledge and sharing knowledge (SAMDI 2003: 79).

It is important to identify the nature of the organisation, the strategy and the processes. It is equally important to know the kind of knowledge the organisation deals with. Successful knowledge management is linked to the strategy of the organisation. Technology is an enabler and should come last. It

should be used to leverage what we know about our customers to serve them better.

Sheenagh (2002) traces the phases of information technology in the years leading to year 2000. The first phase was inward looking, focusing on productivity issues. This phase created a multitude of project databases, best practices databases. The second phase was similar to the first one but with a focus. The main question in this phase was, 'How can we leverage what we know about our customers to serve them better?' Data warehousing was the theme of the day. The problem with the first two phases was that they created massive data and text archives of dubious value, which was all-passive, with no interaction.

The third phase began early in 2000 and it is about interaction. It combines the knowledge and skills of the people in the organisation with information technology to achieve more with less time. The main features are e-learning, e-business, e-commerce, on-line transactions, web pages, e-mail and other web-based human driven transactions.

Knowledge management has propelled organisations from an industrial economy to a knowledge-based economy. In the industrial economy there was lack of innovation, knowledge was seen as power, employees were not empowered, there was a lack of trust, lack of collaboration, lack of transparency and hierarchical structures where as the knowledge economy is characterised by personal and organisational growth (emphasis on the number of hours of personal training), increased importance of information, service orientated, knowledge of customer, flexible and sharing organisational culture, collaboration and trust (Sheenagh 2002).

SUMMARY

In this chapter the researcher summarised arguments of three authors who argued that technology is confused with knowledge management. Organisations invest hugely into technologies with a hope that the investment will change the organisational performance. The researcher defined the terms such as data, information and knowledge and analysed the location of knowledge management in organisations.

In the next chapter the researcher will trace knowledge management from the Nomadic societies to date.

THE ORIGIN AND DEVELOPMENT OF KNOWLEDGE MANAGEMENT

INTRODUCTION
Knowledge management is as old as mankind. Hence it can be traced back to the age of Nomadism. According to *Britannica Concise Encyclopaedia* (2004:465) Nomadism is a "way of life of peoples who do not live continually in the same place but move cyclically or periodically". Nomadism is based on temporary centres whose stability depends on the available food supply and the technology for exploiting it.

KNOWLEDGE MANAGEMENT IN THE HUNTER-GATHERER SOCIETIES
The researcher hypothesizes that the survival skills of the Nomads constituted some type of knowledge. He therefore proposes that the early man survived because of the intelligent way he stored and passed on to future generations the tacit knowledge accumulated over lifetimes. For Nomadic societies knowledge made the difference between life and death. Centuries ago the hunter-gatherer had to store and utilise a large amount of knowledge in order to survive.

There are three types of Nomads. First is a hunter and gatherer society who depended on roots and hunting, second the later day pastoral nomads who depend on domestic livestock, migrate in an established territory to find pasture for their animals and thirdly tinker or trader nomads, such as the Roma and the Irish and Scottish Travellers, are associated with a larger society but maintain their mobile way of life. Nomadism declined in the 20th century as urban centres expanded and governments sought to regulate or eliminate it.

Some of the knowledge and skills, which Nomads had to have knowledge about were:

- The best seasons for greener pastures and animals for food;

- Which poisonous foods not to eat;

- How to cure different kinds of afflictions;

- Hunting different sorts of animals;

- Surviving dangerous animals.

This knowledge had to be shared among men, between men and their wives as well as told through oral literature to children. Their women-folk who were gatherers knew which roots sprouted up in which season, which fruits were to be picked as well as looking after their own offsprings while their men went to hunt. This knowledge had been passed to them by their own parents (Brittannica encyclopaedia 2004).

A family organisational structure existed which saw the men hunting animals and therefore possessing al the necessary skills and technologies of the time. Mothers acquired and shared knowledge on how to look after the children, cook with their girl child. Division of labour was clearly practised also as a way of managing a family organisation. This led to the differentiation of societal roles.

ORAL TRADITION AND THE ROLE OF STORY TELLING IN NOMADIC SOCIETIES

The researcher believes that oral tradition was a powerful instrument by which survival knowledge was shared in the evening around fire. SAMDI (2003: 69) confirms that, "there, the anecdotal wisdom and information play

took place". Storytelling played a significant role in conveying survival knowledge, which included value-laden anecdotes. This was the way in which important information and survival knowledge was conveyed between and among people as well as between different generations. Lately, the importance of and value of storytelling has resurfaced in the context of business management as well as academic research in the social sciences.

Bahra (2001:176) argues the importance of storytelling to turn tacit to explicit knowledge by mentioning five values of stories:

- Stories of identity convey values, build esprit de corps, create role models, and reveal how things work.

- Stories are more important than memos, mission statements, newsletters, speeches, and policy manuals. They constitute the single most powerful weapon in the leader's literary arsenal.

- If you ask people what they know, they will generally tell you what they think they ought to know, and it will generally be explicit knowledge-the knowledge that can be written down.

- The more valuable tacit knowledge, and a substantial proportion of explicit knowledge, is only known when it is needed to be known.

- Heuristics or rules of thumb are one of the most valuable of assets and may be articulated without the need to render them fully explicit.

Storytelling powerfully increases our descriptive ability. Stories build our capacity to more accurately describe our capabilities and the complex strategic environment in which we operate key elements for managing communication and implementation of strategy.

Scholtz (2003) mentions why we use stories in organisational development:

> *We use stories. your story, my story, old stories, new stories, tribal stories, heroic stories. Stories that reward us by creating meaning and connecting us; to each other; to the new visions we have created to the new level of service we will give our customers; to motivate our dynamic selling teams; to inspire new learning and careers; to teach how to live with each other and to share the war stories of high performance teams and capture the tacit knowledge in the cells of our business.*

If taken into account that the recording of information in the Nomadic times was relatively rudimentary by modern day comparison, it is even more astounding that significant innovations and developments did occur on the continent of Africa (SAMDI 2003: 69). Fire was used to scare dangerous animals as well as cooking and warming up in winter.

Those who were regarded as the wise amongst all were afforded esteemed positions (SAMDI2003: 69). Typically elders were regarded as wise, but others were deemed as knowledgeable members of society as well. They used anecdotes, which "provide a means by which an organisation or a leader creates a common identity by providing models and examples of good and

bad behaviour," (Bahra 2001:179). In the current knowledge management practice storytelling is used as a way of solving problems, charting the way forward, validation of practice and discussing the lessons learnt. Storytelling is becoming an important strategic tool in being taught as a business school course.

At IBM the approach is to select a sample of projects and then reassemble as many as possible of the original team for one-day storytelling workshops. Storytellers are encouraged to reminisce, in the style of a reunion, creating a series of anecdotes, humorous incidents, lessons learnt, observations and plain narratives. It does not follow a linear sequence over time, but jumps around in time as the flow of the storytellers evolve and explore (Bahra 2001:180).

In the old examples of leaders or managers were those who hailed from royal descent, particular individuals who through their travels or innovations were regarded as icons or thought leaders and traditional healers. These people were regularly approached for advice upon which they then regularly afforded the consultants information on how to act or behave. These people were respected and trusted. "Respect and trust forms an integral part of the knowledge management process" (SAMDI 2003:69).

THE ROLE OF THE SHAMAN AS THE CUSTODIAN OF KNOWLEDGE

In the Nomadic period the Shaman was a very important knowledge manager. The Shaman was the priest, an earliest professional man and spoke directly to all-powerful spirits. He was a two way conveyer of messages and wishes to man and the spirits. The Shaman had a higher status in the Nomad community and commanded a lot of respect. He was a priest, healer,

psychiatrist, foreteller and a teacher who sought to placate or exorcise the evil spirit with incantations and spells. He believed that man is an animal that prays. The researcher believes that in the present African tradition the 'izinyanga' (traditional African doctors), 'abathandazi' (spiritual forsayers) and izangoma (traditional forsayer) would fit the role of the Shaman (Diamond 1996).

The Shaman knew and practised many community rituals. During the dry spell he would intercede by praying for the rain. In death the corpse was tied up so that its wandering spirit would not reanimate the body and present harm to the living and sometimes laid in the grave weapons to please spirits in its new existence. This researcher believes that the Shaman would communicate or claim to communicate with the ancestral spirits thereby endowing himself with powers that he thought he had. He managed a vast amount of knowledge, which he would give either to his son or his trusted relative or friend. His hereditary position was a revered and sacred one. His family became a very powerful house consulted by a wide variety of community stakeholders.

Old men shared and transferred their skills on how to hunt and dig edible roots to younger men thus ascertaining hunting as a man's way of showing his prowess and his ability to feed his family. While men hunted, womenfolk picked berries, fruits and saved seeds for future seasons. While certain foods were eaten raw, the discovery and management of fire as a powerful tool for cooking was discovered (Diamond 1996:38).

THE DISCOVERY OF THE KNOWLEDGE OF FIRE AND THE RESULTANT EFFECTS

The discovery of fire would change the entire life of the Nomads as they began shaping their arrows laced with poison. This period began a long period that would result in the development of steel. Fire was man's source of power that did not come from his own muscles. It warmed his cave and made his existence possible in Europe and Asia during the last glacial period. This discovery multiplied his feats as a hunter, discovering that all animals are deathly afraid of fire.

Prehistoric man used it in torches to stampede and bewilder his game. Man began to use fire to cook his meet, which greatly improved his lot. According to anthropologist Carleton Coon (Diamond 1996:78), "the use of fire is the only open and shut difference between man and all other animals".

The art of cooking may have been closely bound with early man's love of the rich marrow of large bones. When man cracked the cold bone, the marrow was still hard to get at, but "when heated in fire, it split easily" (Diamond 1996). It seems, likely that woman was the real pioneer behind the actual methods by which plants and animals were deliberately made to serve human needs. Men hunted and womenfolk gathered foods like fruits, nuts, roots and seeds to supply their diet (Diamond 1996:80). For women gatherers fire was used preparing food for the evening.

The development of the arrow must have come as a relief for it meant much faster speed to catch or kill the hunted prey. It saved the hunter's hours of trying to evade the wind, which the prey is naturally trained to smell. On land he hunted with bow and arrow, which allowed him to stalk unseen. He

studied the migrations of fish, made and baited traps, which caught them in quantity, and dried the surplus for future use.

It was probably these basic discoveries that enabled prehistoric man to begin a truly human experience. Tool making was the second most important discovery that defined man's eras and made him distinct from other animals. For instance a chimpanzee or a monkey "will pick up a natural object and use it as an improvised implement but only man devises tools for his future needs".

Managing that knowledge had progressed from a primitive pastime to enabling him the acquisition of wealth by digging wealth lying underneath the earth leading to the discovering of diamonds, gold and other precious metals. Defence weapons from spears to fighter planes have been developed and improved on the basis of the flint objects initially made by the Nomadic societies (Diamond 1996).

Tool-making outlined and defined man's development periods. First there was the Palaeolithic or Old Stone Age which began about 500 000 years ago and lasted until around 8000. Mesolithic Age, then the Neolithic Age characterized by polished stone tools, followed this. These periods of tool making and improvement reveal the development of man's technology during almost a million years.

Next was the art of government. This happened when the men of several neighbouring families overcame their mutual suspicion and formed a cooperative hunting band. This meant knowledge sharing of how to circle a prey being hunted, which seasons were good for which animals and plants.

DOMESTICATION OF ANIMALS AND THE BEGINNING OF MORE ORGANISED CLUSTER FAMILY LIFE

Once man had outlived mutual suspicion there developed an idea of sharing. A group of men would go hunting. They must have shared strategies on how to organise hunting and how to circle difficult prey. After the domestication of dogs the hunting sessions would become easier. The dry spells also added to the domestication of certain plants such as corn. Man began spending more time on a fixed abode and allowing cattle to graze outside and be collected in the afternoon (Diamond 1996).

By selective breeding the wild cow was converted into a docile dairy. Sheep and goats, whose fleece gradually improved during captivity, provided clothing materials. Animal dung was always a valuable fertilizer at a time when all land of an individual was measured by his herds and flocks. The Shaman carried a large amount of knowledge that he puts to use during the relevant occasions such as burial.

With domesticated animals a strong feeling for home, an allegiance to a spot on earth resulted in the establishment of cluster villages. Since the welfare of each village along the banks was linked to that of its neighbours, villages began to make alliances thus beginning the prototype of nations. The economic advances made possible by the Neolithic village quickly resulted in a higher standard of living. The new prosperity swelled the population and prolonged the average span of life.

Because farmers are deeply concerned with the weather the village rain priests and wind priests, rather than the hunting shamans, began to domesticate religious practice.

Neolithic man moved down and began to colonize the plains of the Tigris and Euphrates Rivers. In this new environment, man confronted alarming problems. The Tigris-Euphrates plain presented, as it does even today, a combination of land so dry that nothing would grow on it without irrigation and land so wet that it could not be tilled without considerable drainage.

THE BEGINNING OF THE MECHANIZATION OF KNOWLEDGE MANAGEMENT

Man invented the plough and thus began the machinations of agriculture. He trained cattle to pull ploughs. He probably invented the sailboat turning the broad rivers into highways. With better means of transport came a great surge of commerce and trade. As civilization drew near, the town builders completed its necessary foundations, settled in communities where human beings could work in organized security, and improved transport and communication that extended the range of interests throughout their world (Diamond 1996).

Following the tool-making discovery was the celebrations of elaborate and barbaric ceremonies of puberty. For a young man to enter the high estate of man he was forced to undergo a physical loss, such as circumcision or the amputation of fingers. After he had suffered and had been taught the social and sexual responsibilities of the adult he could be initiated into manhood with solemn but joyous ceremony.

IMPORTANT PERIODS OF KNOWLEDGE MANAGEMENT FROM NEOLITHIC AGE TO THE 21ST CENTURY

Stone carvings, drawings and cave paintings have been a major source of information to enable people who lived centuries after to understand how people of the old survived. These cave drawings have shown how rituals were

carried out. They have archived and shared past knowledge for the future generations in the process increasing our understanding of the indigenous knowledge systems.

Archaeologists also discovered hundreds of artefacts from graves and underneath the ground. The graves also served as a form of knowledge management centre as they contained various forms of artefacts and some form of royalty would be manifest in the number of people found in one grave as some kings were buried with their servants. When archaeologists excavated centuries old artefacts invaluable knowledge was had into the lifestyles of the bygone era.

One way the Celtic managed knowledge for generations to come was 'Celtic Death Rites' whereby they envisioned the hereafter as a continuation of earthly existence, involving all the same pleasures and physical needs. When a man died, his family put into his grave the things he would require in the world to come such as weapons, jewellery and vessels filled with wine. Leaders were laid to rest in their chariots and their earthly trappings (Diamond 1996).

LITERACY AS A TOOL FOR MANAGING KNOWLEDGE AND CONQUERING NATIONS

Writing came as an essential tool for documenting the nomadic history so that the thoughts and events of the past may be read rather than merely deduced from archaeological relics. Among the components of a civilized society are:

- The pursuit of knowledge and arts;

- A high level of political organisation;

- A complex social and economic order;

- True specialization in crafts and skills;

- Submission of the individual to the impersonal requirements of the state;

- Usually but not invariably, the ability to write and thus to record and convey information is an ingredient.

Nomads employed hieroglyphics, which required such painstaking calligraphy that in time the scribes evolved a cursive, everyday handwriting called hieratic in which the elaborate hieroglyphics were reduced to simpler lines representing only the barest suggestion of the originals. As centuries passed, hieroglyphics was relegated entirely to sacred and official inscriptions on temples and funerary monuments, and hieratic that became all correspondence, legal documents and business transactions were set down.

It was in hieratic that the Egyptians left their legacy of medical science to the Western World. Here is an example from an Old Kingdom medical papyrus:

> *If thou examinest a man having a wound in the top of his eyebrow penetrating to the bone, thou shouldst palpate the wound and draw together for him his gash with stretching--- If thou findest that the stitching is loose, thou shouldst draw it together for him with two strips of plaster, and thou shouldst treat it with grease and honey every day until he recovers* (Sheenagh: 2002).

The vast majority of societies with writing acquired it by borrowing it from neighbours or by being inspired by them to develop it, rather than by independently inventing it themselves. The societies without writing had a later start on food production. The history of writing illustrates strikingly the similar ways in which geography and ecology influenced the spread of human inventions (Diamond 1996: 238). The development of human species has greatly been influenced by the technological innovation. This invention has tipped other societies more than others.

The more literate societies were able to conquer more nations who were not. Literacy made the Spaniards heirs to a huge body of knowledge about human behaviour and history (Diamond 1996:80). In the 20th century it is not the basic illiteracy that is a threat to the survival of organisations but the computer literacy that has brought access to tons of information through Internet and other electronic means. By contrast, not only did Atahuallpa have no conception of the Spaniards themselves, and no personal experience of any other invaders from overseas, but he also had not even heard (or read) of similar threats to anyone else, anywhere else, anytime previously in history. That gulf of experience encouraged Pizarro to set his trap and Atahuallpa to walk into it (Diamond 1996: 80).

The Phoenicians acquired knowledge of hieroglyphic writing from the Egyptians. At the end of their trade routes, the Phoenicians set up permanent colonies. The clue to the direction of whether to read from left to right was depicted by the direction of signs depicting birds, snakes and other creatures. If they faced right one was expected to read from left to right. Knowledge spread through the merchants, the slaves and still with the nomadic settlers. With the acquisition of a writing skill and the steel making skill people could

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create while other would adapt products for local consumption. The Phoenicians appeared in Greece and were regarded as the middlemen of civilization. They were, as a rule, adapters rather than creators, absorbing elements of civilization from their neighbours and spreading around the Mediterranean world the ideas they accumulated and the merchandise they manufactured.

INVASIONS AND KNOWLEDGE DIFFUSION
About 4000 B.C. horses were domesticated. This period which lasted for 6 000 years transformed warfare as the horse permitted people possessing them to cover far greater distances than was possible on foot. However, the spin-off to this development was the quick spread of knowledge. Conquered nations were forced into new religions; surviving women were taken back either as slaves or to be forced into bearing children for their conquerors. This period was influential in spreading knowledge and skills.

Invading armies or people also brought with them diseases that the invaded and conquered people were not immunised against. As the diseases took their toll on the numbers of the dying, the invaders who had better steel technologies took their land. Diamond (1996:78) mentions that a small pox epidemic in 1713 was the biggest single step in the destruction of South Africa's native San people by European settlers. Soon after the British settlement of Sydney in 1788, the first of the epidemics that decimated Aboriginal Australians began.

Domestication of crops led to food production. Places that had better systems of knowledge management fared better in food production. Food production also allowed higher population growth in those areas where it was

common. These were Southwest Asia, China, Mesoamerica, South America and the Andes of South America and Amazon Basin. Africa's Sahel zone tropical West Africa, Ethiopia and New Guinea are candidates for that distinction. It is also those countries that proved to be very powerful in wars.

The arrival of founder domesticates enabled local people to become sedentary, and thereby increased the likelihood of local crops evolving from wild plants that were gathered, brought home and planted accidentally, and later planted intentionally (Diamond 1996:100).

DESEASES AS WEAPONS OF INVASION
In certain areas food production began with an abrupt arrival of foreign people and literate people (Diamond 1996:102). These places include areas like California, the Pacific Northwest of North America, the Argentine pampas, Australia, and Siberia.

In those areas the hunter-gatherers were killed, infected, driven out or largely replaced by arriving European farmers and herders who brought their own crops. The Nomadic style of farmers and their children meant they left behind and were always exposed to new ones that their bodies were not immune against. Those 'crowd diseases', like the bubonic plague of A.D 542-543, so named because they survived in large crowds or communities became plagues (Diamond 1996:206). Soon after the invading armies arrived those who were invaded would contract a new disease and would die by hundreds and thousands. That would then leave the invaders with more and stronger armies to finally take over the new land.

Writing marched together with weapons, microbes, and was centralized as a modern agent of conquest (and knowledge management) (Diamond:1996

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216). The commands of the monarchs and merchants who organised colonizing fleets were conveyed in writing. The fleets set their courses by maps and written sailing directions prepared by previous expeditions. Written accounts of earlier expeditions motivated later ones, by describing the wealth and fertile lands awaiting the conquerors. The accounts taught subsequent explorers what empires were administered with the aid of writing. While all those types of information were also transmitted by other means in preliterate societies, writing made the transmission easier, more detailed, more accurate, and more persuasive.

IDEA DIFFUSION OR BLUEPRINT COPYING
Knowledge management is a prime example of a cross-disciplinary field that is a rich mixture of management practises borrowed or copied from different fields. This could either be through the 'idea diffusion', which entails changing the original idea to suit the local or specific circumstances or through blueprint copying, which is taking the idea as is. The development of human species from being hunter-gatherer to farmers up to the knowledge-based workers has been through the two processes.

While blueprint copying and modification are the most straightforward option for transmitting technology, that option is sometimes unavailable. Blueprints may be kept secret, or they may be unreadable due to an invention made somewhere far away, but the details may not get somehow, in achieving a certain final result. However, writing was used as a power tool; to subjugate those they came upon. Diamond (1996) confirms that the kings and priests of ancient Sumer wanted writing to be used by professional scribes to record the numbers of sheep owed in taxes, not by the masses to write poetry and hatch plots.

Food production was a necessary condition for the evolution or early adoption of writing; it was not a sufficient condition. Thus food production and thousands of years of societal evolution following its adoption were as essential for the evolution of writing as for the evolution of microbes causing human epidemic diseases. Once writing had been invented by those few societies, it then spread, by trade and conquest and religion, to other societies with similar economies and political organisations.

Historians of technology have proposed a laundry list of at least 14 explanatory factors. One is long life expectancy, which in principle should give prospective inventors the years necessary to accumulate technological knowledge, as well as the patience and security to embark on long development programmes yielding delayed rewards. Hence the greatly increased life expectancy brought by modern medicine may have contributed to the recently accelerating pace of invention.

The next five factors involve economics or the organisation of society: (1) The availability of cheap slave labour in classical times supposedly discouraged innovation then, whereas high wages or labour scarcity now stimulate the search for technological solutions. Once the inventor had discovered the use for new technologies, the next step was to persuade the society to adopt it. Merely having a bigger, faster and more powerful device for doing something was no guarantee of ready acceptance. Innumerable technologies were either not adopted at all or adopted after a prolonged resistance (Diamond 1996:247). The researcher closely identifies with this phenomenon where in the government offices one finds technologies like computers that are used at a very low minimum of their potential or not used at all. This may be because of the lack of skills on the part of those who are

supposed to use them or lack of understanding why they need to use them if they can do so manually.

Patents and other property laws, protecting ownership rights of inventors, reward innovation in the modern West, while the lack of such protection discourages it in modern China. Modern industrial societies provide extensive opportunities for technical training, as medieval Islam did but the modern DRC does not. Modern capitalism is, and the ancient Roman economy was not, organized in a way that made it potentially rewarding to invest capital in technological development. The strong individualism of U.S. society allows successful inventors to keep earnings for themselves, whereas strong family ties in New Guinea ensure that someone who begins to earn money will be joined by a dozen relatives expecting to move in, be fed and supported.

Diamond (1996) mentions another four suggested explanations that are ideological, rather than economic or organisational.

- Risk-taking behaviour, essential for efforts at innovation, is more widespread in some societies than in others.

- The scientific outlook is a unique feature of post-Renaissance European society that has contributed heavily to its modern technological pre-eminence.

- Tolerance of diverse views and of heretics fosters innovation, whereas a strongly traditional outlook (as in China's emphasis on ancient Chinese classics) stifles it.

- Religions vary greatly in their relations to technological innovation: some branches of Judaism and Christianity are claimed to be especially compatible with it, while some branches of Islam, Hinduism, and Brahmanism may be especially incompatible with it.

The adoption of technology (or lack of it) determined the fate of those adaptor or non-adaptor societies. It is widely believed that Australian Aborigines as a group shared ideological characteristics contributing to their technological backwardness: they were (or are) supposedly conservative, living in an imagined past dreamtime of the world's creation, and not focused on practical ways to improve the present. A leading historian of Africa characterized Africans as inward looking and lacking Europeans' drive for expansion (Diamond: 1996: 240).

However, on every other continent as well, certain native societies have proved very receptive, adopted foreign ways and technology selectively, and integrated them successfully into their own society. The researcher believes that even globalisation has not been fully accepted by all nations of the world however much its forceful wave is. Huge pickets at the International Monetary Fund, the G7, and the World Bank conferences have demonstrated this belief.

In Nigeria the Ibo people became the local entrepreneurial equivalent of New Guinea's Chimbus. Today the most numerous Native American tribe in the United States is the Najavo, who on European arrival were just one of several hundred tribes. But the Navajo proved especially resilient and able to deal selectively with innovation. They incorporated Western dyes into their

weaving, became silversmiths and ranchers, and now drive trucks while continuing to live in traditional dwellings.

Nowadays, the Islamic societies in the Middle East are relatively conservative and not at the forefront of technology. But the medieval Islam in the same region was technologically advanced and open to innovation. They achieved far higher literacy rates than contemporary Europe; they assimilated the legacy of classical Greek civilization to such a degree that many classical Greek books are now known through Arabic copies; they invented or elaborated windmills, tidal mills, trigonometry, and lateen sails; they made major advances in metallurgy, mechanical and chemical engineering, and transmitted them to Europe. In the Middle Ages the flow of technology was overwhelmingly from Islam to Europe, rather than from Europe to Islam as it is today.

Like any organisation, societies that did not adopt new inventions like guns soon found their fate being decided by other societies. The researcher argues that societies, like organisations, have a challenge to use available technologies. That should however, not override the economic benefit of the human resource.

SUMMARY
In this chapter the researcher provided insight into the history of knowledge management from the Nomads. He focused on each invention and its use and how such inventions, for instance the making of fire led to tool making. Tool making led to the early technology of warfare. Together with some form of literacy the nations that passed this knowledge on to its offsprings became

powerful. In the following chapter the researcher will look at how knowledge management is used in the business organisations.

KNOWLEDGE MANAGEMENT IN ORGANISATIONS

INTRODUCTION
In the previous chapter the researcher provided information on the role played by knowledge management for the survival and the development of mankind from hunter-gatherers through to the Stone Age, which gave rise to the Industrial age.

In this chapter the researcher will discuss the role of knowledge management in corporate organisations as a communication strategy for the survival of the organisations.

KNOWLEDGE MANAGEMENT AS FOUNDATION OF ORGANISATIONS
According to Wiig (1993: 9) knowledge is the foundation of all functions and aspects of the enterprise. Without its knowledge, an enterprise could not continue to exist and operate. Its organisation and management structures, traditions and culture, technology and operations, systems and procedures, and the quality of its services and products are all based on and embed the enterprise of knowledge and expertise. Continually there are opportunities to learn how to improve knowledge and with it, the way it performs from internal and external information feedbacks (Wiig 1993).

BASIC REASONS FOR MANAGING KNOWLEDGE
According to Malhotra (1998:10) knowledge management is necessary for organisations because what worked yesterday may or may not work tomorrow. In the knowledge economy over 70 percent of workers in developed economies are information workers. Many factory workers use

their heads more than their hands. Weggeman (2001:135) mentions four reasons for organisations to turn to knowledge management:

- The necessity in the high-wage countries to concentrate on knowledge-intensive products and innovation;

- The increase in the number of knowledge workers and knowledge intensive organisations;

- The continuous professionalisation of the provision of services in the business sector;

- The increased competition as a result of globalisation and the resulting dynamics of the environment.

CHANGING FROM WORKERS TO KNOWLEDGE WORKERS
Knowledge workers need to be facile in the applications of new technologies to their business contexts. Such understanding is necessary so that they can delegate 'programmable tasks' to technologies to concentrate their time and efforts on value-adding activities that demand creativity and innovation. Cortada (1998) states that there is an increasing substitution of brain for brawn within our organisations and our social lives, a reflection of a drastic change of a worker who owns the means of production. Knowledge workers should have the capability of judging if the organisation's best practices is aligned with the dynamics of the business environment.

The knowledge workers would also need to have an overall understanding of the business of their organisation and how their work context fit within it. Such understanding is necessary for their active involvement in the

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organisational unlearning and relearning processes. They can be instrumental in synchronizing the organisational 'best practices' with the external reality of the business environment. They would need to be comfortable with self-control and self-learning and act in an entrepreneurial mode that involves a higher degree of responsibility and authority as well as capability and intelligence for handling both (Malhotra 2001).

FROM INDUSTRIAL TO KNOWLEDGE ECONOMY

According to Koulopoulos and Frappauolo (2000) the middle of the 20th century American business culture was marked by very high levels of bureaucratisation, organisational segmentation and impersonalised indeed, depersonalised-environment. At the same time in Europe and Asia employees were more involved in planning on how to do their job, Japanese employees were gathering before the workday to exercise and sing company songs.

The industrial economy made way for knowledge economy. Knowledge economy is the business environment that has been created by the convergence of communication and computer technologies. Work in the knowledge economy involves people who apply their judgements, skills and creativity personal assets that are beyond the complete control of employers. South Africa cannot divorce herself from the new economy. Hence South Africa is a member of the International Monetary Fund.

According to Management Today (2002):

> *It is impossible to monitor and instruct this kind of knowledge work in the way that managers could when work was the completion of repetitive manual tasks. It is impossible to see what is going on in people's heads. The more work involves the application of knowledge and creativity, the more traditional forms of managerial control become irrelevant.*

In the knowledge economy it will become even more difficult to specify in advance what workers are expected to contribute if an element of their role will be to innovate, create and adapt to unforeseen changes. Management Today (2004: 22) confirms this view that this perspective of knowledge as a requirement for the establishment of the future capability of an organisation is analogous to an ice berg where what really matters, lies below the surface. This view of knowledge managers emphasises a point that knowledge management is strategically based and future orientated rather than operationally based and utilising almost purely historical information (Management Today: 2004).

Thus the culture of work in these organisations will have to be highly collaborative to bring people together voluntarily to share ideas. It will also have to be based on respect for individuals, who might choose to walk out of the door with those assets. The culture of work will have to be both more social and more individualistic.

Phelps (2004:23) believes that the only way to create a culture that is simultaneously more collaborative and individualistic is if knowledge workers are able to manage their own work. He believes organisations that do not have a social sense of work and knowledge will be at a disadvantage in this world of innovation and self-management. Workers will increasingly be inspired to give a little extra for organisations that stand for something more than making profits and meeting targets.

Management Today (2004:23) also emphasises that knowledge economy implies an understanding of the creation of customer value, the management of business processes and the establishment of marketing networks. Added to these the enterprise requires human competence, a command of the appropriate technology and entrepreneurs, leaders and managers who can identify opportunities and fuse the many knowledges into desirable products and services through their holistic insights in an integrative manner.

Maholtra (2001) argues that the most important issue for organisations is to ensure that they focus on the synergy of data and information processing capacity of information technologies, and the creative and innovative capacity of their human members. Advanced information technologies can increasingly accomplish 'programmable' tasks traditionally done by humans. If a procedure can be programmed, it can be delegated to information technology in one form or another.

The information and control systems in organisations are intended to achieve the 'programming' for optimisation and efficiency. However, checks and balances need to be built into the organisational processes to ensure that such

'programmes' are continuously updated in alignment with the dynamically changing external environment.

The human sensors that are interacting continuously on the front lines with the external environment have a rich understanding of the complexity of the phenomena and the changes that are occurring therein. Such sensors can help the organisation synchronize its programmed routines or best practices with the external reality of the business environment (Malhotra: 2001). The push towards the knowledge economy is because of the change from industrial economy to knowledge economy.

Characteristics of the knowledge economy

The knowledge economy differs from the traditional economy in several key respects:

- The economics is not of scarcity, but rather of abundance. Unlike most resources that deplete when used, information and knowledge can be shared, and actually grow through application.

- The effect of location is diminished. Using appropriate technology and methods, virtual marketplaces and virtual organisations can be created that offer benefits of speed and agility, of round the clock operation and of global reach.

- Laws, barriers and taxes are difficult to apply on solely a national basis. Knowledge and information 'leak' to where demand is highest and the barriers are lowest.

- Knowledge enhanced products or services can command price premiums over comparable products with low embedded knowledge or knowledge intensity.

- Pricing and value depends heavily on context. Thus the same information or knowledge can have vastly different value to different people at different times.

- Knowledge when locked into systems or processes has higher inherent value than when it can 'walk out of the door' in people's heads.

Human capital competencies are a key component of value in a knowledge-based company, yet few companies report competency levels in annual reports. In contrast, downsizing is often seen as a positive 'cost cutting' measure.

These characteristics, so different from those of the physical economy, require new thinking and approaches by policy makers, senior executives and knowledge workers alike. To do so, though, requires leadership and risk taking, against the prevailing and slow changing attitudes and practices of existing institutions and business practice.

THE EFFECT OF GLOBALISATION ON THE KNOWLEDGE ECONOMY

The International Labour Resource and Information Group Development Report (1998) defines globalisation as the continuation of the trend of growing openness and integration among economies that has brought the world a half century of unparalleled prosperity. This definition implies a positive development for the world economy.

It sees globalisation as a natural and inevitable part of historical change, the only possible path for the world economy as well as that it will increase wealth and prosperity for all countries and people, including workers. However, capitalists, in particular trans-national corporations, to safeguard their interests and destroy any possibility socialism, have attacked globalisation. This line of thought sees globalisation as an attack on worker rights, trade unions and labour standards. According to this view globalisation will:

- Increase world poverty and lower living standards of workers,

- Increase the gaps between the rich and poor within countries.

THE BEGINNING OF GLOBALISATION

The resolve of the Western states to build and strengthen international ties in the aftermath of World War II laid the groundwork for globalisation. Globalisation is a process of restructuring the world economy, which is a response to the crisis in the capitalist economic system, which began, in the early 1970's. The main purpose of this restructuring is to find new ways for business to maximise profits. Restructuring takes place at many levels:

- In the way investment and trade is carried out;

- How international organisations, agreements and regulations operate;

- How the production process is organised (e.g. workplace restructuring);

- The way development projects are decided;

- Changes in people's daily lives;

- The increasing influence of the ideas of free market capitalism (International Labour Resource and Information Group 1998).

In the early 1970s many large capitalist companies began to experience problems in maintaining their levels of profit. They needed to find new approaches to the way they did business. The set of ideas that inform globalisation are:

Free market capitalism

The principle of free market capitalism is that business is the most important force for a country's development. Free market economy is sometimes called neo-liberalism. According to free market capitalism, if business makes large profits, the benefits will trickle down to everyone. This will promote individualism, particularly the drive for profits and success on the part of the individual business owner or entrepreneur (International Labour Resource and Information Group). Three general policy measures have come to be associated with globalisation, privatisation, deregulation and trade and financial liberalisation (International Labour Resource and Information Group 1998).

The free market system opposes the intervention of the state into the economy as a producer, owner, or deliverer of services. The state is never as efficient in producing goods or delivering services as a private business. Measures of privatisation are:

- Selling off of state enterprises;

- Outsourcing of subcontracting;

- Promoting partnerships between the state and the private sector;

- Increasing the user charges for services.

DEREGULATION

Deregulation refers to a range of measures that reduce the state's role as a producer, provider of services and promoter of social welfare. Key measures of deregulation are:

- Removal of subsidies;

- Removals of price controls;

- Reduction of direct taxes;

- Easing or removal of state regulations on business (International Labour Resource and Information Group 1998).

TRADE AND FINANCIAL LIBERALISATION

Globalisation has brought diminishing national borders and the fusing of individual national markets. Trade and financial liberalisation covers measures that allow goods, services and money to move more easily across borders. The motive behind this liberalisation is to make it easier to do business internationally. Trade liberalisation is often closely linked with investment agreements and policies in order to attract foreign investors. The key measures of trade liberalisation are:

- Removal of tariffs (i.e. taxes on imported goods);

- Foreigners can own removal of limitations on how much of a firm or industry;

- Removal of quotas (limitations on the amount or quantity of a certain good that can be imported).

Financial liberalisation removes restrictions on movement of money across borders. Financial liberalisation makes it easier for companies to take their profits out of one country and invest elsewhere.

Factors that have contributed to globalisation

Workplace restructuring

With this approach to organising production, more pressure was put on organisations and workers to become internationally competitive that is to compete with other organisations around the world. Increased competitiveness meant that workers were called upon to produce more goods in the same time, at the same cost. The push for increased competitiveness often meant workers were expected to do new or different jobs-often referred to as multi-skilling. In many cases competitiveness went hand in hand with downsizing or right sizing or rationalisation (International Labour Resource and Information Group 1998).

Technological advances

The advent of computers changed the face of how business is done. Computers make it possible to move information or money around the world in an instant. People and businesses are now able to find out what is happening around the world much more quickly. With this information people and businesses are able to make decisions and carry out their activities in a way that was not possible. Improvements in the telephone technology

have made it possible to talk to people in all parts of the world at any time of the day or night. Through the use of cell phones, many people are accessible no matter where they are moving in a car, walking on a mountaintop, or in a meeting.

This increased speed and access of communication further assists in promoting changes in a number of aspects of the world economy. Computers combined with highly organised, high-speed aeroplane travel systems make it easy for goods or people to travel anywhere in the world fairly smoothly. With the use of computers, one worker can often do a job that previously required 3, 5 or even 10 people. The use of computer technology has led to great increases in productivity in many businesses and government departments. However, technology has also led to retrenchments in the workplace.

McGarry (2001) argues that at the heart of the concerns is the fact that huge trans-national organisations are becoming more powerful and influential than democratically elected governments, putting shareholder interests above those of communities and eve customers.

McGarry (2001) quotes Statistic S.A to argue that South Africa has also suffered because of the effect of globalisation.

Rates of unemployment %	1994	1995	1996	1997
Very expanded unemployment rate	38.4	37.4	41.7	42.4
Expended unemployment rate	30.9	29.1	35.6	37.8
Official unemployment	19.2	16.9	21.0	22.9

Figure 3 adapted from Statistics SA: 1997 (McGarry 2001).

This (Figure 3) indicates the effect globalisation has on South Africa but also on developing countries whose majority of populations are still employed in the elementary (non-knowledge based) occupations. The already meagre share of the global income of the poorest people in the world has dropped from 2.3 % to 1.4% in the last decade (McGarry 2001). The challenge is for organisations in the developing countries to skill their populations to a higher level that fits in with the digital communication age (International Labour Resource and Information Group 1998).

Policy implications

The evolving knowledge economy has important implications for policy makers of local, regional and national government as well as international agencies and institutions e.g.:

- New ones must supplement traditional measures of economic success.

Example: Nova Scotia has developed Knowledge Quotients for their economy

- Economic Development policy should focus not on 'jobs created' but rather on infrastructure for sustainable 'knowledge enhancement' that acts as a magnet for knowledge-based companies.

Example: Sophia Antipolis in France is a hub for many knowledge-based businesses.

- Develop regulation and taxation for information and knowledge trading at international level, looking to future knowledge-based industries rather than traditional industries.

- Stimulate market development through new forms of collaboration.

Example: Several EU programmes now focus on market development (rather than product development) and encourage participation by collaboration across national boundaries using electronic knowledge networking methods.

IMPLICATIONS FOR ORGANISATIONS

Many organisations are now realizing the role of knowledge and are creating knowledge management programmes and appointing Chief Knowledge Officers. Such responses should be part of a coordinated effort that (Skyrme: 2001):

- recognizes the importance of knowledge to their business bottom line.

Example: Buckman Laboratories. Buckman recognises the value of solving customer problems by enhancing knowledge flows from their chemical experts direct to the customer interface.

- Develops new measures of corporate performance based on knowledge:

Example: Skandia supplements annual reports with intellectual capital reports using measures from the Skandia Navigator.

- Systematically enhances Stadia learning and knowledge, through new organisation and processes.

Example: Price Waterhouse has created knowledge centres to improve the capture, codification and dissemination of 'best practice' knowledge.

- Provides a technology infrastructure to enhance knowledge creation and sharing.

Example: Hewlett-Packard uses an intranet for knowledge sharing throughout the company on a global basis.

- Encourages the sharing of knowledge through effective Internet settings and business practices.

Example: Steelcase designs 'smart' working environments and have developed a culture of knowledge sharing (Skyrme: 2001).

ISSUES AND CHALLENGES
The main challenges facing policy makers and business leaders are the following:

It is difficult to 'go it alone'. Stakeholders, especially employees and business partners must share similar views for your own initiatives to succeed.

- Alone recognition and reward systems usually do not sufficiently recognise contributions. They are linked to performance measures of the traditional economy.

- Measures of return on investment are done using traditional accounting methods, thus investments in knowledge enhancing activities need strong advocates at senior levels (Skyrme: 2001).

ORGANISATIONS SHOULD CREATE A KNOWLEDGE SHARING CULTURE

To create a common understanding of knowledge and its application and sharing thereof, a common language, mutual understanding and generally a supportive organisational culture should exist. A common vision should exist as far as the organisation and its function. To create this environment, the typical processes of strategic management and concomitant change management should be engaged in.

This knowledge-sharing environment creates a new 'culture' within the organisation. The following are important issues to consider in creating a knowledge sharing culture (SAMDI 2003):

- The role of information and communications technology should not be overemphasised, yet it should be duly acknowledged. It is a tool to be applied by people out of their conviction.

- The limitations of technology to transfer tacit knowledge should be recognised.

- Managerial interventions should be launched to remove barriers that restrict knowledge sharing.

- Face to face interaction between staff should be encouraged and an over reliance on e-mail and other information communication technologies be cautioned against.

- Knowledge sharing should be encouraged by rewards systems but should not become such that it occurs only when rewards are offered.

Intra-organisational (even extra-organisational) boundaries should not limit co-operation between sections, units and levels (SAMDI 2003).

a. A LEARNING ORGANISATION

The basic reasons for managing knowledge is to make the organisation act more intelligently in the way it conducts business and performs internal operations. Leading organisations achieve their superior performance by promoting intelligent-acting behaviour by individuals through delegation of authority, management and work practices, and effective organisational structures. They also ascertain that those who are given added responsibilities are provided with the appropriate knowledge to execute their responsibilities competently (Wiig 1993).

This gives the organisation competitive advantage over other organisations. Senge (1990) argues that the ability to learn faster than your competitors may be the only sustainable competitive advantage in today's environment where nothing is constant or predictable. The most successful corporation of the 2000s will be a learning organisation.

A learning organisation is an organisation where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (Senge, 1990).

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Management Today (2004:25) confirms that a learning organisation is fundamentally set upon the optimal growth and utilisation of its intangible resources through the strategically focused management of knowledge in the development, integration and execution of its business processes and protection of these competencies in a pro-active and structured way.

The approach to learning organisation is focused on enabling the organisation to handle new organisation strategies (Koulopoulos 2001: 61). It is oriented towards cultural reform of organisational attitudes and practices surrounding knowledge. The learning organisation focuses on reforming the way people think and learn skills, rather than just on the way they organize their knowledge. The learning organisation focuses on team-learning through exchange of the tacit knowledge which each of the members possess. In this way, they are able to develop a 'team knowledge', less susceptible to damage through loss of key employees. The objective of the learning organisation is to improve levels of innovation throughout the organisation (Koulopoulos: 2001). Management Today (2004: 36) mentions that a learning organisation takes a view on things that are long term and not short term. However, if an organisation is to become a real learning organisation, the shift must come from the leadership. Management must support the process by listening and providing for the implementation of ideas that arise from the exchanged interactions.

Wiig (1993) clarifies the nature of a learning organisation by saying that, "organisations are built on networking". The effectiveness of the organisation is directly a function of how well people network to deal with the complexity they face. Without networking, people operate in isolation relying on their

own limited knowledge and perspectives, and work suffers tremendously if it can be done at all.

The basic reason for assembling people in an organisation is to let them work together to facilitate interactive networking and, if possible, team to perform collaborative work. Organisations operate and prosper through people interactions. People interact and work together to get things done by analysing challenges, resolving issues, solving problems, making decisions, and implementing changes (Wiig: 1993). These networks have been given different terms by different practitioners namely, Learning networks or Communities of Practice.

LEARNING NETWORKS OR COMMNUNITIES OF PRACTICE

A learning network is a group of people who are engaged in similar or related activities and who share a common purpose related to their common context and similar work roles (DPSA 2002: 2). This common purpose leads them to share frustrations, ideas, experiences, successes, lessons learnt and insights on specific themes and to help one another find solutions to problems and develop a common practice or approach. The reasons for the learning network are:

- Collaborative learning results in better understanding of and clarity on challenges and expected outcomes as well as better insight on how to achieve goals and make expected or maximum impact within their areas of performance and influence.

- By design, engagement amongst members results in the creation of new knowledge through reflection, debates and discussions.

- The knowledge economy presents an additional challenge. Knowledge markets are globalising rapidly. What someone knows in Gauteng could make or break your business in KwaZulu-Natal.

Consider the examples of the Siemens sales team in Malaysia that was able to get a large telecommunication contract because of the experience and material developed by their peers in Denmark. Success in global markets depends on communities sharing knowledge across the globe (Wenger et al 1999:7).

The great benefit is in linking champions or experts in a specific field for the purpose of sharing tacit knowledge. Learning networks are informally bound together by shared expertise and passion for finding solutions jointly and sharing their expertise and passion for finding solutions jointly and sharing their knowledge (DPSA: 2004). An important and acceptable dynamic issue in the learning network scenario is that they emerge and dissolve, caused by the fact that they are genuinely driven by 'needs'. Content owners, be it line departments or components within departments, have crucial roles to play. Forming a learning network can be divided into the following activities:

- Determining the purpose;

- Determining the membership.

Of extreme importance in establishing learning networks is the identification and nomination of people, line departments, who will drive the network/s. These people play a crucial role in ensuring that learning is embraced within and/or amongst the province or within and/or amongst departments who share a common purpose (DPSA 2004).

The community of practice is a practical way by which learning organisations practise knowledge management. They are the first knowledge-based structure (Wenger et al: 4). Communities of practice at the simplest level are small groups who have worked together over a period of time (Wood 2004). Wenger (1999) gives an example that engineers who design a certain kind of electronic circuit called phase-lock loops find it useful to compare design regularly and to discuss the intricacies of their esoteric specialty. Artists congregate in cafes and studios to debate the merits of a new style or technique. Gang members learn to survive on the street and deal with an unfriendly world. These people do not necessarily work together everyday, but they meet because they find value in their interactions.

They may create tools, standards, generic designs, manuals and other documents or they may simply develop a tacit understanding that they share (Wenger et al: 1999). They may be local communities who typically have regular face-face meetings where they see other community members. However, others may be distributed communities who cross multiple types of boundaries (Wenger et al: 116). Geographically distributed communities link people in time zones, countries, and organisational units. Distributed communities are generally less present to their members. On a teleconference call or on a Web site, community members are not visible unless they make a contribution, post a question, or ask for help.

CULTURE: COMMUNICATION AND VALUES

Distributed communities are also likely to cross cultures. National cultures are the most obvious type, but organisational and professional cultures can also present problems in diversified companies or when there has been a lot of merger and cultural diversity issues. People from different cultures can have

very different ways of relating to one another and to the community, and this is likely to affect the development of global communities. Cultural differences can easily lead to communication difficulties and to misinterpretation (Wenger et al: 1999).

In one instance of a merger of an American and a European company, people realized that they had different interpretations of how to come to a meeting. The Europeans always came very well prepared, with an agenda and documents compiled in advance. They thought the Americans had not done their homework, either because they were lazy or because they did not care. The Americans, on the other hand, were used to building the agenda together at the meeting, and interpreted the all-meaning preparedness of the Europeans as an attempt to take over.

Language differences also introduce a very basic barrier to communication. They can intensify cultural boundaries, even when all parties agree to speak a common language. Non-native speakers may not understand the nuances and connotations behind certain terms or may hesitate to speak if they are uncertain of their ability to express themselves effectively.

Also access to technology can be a barrier to communication. Communities are based on the connections of members. If simply connecting is difficult, people are less likely to make the effort, at least not regularly. It took a global community in Nigeria twenty minutes to connect to the community Web site because his bandwidth was so narrow (Wenger et al: 1999: 116).

In ancient Rome, corporations of metalworkers, potters, masons, and other craftsmen had both a social aspect (members worshipped common deities

and celebrated holidays together) and a business function (training apprentices and spreading innovations). In the Middle Ages, guilds fulfilled similar roles for artisans throughout Europe. Guilds lost their influence during the Industrial Revolution, but communities of practice have continued to proliferate to this day in every aspect of human life (Wenger et al 1999: 4).

People in communities of practice can perform the same job or collaborate on a shared task or work together on a product for example, engineers, marketers and manufacturing specialists. They are peers in the execution of 'real work'. What holds them together is common sense of purpose and a real need to know what each other knows. There are many communities of practice within a single company, and most people belong to more than one of them.

In the organisation work itself is organised as a network of interlinked actions between people particularly through interactions between knowledgeable people whose expertise is pertinent to the challenges that are faced.

Networking takes many forms and occurs at many levels. For example, it can be shallow as when it is forwarded to those parties who will be affected in order to *coordinate* activities. It can be more extensive when people exchange information and work to adjust their activities to *cooperate*. It can be more comprehensive when knowledge-workers access expert networks to obtain assistance with difficult challenges. Finally, it can be very comprehensive and effective as when a complimentary team of knowledge-workers *collaborate* to work on specific tasks by pooling their knowledge and creating together (Wiig 1993).

Modern management theory encourages the use of networking that serves to make better use of the organisation's knowledge resources and to establish working relations between people.

According to Carlsen and Stuart (2002:53) the most critical issue is identifying and leveraging distinctive knowledge that makes the firm unique in the marketplace. Distinctive knowledge is always linked to organisational routines within groups of individuals, routines that are deeply rooted in rituals, myths, heroes and stories thus encultured.
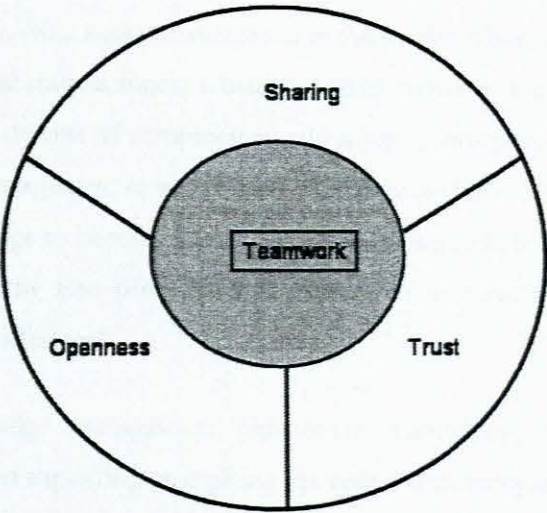
Figure 4 The TOTS community of practice model adapted from Wiig (1993).

Figure 4 above indicates the four most important challenges in the community of practice. The most basic one is teamwork. The team shares in a

vision, based on the objective of the community of practice. Secondly members must trust each other. This will allow a free flow of information and for members to keep secret the privileged information that could be abused by competitors. Thirdly all members need to be open to each other. Everyone has something worthwhile for members to gain from.

BROAD BASED APPROACHES TO COMMUNITIES OF PRACTICE
Wiig (1993) mentions a few broad based approaches to community of practice.

Core competency approach

This is when the organisation is focusing on what they are good at or their dominant area of expertise. A financial firm, for example, may find that its core competency, what makes it successful in the market place, is its ability to provide high-yield mutual funds; a manufacturing company may find it is its high technology designs of compressors, and so on. Firms pursue this aspect of knowledge management to answer two questions: (a) How can we improve our core knowledge to become better? (b) How can we include our dominant expertise differently into products and services to increase the value and demand for our offerings?

From a knowledge management perspective, identifying, focusing on, strengthening, and exploiting or applying the core competency is an objective that a knowledge organisation must actually pursue (Wiig 993).

Learning organisation approach

The rationale behind this concept is that to keep abreast of competition, the organisation must build explicit practices to learn quickly and thoroughly and implement what is being learned faster than the surrounding world changes.

If the organisation learns slower, it falls behind. This may lead to a number of tactical steps such as the one associated with deliberate 'benchmarking' activities. Others involve formal market, customer, and competitive intelligence gathering and analysis, as well as internal communication programmes. One important example is the Federal Express Corporation, which based much of its success on ascertaining that all its employees are well educated to be able to engage with all kinds of routine tasks and a broad range of non-routine challenges.

Human resource management approaches

This approach was initially used in several organisations with prior experience with knowledge-based systems development or with knowledge optimising systems. Methods such as knowledge profiling and knowledge use and requirements analysis are used to identify and explicitly characterize knowledge areas and proficiencies required for particular positions and tasks and to provide a framework for personnel reviews to be difficult but find that the knowledge-based framework often changes that process from being confrontational to be collaborative and creative. It helps to identify personnel growth paths and determine educational needs that are easily aggregated to corporate programmes.

Other organisations have introduced comprehensive 'skills directory' systems that contain extensive information on professional capabilities—areas of expertise and levels of proficiency for each of their employees. These inventories are used to build highly qualified project teams in engineering firms and other project-oriented organisations, and to identify hiring requirements, detect valuable but under utilized expertise and, in less desirable situations, decide where there is excess capacity (Wiig 1993).

Knowledge optimising approach

This is managing knowledge through in-depth task-environment and other knowledge analysis methods to determine potentials for improving knowledge work and decision-making. Critical target functions such as underwriting, customer service, instrumentation maintenance, or design engineering are investigated. This approach to knowledge management explores and analyses the target function's present and potential overall functionality, its knowledge-intensive activities and different approaches to performing these activities, as well as the knowledge flows exchanges, pooling, knowledge building, and higher level uses. To perform these investigations, methods are used to determine what the knowledge is about rather than what it is in detail, as required when developing knowledge-based systems (Wiig 1993).

Universal management of knowledge approach

This approach views knowledge as the decisive and fundamental driving force of success, and facilitate knowledge building and use. The organisations that practise this method have 'holographic management' where every employee replicates the visions and objectives of the leaders. Finally, they ascertain that the internal culture supports the underlying philosophy.

THE CREATION, SHARE AND TRANSFER OF BEST PRACTICE IN ORGANISATIONS

Best practice can be defined as a committed approach to improvement in every area of the organisation or service delivery system in an organisation's strive for excellence, establishing and maintaining highest quality services, and continually improving performance to achieve better outcomes for service users. A best practice is a method that has been judged to be superior to other

methods. Many times it is the most efficient way to perform a task. The idea of best practice performance is embodied by an organisation's shared vision for world-class performance. This vision must be supported by a comprehensive, integrated and co-operative strategy, which brings about continuous improvement in cost, quality and timeliness.

SUMMARY

In this chapter the researcher provided information about the rise of knowledge management and the implications of the globalisation push to the knowledge age. He then looked at the forces such as learning networks and organisational best practice that have been brought about by the speed of the knowledge economy. In the following chapter the researcher will study the role of electronic communication in knowledge management with particular reference to public organisations in KwaZulu-Natal.

ELECTRONIC COMMUNICATION IN ORGANISATIONAL KNOWLEDGE
MANAGEMENT

INTRODUCTION

The invention of the printing press in 1558 set in motion an ongoing
revolution of which the future is interesting but difficult to predict. The
information age has revolutionized and digitised communication to a point
where to attain the highest dividends of communication, organisations need
to have highly specialised and updated skills. Knowledge management has not
escaped this information wave.

**COMMUNICATION TECHNOLOGIES AGAINST KNOWLEDGE MANAGEMENT
SYSTEMS**

To be highly competitive in the field of information and knowledge,
organisations have to optimise their communication skills. The transfer of
information, for instance, the use of Internet, intranet and teleconferencing
has drastically changed and shaped organisational operations. However, there
is an over reliance on electronic communication as a tool to leverage one of
the nation's most valuable resource (SAMDI 1994).

With the advent of new technologies, such as data mining, intranets, video
conferencing, and web casting, several technology vendors are offering such
solutions as panaceas for the organisational challenges of the knowledge era.
Trade press coverage of the productivity paradox has further added to the
speed of the information technology treadmill by suggesting that increasing
investments in new information technologies should somehow result in
improved organisational performance.

THE NEW ECONOMY PUBLIC SECTOR

As the new economy is global by nature it demonstrates the following characteristics:

- Fast paced innovation to efficiently address increasing needs.

- A need for ever-increasing improvement in productivity due to lacking human resources capacity in number terms.

- New business models influenced by private sector businesses practices.

- Political pressure to deliver services rapidly and immediately.

- A call for sustainable development rather than 'old style' development practices.

- Performance management and evaluation systems to improve officials' practices.

- Performance management and evaluation systems to improve officials' conduct (SAMDI 2003:72).

In the KwaZulu-Natal Department of Education the senior managers such as Directors and Chief Directors have to sign a Performance Management Development System with the following core management criteria assessed at the end of the contractual period:

- Strategic capability and leadership;

- Programme and project management;

- Financial management;

- Change management;

- Knowledge management;

- Service delivery innovation;

- Problem solving and analysis;

- People Management and empowerment;

- Client orientation and customer focus;

- Communication;

- Honesty and integrity (KZN Department of Education 2004:17).

From a strategic management point of view, the imperative is to equip all workers as knowledge workers. It is also to find ways to cope with change and to be able to predict the future.

ESTABLISHING KNOWLEDGE MANAGEMENT ROADMAPS

The road map is a living document regularly updated that serves as a framework for the monitoring of the knowledge management programme. It reflects the current state of the interrelationships between work in progress and proposed for the future and the overall milestones and aims of the programme (SAMDI 2004: 88).

Knowledge Asset Road Maps highlight the critical knowledge assets required by an organisation to meet needs five to ten years in the future. They are mechanisms enabling organisations to visualise their critical knowledge assets, the relationships between these and the skills, competencies and technologies required to meet future demands. They allow:

Individual knowledge management actions need to be defined and justified in terms of their contribution to the overall aims, which are;

- Effective communication of the work and progress on the programme to the participants and observers;

- Management aids for those involved in carrying out the programme and measuring its progress;

- More effective communication between users, researchers, technicians, managers and directors involved in the various aspects of the programme;

- Sensible decisions to be taken on the opportunities for further exploiting the results of the programme; and

- The identification of knowledge gaps that need to be filled (SAMDI 2004).

CAPACITY BUILDING IN THE PUBLIC SECTOR THROUGH KNOWLEDGE MANAGEMENT

The challenge of deploying the knowledge assets of a public sector organisation to create improved performance becomes crucial because:

- The rate of innovation is rising, so that knowledge must evolve and be assimilated at an ever faster rate:

- Institutions are organising their activities to be focused on creating customer value. There is a need to replace the informal knowledge management of the staff function with formal methods in customer-aligned processes.

- Competitive pressures are reducing the size of the workforce, which holds this knowledge.

- Knowledge takes time to experience and acquire. Employees have less and less time for this.

- There are trends for employees to retire earlier and for increasing mobility, leading to loss of knowledge.

A change in strategic direction may result in the loss of knowledge in a specific area. A subsequent reversal in policy may then lead to a renewed requirement for this knowledge, but the employees with that knowledge may no longer be there (SAMDI 2003).

There are many problems with identifying these knowledge assets and being able to use them and manage them in an efficient and cost-effective manner. Institutions need:

- To have an organisation-wide vocabulary to ensure that the knowledge is correctly understood;

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- To be able to identify, model and explicitly represent their knowledge;

- To share and re-use their knowledge among differing applications for various types of users; this implies being able to share existing knowledge sources and also future ones; and

- To create a culture that encourages knowledge sharing

INFORMATION MANAGEMENT, SYSTEMS AND TECHNOLOGY IN THE SOUTH AFRICAN PUBLIC SECTOR

The democratic process from 1994 onwards in South Africa coincided with a global move towards information driven governance. The newly elected ANC government of 1994 realised the importance of information as a commodity and established working groups and committees to investigate the use of information systems, management and technology in the South African public sector. The Presidential Review Commission (DPSA 2004) found that the use of the information resource in government encompasses the three aspects of (i) management, (ii) systems and (iii) technology (IMST).

Although the primary focus of the Presidential Review Commission (DPSA 2004) is the use of systems and technology to manage information in the public service, it is believed that such practices can only be understood in the context of developments in information management, systems and technology more generally. The report argued that the state has a major role to play in promoting the information society and the consequent use of information technology as a whole. It also recognised that current public service practice lags behind that of the private sector in South Africa, which is itself slipping behind developments elsewhere in the world. As a result the

public service in South Africa is falling dangerously behind its public and private sector counterparts internationally.

In order to propose options for transformation in the information management, systems and technology (IMST) sector, the South African government has sought to identify the best practices internationally. Although the private sector has played a leading role in the development and use of IMST, there are some valuable precedents such as in Australia, Canada, Singapore, Malaysia and the United States where other governments have taken the initiative. These, and other examples, suggest that the current shortcomings in the use of information management systems and technology in the South African public service may be overcome if sufficient political will is mobilised to address the systemic problems identified below.

The view of IMST advanced by the Commission is that technology is driven primarily by the business objectives of the state, and not business objectives driving Information technology. Even though information technology can significantly change the manner in which the public service conducts its business, transformation must be shaped by the strategic and operational requirements of the public service, particularly in relation to the provision of efficient, effective and equitable service delivery by adhering to the principles of Batho Pele-People First (SAMDI: 150).

The report indicates that information management systems and technology should come from the senior political and managerial leadership of the state and not be delegated to the technologists. Senior politicians and management should see the management of information management systems and

technology as equally important, as are the management of people, money and organisations in the public service.

THE INFORMATION MANAGEMENT, SYSTEMS AND TECHNOLOGY PROBLEM IN SOUTH AFRICA

The South African public sector has the responsibility to deliver services to all the inhabitants of this country. These aspects ensure that the information management systems and technology problem is exacerbated. The essential nature of the information management systems and technology problem is that current systems and technology applications in the public service cannot, in their current form, come close to meeting the requirements of the new South Africa. The problem is two fold:

- South Africans already invested huge amounts of financial resources in technology and systems.

- There is a dire need for the public service to support this investment in its quest for transformation.

However, this massive investment has been made in a highly fragmented manner.

> *The lack of integratedness in development planning between the different spheres of government places the South African development drive in serious jeopardy. Intergovernmental relations or rather the lack of it, is one of the weak aspects of the integrated development planning processes between the different spheres of government* (SAMDI 2004: 88).

A huge cost has been borne by the South African public without any appreciable benefit in the form of greater service delivery or a more efficient and effective public service. Perceptions gathered from state officials also indicate that the current information technology assets are not regarded as contributing significantly to service delivery or transformation objectives. In most cases, both the public and officials believe that the current systems and technology may even act as a major constraint on realising these objectives (SAMDI 2003:151).

An area such as the public service demands that individuals acquire knowledge and skills as an ongoing process. From the report it becomes clear that the public service has not benefited appreciably from the billions spent. It, furthermore, does not have any significant pool of skilled information management resources, one of the main reasons being the attractive salary packages offered by the private sector. The problem of staff is possibly the most critical and demands to be resolved before any real progress at transformation can be made.

Functions of information management systems in government

Technology and systems have been used for transactions and control purposes for many years. In the past couple of years new management information systems have been implemented to supply information systems have been implemented to supply information for strategic planning and policy decision-making. Recently the use of information management system and technology has been tested to enable the electronic delivery of certain public services through online kiosks and other mechanisms.

At present, information regarding transaction and control of data is managed in the South African public service using electronic means. The following systems already in use indicate that the use of information management systems and technology is now essential (SAMDI 2003):

- The transversal financial and personnel management systems. However, this system has been changed over to BAS.

- The case management systems used by the South African Police Service.

- The motor vehicle registration systems used by the Department of Transport.

- The pensions and unemployment insurance systems used respectively by the Departments of Welfare and Labour.

- The subsidy management system used by the Department of Housing (SAMDI 2003: 152).

An example of the system that is already being implemented by the City of Johannesburg (Sunday Times: 2004) is an initiative aimed at using modern information technology to house municipal data in a central place, making it more accessible. The project is now in phase three and has involved placing the council's information onto a central repository over the past four years, and making this information available to staff and the public. This phase is specifically aimed at resolving some of the well-publicised billing and revenue collection problems the city has been wrestling with for a number of years. It is focusing on this by allowing customers and the city to interact with each

other through the e-government portal. It will enable people to get information that is relevant to them. Companies are able to access business information such as zoning, lights and water matters and tenders.

In these circumstances what matters most is whether these systems work effectively and efficiently. The question is not whether the public service should have information management systems and technology, but whether they have good or bad information management systems and technology.

In recent years the use of information management systems and technology has extended to developing management information systems to assist senior management and policy roles. Although many of these systems build on the base transaction and control data systems mentioned above, they have been linked with more general policy-oriented databases. The report indicates several separate initiatives in the Department of Housing, Welfare, Education, Health, and Department of Local and Provincial Government. While the use of information management and system and technology in these instances cannot be questioned, the duplication of data collection and warehousing activities should be assessed with the intention of rationalising these systems in government (SAMDI 2003).

Information management systems and technology is being used increasingly to deliver services directly to the public. The range of services that can be delivered directly using information technology include information and transaction kiosks which enable citizens to access their government institutions 24 hours a day. This is already effective in South Africa through portals that have been created in the community learning centres or

multipurpose centres (Government Communication Information System 2003).

MULTIPURPOSE COMMUNITY CENTRES (MPCCS).

The White paper in Education (Department of Education 1995) stated the government's intention to revise the non-formal education and mass information communication strategy by beginning to establish the Multipurpose Community Centres.

According to the National Investigation of Community Colleges (1995) community leaning centres are a means to help the people who have been left on the side by mainstream education. They are seen as a complimentary and parallel education system required to overcome the limitations inherent in the uniform and standardised nature of formal education. They are the proactive focus of programmes aimed at assisting the whole community to be conscious of community needs and to be active in providing for or facilitating action towards meeting expressed community needs. They aim to link training, education and developmental programmes to the provision of resources relevant to the learning being done.

These information centres have been built in rural areas like Msinga, north of the Tugela river, Bergville and Cato Manor Community Learning Centre as one-stop community information kiosks. The Government Communication and Information System (GCIS) Department, under which the centres fall, develops and support the research to provide the most relevant information.

The centres have to be the integral part of the community in that they would be situated next to the frequently used centres and forming part of the

community development. They would provide information relevant to the community being serviced e.g.

- Postal services like sending and receiving mails;

- Application for social services information;.

- Use Internet;

- Receive counselling on a number of illnesses;

- Receive their pension through a teller machine;

- Receive information about government available service;

- A help desk;

- A library;

- A voice prompted pension portal.

The centre would not discriminate between those that are illiterate from those that are. However, information might need to be repackaged in order that it is on the level of literacy of its users. Repackaging could include (a) translating information to the language spoken by local people, (b) bringing in cultural artefacts and music so that people would feel welcome to the centre, employ a communication officer that speak and understand the local language and to simplify information so that they include more pictures than written texts.

It would provide up to date information in all ways possible and gradually introduce them to electronic communication so that communities would be able to access varied government funds. The one-stop centre would reduce if not totally end the 'wrong door effect' (DPSA, 2003:90). This happens is

when you stand in a queue and after 20 minutes you discover you are in the wrong queue. There is nothing telling you where you have to go. The challenge is for the information and communication technology to eliminate the 'wrong door effect' and introduce a single window, "that is structured around the life events of natural persons and juristic persons" (DPSA, 2003: 91).

With the passing of the Skills Development Act of 2001 which encourages employers to contribute towards the training of their workforce and the government Skills Education and Training Agencies which develop and assess training material and quality of the training material, these centres can become skills training centres where people are trained from literacy courses to business training.

The South African government is serious about improving the lives of people by managing knowledge through technology. The challenge is combining the skilled human capital and the use of technologies. This according to Government Gazette (22889: 2001:8) is manifest in the government plan for a national e-strategy. The e-strategy has to do the following:

- maximising the benefits of electronic transactions to historically disadvantaged persons and communities, including, but not limited to:

- making facilities and infrastructure available or accessible to such persons and;

- communities to enable the marketing and sale of their goods or services by way of electronic transactions;

- providing or securing support services for such facilities and infrastructure to assist with the efficient execution of electronic transactions; and;

- rendering assistance and advice to such persons and communities on ways to adopt and utilise electronic transactions efficiently.

In countries like Australia, Singapore and the United Arab Emirates information management system and information technology also includes advances in Information technology enabled medicine and education where international expertise can be delivered to remote areas, a process known as telemedicine, via Internet technology or equivalents.

SUMMARY

In this chapter the researcher looked at how the information management systems impact on the public organisations in South Africa. The government's aim is to empower and improve both the public sector as an organisation as well as the public community to access service through electronic communication systems. However, there are problems with the high expenditure of computer programmes that continue to clog the system with problems. In the next chapter the researcher will provide insight into the advantages and the disadvantages of information management systems and technology in government.

ADVANTAGES AND DISADVANTAGES OF INFORMATION MANAGEMENT SYSTEMS AND TECHNOLOGY IN GOVERNMENT

INTRODUCTION
In the last chapter the researcher looked largely at KwaZulu-Natal's public information management systems in the context of South Africa and focused on the problems that have occurred when technology was used as a driver rather than an enabler to organisational goals.

In this chapter the researcher is to focus on the benefits of a well integrated information management system where human resources are not left out of the equation of organisational objectives and performance.

INFORMATION MANAGEMENT SYSTEMS AND IMPLEMENTATION IN THE ORGANISATIONS
All the different uses of information management system and technology raise the inevitable question in the South African context of whether a country already over-burdened with large-scale unemployment, low levels of scientific and technological education, and a vast rural population currently out of the reach of electronic communication, should invest further in such advanced technology. The cost of many basic resources such as leased lines and international telephony are all potentially obstacles to the positioning of South Africa as a leading location of advanced information communication technology services, and there is a clear need to enforce existing legislation and competition law more effectively (Grigg 2005).

There is a legitimate concern that further advances in the information society will merely exacerbate the existing divisions between rich and poor, urban and rural, and the technologically informed versus the technologically marginalized. A look at the rest of the developing world supports such concerns.

There is reason to believe that current information technologies and systems have greater potential than earlier ones to be accessible to the poor, rural and technologically marginalized sectors of society. The extension of the information society in South Africa is therefore both feasible and desirable if it can be used to assist all segments of society to make use of the new information tools and systems. There are also compelling arguments to suggest that South Africa cannot afford not to continue to invest in appropriate information technology. These reasons range from the fact that many of the basic operations of government are now entirely dependent on such technology, to the fact that the country's economic future, relative to the rest of the world, will also be determined by the extent to which it sees to keep up with technological developments elsewhere.

Possible solutions to the information management systems and technology

There is quite a high level of awareness and understanding among senior managers in the public service about the need for and uses of information management systems and technology. There is also an understanding of the problems and challenges in devising and implementing effective information management system and technology (SAMDI 2003).

The difficulties of taking over and transforming the current public service, and the overwhelming responsibilities of addressing pressing problems of delivery, have meant that senior management have:

- either decided to live with the existing state of affairs, however, constraining;

- or embarked upon short-sighted information management system and technology initiatives designed to address their immediate difficulties with little or no attempt to seek systemic solutions to problems.

While it would be futile to expect high-ranking government executives to become experts in technology, it is imperative that they should have an adequate understanding and appreciation of the main issues, challenges and opportunities involved. In particular, there should be enough understanding of Information management system and technology to enable senior management not only to deal with current problems but also to position their institutions to meet future objectives in new and different ways.

It is therefore vital that certain basic building blocks be put in place to ensure that most future information management systems and technology developments in the public service share a common set of features that will contribute to their ultimate improvement in the long term. These building blocks will include an object-orientated open systems architecture (SAMDI: 2003).

The building blocks must at least include the definition of the following technical components:

- networking protocols;

- operating systems;

- data and database standards;

- middle-ware;

- transaction processing;

- desktop environment;

- basic documentation standards;

- use of the Internet medium.

ELECTRONIC KNOWLEDGE MANAGEMENT SYSTEMS IN THE ORGANISATIONS

Management Today (2004:23) states that knowledge management system should provide for the management of the risk of potential loss of knowledge. This requires the integration of a deliberate strategy for the embedding of knowledge within the enterprise. A knowledge-based organisation has to develop clear strategies to capture, store, retrieve and disseminate knowledge. This is viewed as a strategic requirement (Management Today: 2004:23).

Globalisation and rapid change driven by technology and the ever-increasing customer demand force organisations to become extremely effective and efficient in order to stay in business. The increased complexity of technology strengthens the realisation that the enterprise cannot do everything themselves, but needs to focus on its core competencies.

A technology and knowledge intensive 21st century will require new leadership, a thorough understanding of the management of technology, related complexities and the exploitation of technology for business advantage (Management Today 2004: 46).

While there are long held and practiced efforts to recording and preserving information and knowledge in government departments in South Africa many government departments have been late adopters of electronic communication technologies.

The National Archives and Records Service of South Africa Act (Act No 43 of 1996) provides a mandate for manual record keeping. Some attempts have been made to change transfer and back up this information to digital records. However, these are lagging far behind the pace at which technology is advancing, hence the knowledge that users need now remains archived.

The definition of these technical standards would enable any system to share data and inter-operate with any other system, even if the original programme specifications did not mandate such sharing. Such standards are not designed to limit departmental and provincial autonomy, but to facilitate system choices that are not compatible. They would also enable the public service to more readily extend the capabilities of the current systems and obviate the need to replace them in the short term. The move towards this kind of systems architecture would help to:

- ensure greater inter-operability and integration of different applications

- facilitate continuous improvement in the technology and human resources of the state

- overcome current skills shortages and service bottlenecks.

The above movement to object-orientated technology raises some pertinent questions. SAMDI (2003) argues that a downside of object-orientated technology is that it is substantially different from other information technologies. Because of the difference, it usually presents a considerable learning curve to practitioners. Considering the current state of affairs in IMST in the South African public sector, one should stop and ask the question whether such a move to object-orientated technology is not premature and could cause considerable harm to the public sector in the long run.

OBJECT- ORIENTATED (OPEN SYSTEM ARCHITECTURE) TECHNOLOGY

Object orientated technology is one of the hottest topics in information technology at the moment, and it is destined to be in the information management system technology that the specialist is scrambling to learn how to write software in object-orientated programming languages, create databases using object-orientated analysis and design. Object-orientated technology is any technology (e.g. programming language, database management system) that combines information and procedures into a single object (SAMDI 2003).

Combining information and procedures is quite different from other approaches. Most often, information is stored separately from procedures. In other approaches it is possible to have access to the information but not able

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to do anything with it because one may not have the procedures much like having a certain file and not having the correct computer programme to access the file. Likewise one may have the procedures in the form of software but not able to do anything with them because you do not have the information to work with.

ALTERNATIVE SERVICE DELIVERY

Governments throughout the world are faced with the challenge to modernise their processes to provide services to citizens at ever increasing levels of convenience (DPSA 2003: 31). This is a result of the fact that:

- citizens are becoming more and more sophisticated due to the exposure to modern technologies in their daily lives, for example cell phones; and;

- ever-increasing levels of service experienced by citizens in their dealing with business, e.g. Internet banking.

The availability of and access to information and communications technologies offer opportunities to governments to interact with citizens in ways that traditional mechanisms cannot achieve. Hence the South African government's change towards e-government ((DPSA 2002:31). E-Government is about:

- using technology as enabler to facilitate government service delivery by improving internal operations of government, reducing costs and turnaround times, increasing accessibility of public services to citizens, and enabling them to interact with government through multiple channels at their convenience;

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- rethinking current service delivery mechanisms and finding the best possible ways to deliver the same services more effectively. The integration of related services across and within departments with a view to allow the citizen more convenience when dealing with government; and redesigning the way in which government is organised in a manner that makes sense to the citizens.

However, e-government does not suggest doing away with traditional contact-type service delivery mechanisms but rather that these be complemented by taking advantage of technological innovations (DPSA 2002: 32).

Information is pivotal to the performance and capacity of government services and South Africa's economic competitiveness. At issue is whether information technology can be used effectively to empower government, the private sector, and citizens alike. The complexity of today's world demands that the public and private sectors not only learn to master this tool, but also to work co-operatively to maximise the national benefits. To achieve this, the public and private sectors must engage in innovative partnerships that share the costs, risks and rewards of developing technology-based solutions. The government should look at the pioneering work on alternative service delivery as a model for developing new public-private partnerships for information management system and technology delivery.

In the procurement and operation of state assets, the Canadian government has made significant advances promoting what is called the alterative service delivery model. Unlike the Private Finance Initiative in the United Kingdom, which tried to subject every asset or service acquisition to a privatisation test,

alternative service delivery puts in place a range of service delivery options involving a spectrum of the public, to encourage new relationships in service delivery without the government abdicating its ultimate responsibility of governance.

As the processes of integrated development planning for and between spheres unfold, it should be realised that South African reality poses unique challenges to officials and politicians alike. South Africans are actually engaging a new system of governance within the context of a new social system where the principles of non-discrimination, equity, fair distribution of resources, gender equality, transparency and democracy prevails.

In order to justify the energy expended through applying the above-mentioned principles against a developmental backdrop, we all need to learn from our problems as our best practices. Chapter 3 of the Constitution of the Republic of South Africa, 1996 (SAMDI 2003: 89), places the obligation on different organs of state to apply the principles of co-operative governance to attain sustainable development on the basis of an integrated effort. Essentially, the secret formula in effecting this ideal is to build a culture of knowledge sharing throughout government. One way of doing this is through e- strategising.

THE E-STRATEGY OF ORGANISATIONAL KNOWLEDGE MANAGEMENT

As the world of business continues to globalise, the way people work together is undergoing a dramatic transformation (Management Today 2000:14). There is no doubt the Internet in its first ten years of commercial existence has changed the fundamentals in business models in terms of how organisations design, develop and deliver products and services to customers.

Porter (2003) confirms that the Internet is an extremely important new technology, and it is no surprise that it has received so much attention from executives, entrepreneurs, investors and business observers.

Leadership is now being mediated by technology as we interact through e-mail, Internet meetings, at a distance via a whole new range of collaborative technologies that are transforming how organisations work together. Porter (2003) decries the importance that has been given the Internet at the expense of managing human capital resources.

> *Caught up in the general fervour, many have assumed that the*
>
> *Internet changes everything, rendering all the old rules about companies*
>
> *and competition obsolete.*

The Internet has led many companies, dotcoms and incumbents alike, to make bad decisions that have eroded the attractiveness of their industries and undermined their own competitive advantage (Porter 2003).

Research conducted with 27 South African organisations in 1999 (Avolio and Maritz 2000: 14) stated that, when asked which characteristics would become more important over the next five years regarding the future work place, the following emerged:

- flexible work arrangements 77%;

- a knowledge sharing culture 86%;

- face to face interaction 53% (one of the lowest);

- collaboration in teams via technology 84%;

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- leading virtually through technology- 70%.

The research indicates that the type of leadership and the nature of teams will be more virtual and dispersed in the near future. When these organisations were asked if they have the appropriate organisational structures, work designs and technologies in place to lead and develop virtual teams, only 15% responded positively. The key question is not whether to deploy the Internet technology- companies have no choice if they want to stay competitive- but how to deploy it. The Internet technology provides better opportunities for companies to establish distinctive strategic positions than did previous generations of information technology (Porter 2003:2).

Many of the companies that succeed will be ones that use the Internet as a complement to traditional ways of competing, not those that set their Internet initiatives apart from their operations. The Internet has created some new industries, such as online auctions and digital marketplaces. Its greatest effect has been to enable the reconfiguration of existing industries that had been constrained by high costs for communicating, gathering information or accomplishing transactions.

The value of integrating traditional and Internet methods creates potential advantages for established companies. It will be easier for them to adopt and integrate Internet methods than for dotcoms to adopt and integrate traditional ones. It is not enough just to graft the Internet onto historical ways of competing in simplistic 'clicks-and-mortar' configurations. Established companies will be most successful when they deploy Internet technology to reconfigure traditional activities or when they find new combinations of Internet and traditional approaches (Porter 2003:2).

Management Today (2000:14) quotes a recent survey of corporate executives ranked going 'virtual' as among the top five challenges to be addressed over the next five years. The shift towards e-leading teams and organisations raises several fundamental questions for organisational leaders and human resources practitioners to consider. South Africa is already observing the emergence of virtual leadership and the need to establish the virtual workplace within organisations.

In a recent survey conducted with 30 leaders in a large organisation in the manufacturing industry (Avolio and Maritz 2000:14) the organisations expressed that:

> ...for them to stay competitive they need to rethink their leadership as well as place more emphasis on managing knowledge in teams. These teams must have global access to the best people, have the ability to deliver quickly with seamless technologies, effective and local networks and accelerate the sharing of ideas.

Knowledge-based organisations must begin to address these questions to harness the collective intelligence, creativity and know-how of human resources working in virtual teams.

THE DANGER OF IT DEPENDENT KNOWLEDGE MANAGEMENT

While the electronic knowledge managed organisation reaps profit there is always a possibly downside. These can be because Internet or computer downtime can cause serious and even fatal problems for many industries.

Certain emergency services like air travel, safety and security services and automatic bank tellers cannot afford to go offline.

Nick Cheetham (Management Today 2000:46) argues that computer networks are becoming increasingly essential to maintaining a competitive advantage and a critical factor in that computing services are available 24 hours a day, seven days a week – or, at the very least during critical periods of processing. However, the intermittent downtime has a negative effect on service delivery. Hence knowledge management should not be about pure technology but technology should be employed as an enabler in an integrated system.

The increasing computer crimes where a pin number can be used to hack other peoples' information remains a big danger to the information stored over a long time. Hence in the KwaZulu-Natal Education Department and many other service organisations a unique password is used for performing a specific function in the processing of a client's forms e.g. payment. This is done so that no other person can use the same password and thus for instance illegally pay himself huge sums of money or deduct money using somebody's password. However, computer criminals always find a way of subverting the system.

The advent of the computer memory sticks that can take gigabytes of information poses a danger for people who can at the split of a second *save as* in their disc the whole privileged and strategic information from an organisation and wipe off the source of information from the hard drive. To save themselves from such impending disasters some companies have installed systems and made policies that disallow users to *save as* (Knowledge Managers Practitioners Group: 2004). But with existence of e-mails some files

can still be sent 'home' or diverted to a destination where the user can collect them later. It is thus important for the organisation to establish a foolproof system of archiving information. The information and communication technology policies should be discussed and made known to everyone in the organisation.

THE USE OF E-MAIL AS ELECTRONIC KNOWLEDGE MANAGEMENT SYSTEM
Organisations receive hundreds of e-mails of various forms a day. It is therefore important that a policy on e-mail storage and usage be established. Given the nature of the environment, it is important that the organisation recognise that e-mail systems such as those commonly found in the marketplace are not record-keeping systems. Unless there are arrangements in place to transfer e-mail messages to a secure central system and to manage them as electronic records, the policy should be to require users to print important electronic mail messages to paper and place these in the corporate filing system. In setting this policy, records managers should be prepared to offer generic advice on how electronic messages can be managed even as the important messages are printed to paper.

As more organisations embrace e-mail as their primary method of communication, the majority overlook the fact that e-mail content contains evidence of business decisions, actions and transactions. These e-mail messages become documents and records with the same legal requirements, restrictions and standards as any other record produced in any form or medium. Public and private organisations are quickly discovering that, in connection with the transaction of business, they have an obligation to apply the appropriate retention for e-mail created or received, and an equal obligation to provide access to the e-mail (Abaza 2004).

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While e-mail management is a large and rapidly growing industry sector, organisations have been slow to adopt this technology due to both the complexities involved in properly managing e-mails as documents, and the sudden explosion in the use of this method of communication. Organisations in both the public and private sectors are increasingly faced with issues related to compliance with industry, legal and government regulations and standards relating to the management of e-mail documents and records. In most organisations today, e-mail management is either non-existent or is done using existing technologies such as e-mail delivery software, document management systems, and/or records management systems. Many organisations are realizing that e-mail management requires specialized capabilities not presently found in existing products.

The evolution in the way organisations are conducting business highlights the need to automatically capture and classify e-mail content in its entirety and native form within the corporate file structure based on rules specific for each organisation. Knowledge workers must also be allowed to search, retrieve, and manage the life cycle of e-mail within a secure environment that allows true collaboration between all. A comprehensively structured e-mail management system provides many benefits including reduced information technology costs, reduced downtime and improved messaging infrastructure, and reduced legal costs. By capturing e-mail and organizing it into corporate knowledge maps, e-mail content is accessible to authorized users thus allowing for better and faster decision making, efficient implementation and execution of business processes, and improved knowledge worker satisfaction. Organisations will have better control over their information

(measure of work performed) and knowledge (ability to execute work planned) assets.

When implementing an e-mail management solution, organisations should avoid the following shortcomings during their selection process:

- When e-mail-based knowledge is not captured, the organisation abdicates its legitimate right to be the custodian of its knowledge.

- Relying on users to make decisions about which e-mail message is a record will result in the loss of important e-mails that are corporate records.

- The complete random purging of e-mail leads to knowledge drain.

- The blanket purging of e-mail leads to the loss of e-mail-based documents, records, and ultimately evidentiary records.

- E-mail-based documents and records are not organized in the corporate file plan classification, with one potential problem being that the process of legal discovery becomes very difficult and expensive.

- E-mail records are not subject to the corporate life-cycle retention rules.

- The storage requirements of the personal e-mail workspaces swell.

- The content duplication problem is not addressed.

- Retention of convenience copies extends the organisation's risks.

Technologies that address the challenges associated with structured e-mail management are just beginning to emerge. One of the most challenging technologies to develop, that is expected to continue to evolve and mature, deals with the automatic classification of e-mail and electronic documents. To achieve accurate auto-classification there is a need to implement several technologies in concert; including the implementation of rules based on the organisation's business requirements and auto-categorization based on content analysis.

The *eManage* solution is a leader among the solutions presently available for structured e-mail management (SAMDI 2004). It organizes and manages e-mail, along with its metadata and attachments. *eManage* allows organisations to implement a secure and structured knowledge map to link and understand the relationship between information and knowledge holdings. It provides a single point of access to corporate knowledge regardless of storage location or format. Knowledge objects (word documents, spreadsheets, images, e-mail, web content, etc.) are organized in a logical hierarchy that features compound folders and subfolders. These folders contain documents (and virtual documents) that are located within multiple repositories. *eManage* can be configured to automatically monitor and capture knowledge objects from various sources and to automatically classify them within its knowledge map. Its built-in rules-based engine allows users to set "capture rules" defining how objects are automatically captured and classified.

By capturing messaging-based knowledge, organizing it into a dynamic corporate file classification, and making this knowledge accessible from other applications, *eManage* ensures compliance with legal and industry regulations and standards. As the percentage of e-mail-based business documents increases, implementing a structured e-mail management solution leverages the investment in e-business and e-commerce applications. Organisations without structured e-mail management solutions will lag behind as their competitors surge ahead, armed with better control over their e-mail records and profiting from true collaboration between their knowledge workers.

However, the storage media is only part of the equation. All electronic records are created using technology that is constantly changing. Thus, even if a CD-ROM can last for fifty years, the technology of CD-ROM drive will last, probably at most, ten years. Consequently, one of the requirements for an electronic records management programme will be the planned migration of information off of the current storage medium to a new medium. The new medium will take advantage of the technology in use at the time of migration (SAMDI 2004).

There are several research projects underway around the world that are exploring ways to resolve the problem of having to move electronic information to new technology. Because there are no obvious answers at present, part of any electronic records management programme must include planned migration to new media. Thus, the organisation should determine the answers to the following questions.

E-mail should be managed according to the basic principles that apply to records in any medium. The management and retention of e-mail are subject

to the National Archives and Records of South Africa Act, (Act No 43 as amended), and its regulations. The following guidelines are applicable to the management of e-mail (National Archives and Records Service of South Africa: 2003).

Each governmental body needs to establish a policy for capturing records of e-mail communications. Its own unique functions and environment should inform this policy. The policy should be endorsed by senior management and should be communicated throughout the organisation as part of the overall records management policy. The policies should inform e-mail users that official records communicated through e-mail systems must be identified, managed, protected, and retained for as long as is needed for ongoing operations, audits, legal proceedings, research, or any other anticipated purpose. A policy should also explain how the governmental body would implement a records management programme that includes e-mail records. For example, the policy should specify where official records will be kept, such as in a central repository associated with a departmental network or Local Area Network or in decentralised electronic or paper-based filing systems. Governmental bodies should inform end users about policies for security, backup and purging to protect records from alteration, loss, or inappropriate destruction.

Retention periods for records communicated through e-mail systems, like other records are derived from the functional needs of the office and any additional legal and audit needs. Generally, records transmitted through e-mail systems will have the same retention periods as records in other formats that are related to the same function or activity. Strategies for managing and

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preserving electronic messages as records will have the same retention periods as records in other formats that are related to the same function or activity.

There are two basic options for filing and managing e-mail records:

- Print messages and file them in paper-based filing systems, or;

- Transfer e-mail messages to an electronic file plan in the electronic repository.

The method chosen will depend on whether the office has a paper-based filing system or an integrated document management system in place. If the office uses the first option, the following should be kept in mind to prevent unnecessary duplication of e-mail messages on the paper-based files:

- If an e-mail message is sent and no reply is expected, print and file the message; (National Archives and Records Service of South Africa: 2003;)

- If an e-mail is received and no reply is necessary, print and file the message;

- If an e-mail message is sent and a reply is expected, keep the e-mail until the matter is finalised. As soon as the matter is finalised, print all related messages and file them. A good option would be to require the recipient to always attach the original message text to the replies. In this way messages sent and received on the same matter are kept together;

If e-mail received and a reply is expected, keep the e-mail until the matter is finalised. As soon as the matter is finalised the message must be printed and

filed. A good option would be reply to the message and to attach the original message text to the replies. In this way all messages sent and received on the same matter are kept together.

If a message is sent to a distribution list and the recipients reply to the message, different records are generated, that should each be kept until the individual matters are finalised and then be printed and filed separately.

If the second option is used, the above approach to prevent duplication could also apply for messages saved into the electronic repository, depending on the specific features of the integrated document management system and the business rules of the particular office.

Whichever method is chosen, all users should be aware of the policies, procedures, and tools for managing e-mail messages and they should be capable of applying them consistently to all records. Furthermore, both the paper-based and the electronic records management system must ensure that:

- Related records are grouped together in accordance with the office's file plan;

- The records are accessible to authorised persons;

- The retention of the records is supported for as long as they are required;

- Destruction of records can take place when so scheduled; and

- Permanent preservation of archival valuable records is supported.

When preserving electronic messages, the following specific requirements should also be kept in mind:

The e-mail message must include transmission data as well as the message itself and all the attachments to the message. The transmission data identifies the sender and the recipient(s) and the date and time the message was sent and/or received. This data provides essential context for the message. This is equivalent to correspondence on paper, where the record includes information identifying the sender and recipient and the date of the letter, not just the message. Any attachments containing information necessary for decision-making or to understand the intention or the context of a message should be kept as part of the record.

When e-mail is sent to a distribution list, information identifying all parties on the list must be retained for as long as the message is retained. If the e-mail system uses codes, aliases, nicknames, or anything other than the real name of senders or recipients, their identities need to be retained as part of the record.

If a message is sent to a distribution list and the recipients reply to the message, different records are generated that should be filed as separate records. The system normally uses the subject line to name messages when they are filed into the file plan. To prevent filing of messages with the same name into the electronic repository the messages should be renamed to enable them to be filed. Renaming should include the subject of the message as well as any other information that would identify each message as a unique entity. If messages are renamed, a proper audit log should be kept (National Archives and Record Services of South Africa: 2003).

SUMMARY

In this chapter the researcher looked at the different information systems and technology used in government as a way to service delivery. He concluded

that although South Africa cannot be left behind in the global village, the amount of billions spent on information communication technology has not yielded corresponding results. Therefore it is not advisable to create an information technology dependent workforce. Finally the researcher looked at the use of electronic knowledge management and how to store the useful electronic mails.

In the following chapter the researcher will focus on the future of electronic knowledge management in organisations.

THE FUTURE OF ELECTRONIC KNOWLEDGE MANAGEMENT IN ORGANISATIONS

INTRODUCTION

Countries like Malaysia and South Africa and various organisations around the world have begun their 2020 visions. The researcher visited the capital of Malaysia, Kuala Lumpur, in 2003 and was introduced to their country's vision of 'a paperless society' by year 2020 (2020 vision). These are electronic communication strategies with an aim to prepare and project the government and organisations into the future. For governments and organisations in general to work better (i.e. to the satisfaction of citizens), it is necessary that governments are organised according to business processes rather than according to departments (DPSA 2003:32). Currently government is organised according to departments, which operate in silos. They are all governed by specific regulations, which often do no encourage seamless sharing of information between systems, even if the systems are within the same department.

WHAT INFORMS GOVERNMENT'S VISION ON E-GOVERNMENT?

Witschger (2003:14) mentions that any organisation can throw technology at a business problem. Successful organisations will provide a combined technological/human-interfaced solution that treats the customer as a person and not as a number. Witschger (2003:16) further argues that people are the key differentiators for organisations to achieve a competitive edge in a radically changing world and hold the key to unlocking the value contained in an organisation's resources in order to create wealth. Thus the government's

vision is of using technology as enabler to fast-track public service delivery and not for its own sake. That vision is premised on the following:

- The increase of productivity;

- Reduction in the costs of service delivery; and;

- Provision of convenience to the citizen (DPSA 2003:33).

These are in turn supported by four pillars, which rest on the foundation of competent skills to drive and support government information communication technology strategy.

The pillars are the following:

- Inter-operability;

- Information security;

- Economies of scale; and;

- Elimination of duplication.

The appropriate institutional framework to ensure the realisation of this vision has been set up and comprises among others agencies such as State Institute Technology Agency (SITA). SITA is the prime system integrator and also has a role of being the central procurement agency of government Information and Communication Technology goods and services, thus enabling the realisation of economies of scale and elimination of duplications.

The Centre for Public Service Innovation looks at encouraging innovation in the Public Service as well as setting up of Public-Private Partnerships. The

Government Information Technology Officers' Council (GITO Council) advises the Minister for Public Service and Administration on the appropriate policies to the use of technology in government to facilitate service delivery (DPSA 2003).

FUTURE PROSPECTS OF ELECTRONIC GOVERNMENT

Lack of system integration leads to a situation where certain processes requiring the authorisation or interaction of different systems/departments are prolonged. Shilubane (2002: 32) quotes an example to indicate the disintegration of these systems:

> *In order to apply for company registration, which is done by the*
>
> *Department of Trade and Industry, it is necessary to verify that the*
>
> *directors of the company do not have a criminal records. This database is*
>
> *kept by the SAPS. It is also necessary to check whether the directors have*
>
> *permanent residence a database, which is housed at the Department of*
>
> *Home Affairs.*

This process requires the interaction of at least three departments and therefore implies that requests have to be made in writing to the particular departments for them to do a search on the individual company registration whether they comply with the requirements of the law. This situation impedes the speedy delivery of services to the citizen. Often the citizen is burdened with moving from department to department inquiring about the status of their application. The citizen has to identify the department responsible for the delivery of a specific service and if interdepartmental interaction is required the citizen becomes the integrator. In addition the citizen has the

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burden of supplying the same information every time he or she interacts with government.

However, the ideal should be that the citizen is able to request services and information about government form a single point (Shilubane 2002:32). A multi-channel delivery approach, which gives the user of government services an option to choose the medium and channel that they are comfortable with, is possible. This will complement the current contact-type approach to service delivery, with the use of kiosks, intermediaries, retail outlets, telephone and faxes, as well as cellular phones. In order to ensure social inclusion, it is possible to use technology in a manner that enables citizens with various disabilities to interact with machines through voice prompts and other mechanisms that take into account their disabilities and inabilities. Citizens, who do not feel comfortable dealing with government in either English or Afrikaans, should have the option to interact with government in any of the 11 official languages.

The use of information communication technology to speed up delivery of services will have the benefits of the following:

- Increased productivity in the Public Service Government services will no longer be confined to the normal office hours thus enabling the processing of far more transactions than with current contact-type services. Citizens will be able to interact with government anytime of the day using any medium they are comfortable with. This also offers avenues for the training of current data captured in order to enrich their jobs to focus on other functions such as approvals of leave.

- Citizen convenience; citizens will deal with government as and when they want to go through a channel of their choice.

- Reduce costs of service delivery while there will be huge investments in infrastructure in the beginning, it is foreseen that the migration to electronic government will in the long term result in reduced costs for service delivery.

The integrated customer service foreseen through the Gateway (Shilubane 2002:33) presupposes that the customer will have a single view of government in its entirety. The citizen will have a central point through which he or she can have access to public services thus eliminating the need for the citizen to have an understanding of how government is organised in order to deal with government. Technology will act as the integrator of government services, allowing citizens the opportunity to give government information once and have it updated in all the relevant databases of government. This will ease the burden of supplying information to government and when some details or information about the citizen change. There will be a single place where this information can be changed.

SUMMARY
In this chapter the researcher discussed the future of knowledge management in organisations by looking at the vision and information technology implementation strategies that the South African government is putting in place to integrate its information communication technology (ICT) systems.

These systems are meant to create a single point or multi-channel delivery systems for service delivery. This will enable citizens to access and receive

information and services from one central point. For citizens who are both functionally and computer illiterate, voice prompted machines combined with their thumbprints for protection and change of voice will be available in their own language. In the following chapter the researcher will discuss the fieldwork and data processing.

Chapter 8

FIELDWORK AND DATA PROCESSING

INTRODUCTION

In this chapter the researcher presents the results of an empirical survey among knowledge managers active in the public, private and non-governmental sectors in KwaZulu-Natal.

RESPONDENTS AND RATE OF RETURN

70 survey questionnaires were distributed to various levels and sectors of assumed knowledge managers. 50 fully completed questionnaires were returned to the researcher, which represented 71% returns.

70 prospective respondents were targeted by means of e-mail, personal letters and personal contact to serve as respondents in a voluntary survey because they were *de facto* operating as knowledge managers according to their job descriptions. 27 (39%) of the 70 prospective respondents contacted were informally acting as knowledge managers in their organisations, without explicit training in knowledge management, and were therefore unsure of what the term 'knowledge management' meant or whether they were knowledge managers. These 27 prospective respondents therefore declined to take part in the survey.

THE QUESTIONNAIRE

The questionnaire had 50 questions divided into 6 parts, namely (i) written permission to use responses for academic research; (ii) general personal particulars; for instance, age, gender and home language; (iii) activities as a knowledge manager; (iv) technologies used for sharing knowledge

management; (v) about the usage of the organisational knowledge; (vi) knowledge management policies.

DATA ANALYSIS

The data collected by means of the questionnaires was analysed by means of the statistical programme SPSS 11.5

Setting up data encoding parameters in SPSS

Rows, columns and cells

SPSS 11.5 is a statistical analysis database organized in vertical columns and horizontal rows. Each column contains the data for a particular question of the questionnaire. Each row contains the total number of responses of a particular respondent as shown in the SPSS 11.5 screen shot below. The rows and columns attribute what I have been testing for. The data is entered in the numeric codes 1 to 9, including 0. The first column is the respondent number, which represents the respondent in an anonymous way. This was done because respondents were assured that they would not be identified. The sum total of a respondent's responses makes up the total number of attributes that reflect the respondent's overall attitude about the aspect that is being surveyed. The point where a row and column intercept is identified as a cell. Data is entered in a cell.

The data for each respondent is entered one cell at a time, proceeding from left to right. Each cell in the respondent row contains the respondent's particular response to the attribute what is being tested in that particular column of the database.

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In the image beside one can see the coding parameters for age, gender, etc. Responses were entered in numeric format that is 0 to 9. I used 0 as default places because they are not sum able.

Figure 5: The data entry view in SPSS 11.5

Variable view and data view

One sets up the coding parameters for each survey item of the questionnaire by right clicking on the column banner at the head of each column, by then selecting the Define Variable option, indicating whether the question relates to a scalar, an ordinal or a nominal measurement set of variables. One first fills in the Age label on the panel, then you tick Scale as the measurement unit before clicking on the Labels tab, as shown in the image below:

Figure 6: The Data View in SPSS 11

Figure 7 below indicates the variable view of the database. Coding parameters such as the respondent identity document number for each respondent, age,

gender, race and for the possible responses to questions are set up in the variable view mode.
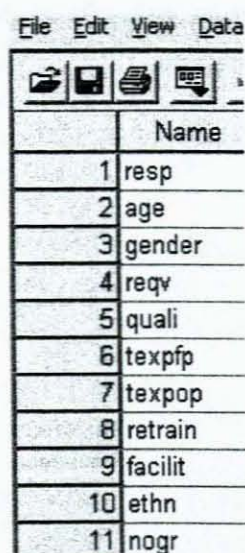
File Edit View Data Transform Analyze Graphs Utilities Window Help

	Name	Type	Width	Decim	Label	
1	resp	Numeric	8	0	Respondent number	
2	age	Numeric	8	0	Your age	{
3	gender	Numeric	8	0	Your gender	{

Figure 7: The variable view in SPSS 11.5

The name column in the variable mode
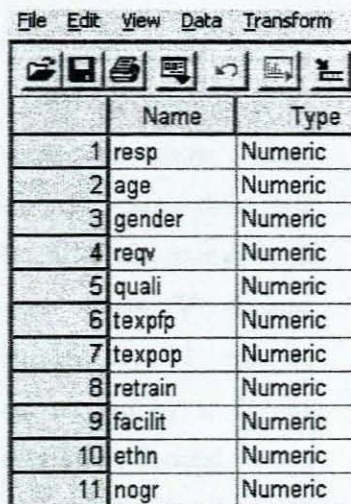
The name column gives the short hand name for each of the question elements to be coded into SPSS. It appears in the abbreviated form, and gives an indication of which questions or statements appear in the questionnaire. For example, 'quali' represents the question; 'Where did you obtain your qualifications?' in the questionnaire.

File Edit View Data

	Name
1	resp
2	age
3	gender
4	reqv
5	quali
6	texpfp
7	texpop
8	retrain
9	facilit
10	ethn
11	nogr

Figure 8: The Name column

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The type column in variable mode

File Edit View Data Transform

	Name	Type
1	resp	Numeric
2	age	Numeric
3	gender	Numeric
4	reqv	Numeric
5	quali	Numeric
6	texpfp	Numeric
7	texpop	Numeric
8	retrain	Numeric
9	facilit	Numeric
10	ethn	Numeric
11	nogr	Numeric

Figure 9: The type column in variable mode

The Type column in Figure 9 indicates the nature of the coding symbols that will be used to encode each respondent's responses in SPSS. As can be seen from this figure I used numeric codes (numbers 0-9, or combinations of them) to represent the responses that respondents indicated on their questionnaire.

When one clicks on any cell under the Type column, the Variable Type selection box, as shown in Figure 10 below, opens up, allowing one to select the most appropriate type of variable to translate the response to data.

The width and decimals columns in variable mode

The width column defaults to eight spaces. Decimals relate to how many decimal spaces there will be after the numeral. If one selects '0' decimal spaces, then 1 will be represented by 1. If one selects 1 decimal space, then 1 will be represented by a number followed by a fraction, for example, '1.0'.
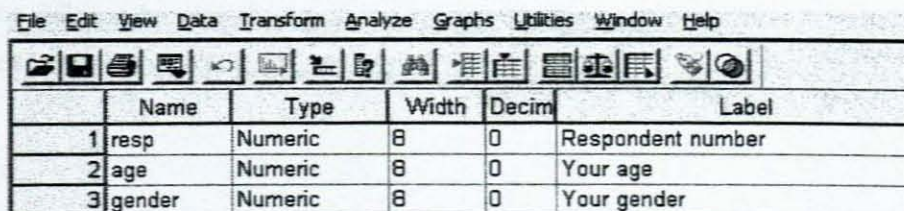
Figure 10: Setting up the column width and number of decimal spaces

If two decimal spaces are chosen, then it will appear as '1.00'. If for example when one is working with currency, then the whole number will be followed by 2 decimals, as in 10 dollars, $10.00

The label column in variable mode

In the Label column, the questionnaire elements are typed in exactly as they appear in the questionnaire. So the text will appear exactly as it appears in the database as shown in Figure 11 below:

File   Edit   View   Data   Transform   Analyze   Graphs   Utilities   Window   Help

	Name	Type	Width	Decim	Label
1	resp	Numeric	8	0	Respondent number
2	age	Numeric	8	0	Your age
3	gender	Numeric	8	0	Your gender

Figure 11: The label column in variable mode

The values column in variable mode

For every response tested, a coding parameter has to be set up in the values column. It can include a simple response such as YES/NO, or a scale, or it can take the form of categories such as the racial group or the gender of the respondent. One fills in the age coding parameters by typing "Your age" in the Variable Label slot and then one by one stipulating the age variables. One for instance defines the 1 = 20-30 variable by first typing "1" into the Value slot, and then typing 20-30 in the Value Label slot. After clicking on the Add tab the coding parameter 1 = 20-30 appears as the first item on the coding parameter list. A sample of this is provided in Figure 12 below.
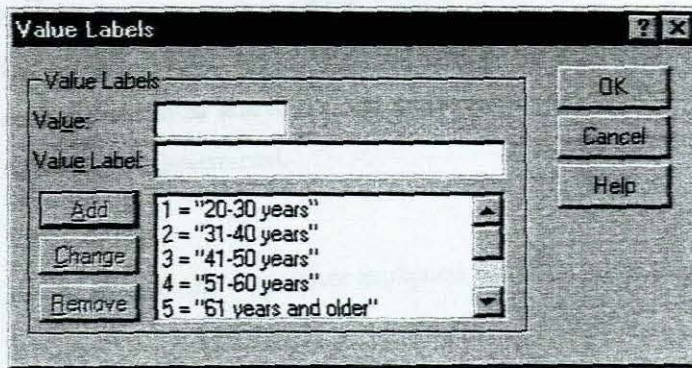
Figure 12: Value Labels

One follows the same procedure, by setting up the coding parameters for each attribute item on the questionnaire as column in the database.

Selecting the appropriate measure for the type of data

There are only three types of measures. They are Nominal, Ordinal and Scale. The scale of measurement will dictate the statistical procedures that will be used in processing the data. According to Leedy (1997:40) when nominal measurement is used data is usually restricted or limited. For example when
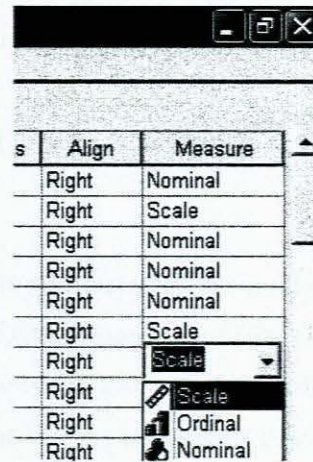
Figure 13: Measurement

we measure gender, we divide into two groups, namely, male or female. Ordinal measurement is where various pieces of data are brought together and ranked in either higher or lower values than each other. A scale is used to achieve inferential analysis. A scale has equal units of measurement, where a mean can be determined.

SUMMARY

In this chapter the researcher explained what the statistical programme SPSS 11.5 is all about and how it was implemented to capture the data received by means of the questionnaires. By pressing the Alt and Print screen buttons at the same time, snap shots of particular functions of SPSS 11.5 were taken and placed in Word, to help the reader better envisage how SPSS 11 was set up to code the results. In the next chapter the researcher will report and interpret the results of research that were obtained using the statistical programme SPSS 11.5.

RESULTS

INTRODUCTION

In this chapter the researcher will report and interpret the results of the survey that were obtained using the statistical programme SPSS 11.5 from assumed knowledge managers in KwaZulu-Natal. The researcher will analyse the results and give a general overview of the respondents of this study in order to understand how electronic communication is used in knowledge management in the organisations, and where this usage could take organisations.

DEMOGRAPHIC PROFILES OF THE RESPONDENTS

Part 1 and Part 2 was included to investigate the demographic profiles of the respondents. It included permission to use the questionnaire, age group (graph 4), managerial level (graph 15), gender (graph 16) and whether their jobs include knowledge management or not (graph 17). Although the survey questionnaire provided for the "age group" range from 20 to 70 it became apparent in the results that all the respondents fell within the age group of 30 to 60, cutting off the fringe between 20-30 and 60-70.

The age group 30-60 as represented in graph 4 is normally a range of economically active persons. People begin working in their early twenties and work their way up the management level so that in their early thirties they may have become managers on different levels.

AGE GROUP

The graph (Figure 14) indicated that 22 (44%) respondents were between the age range of 41-50. The 51-60 age group constituted 18 respondents (36%) as the next major age group. The researcher had hypothesised that this group would be in the middle to senior management positions as deputy directors, directors, managers and senior managers. In order to empirically test this hypothesis one of the questions was to investigate the level of management at which the respondents worked. Figure 14 below confirmed the hypothesis.
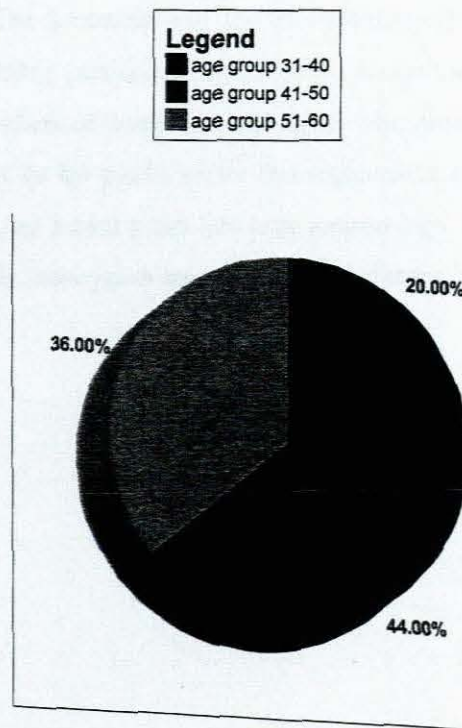
Figure 14: Age groups of respondents

The last group of 10 (20%) fell within the 31-40 age group. These are usually the lower level managers who are still undergoing training. A few might have been quicker to climb the corporate ladder as middle or even senior managers. In the graph below the researcher will look closely at the results regarding managerial levels of the respondents.

MANAGERIAL LEVEL

In the graph below (Figure 15) 22 (52%) respondents formed the largest group of middle managers. There were 18 (36%) senior management respondents while 6 (12) out of 50 respondents indicated they were junior managers. The scramble and the competitiveness towards a very narrow upward mobility, particularly in the public sector mean that there will always be large numbers of competent managers who remain on the lower level of management. In the public sector this argument is attested by the number of always disputed senior posts and acrimonious legal fights that always follow. Consequently those posts are never filled and some have to be cancelled.

Figure 15: Managerial levels of respondents

However, it does not follow that if an individual has spent many years in the organisation he is assured of a higher position, although in terms of the Labour Relations Act (1999) he is guaranteed an interview should he apply for the advertised position. However, the researcher assumes that the more years a person spends in the organisation the more knowledge he acquires. This could be a plausible reason that the employers use to offer him a higher position so that he could transfer his skills and knowledge to more workers.

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GENDER

There was an almost equal split between female and male respondents as females constituted 52% (26) and male constituted 48% (24%) of respondents as represented in Figure 16 below.
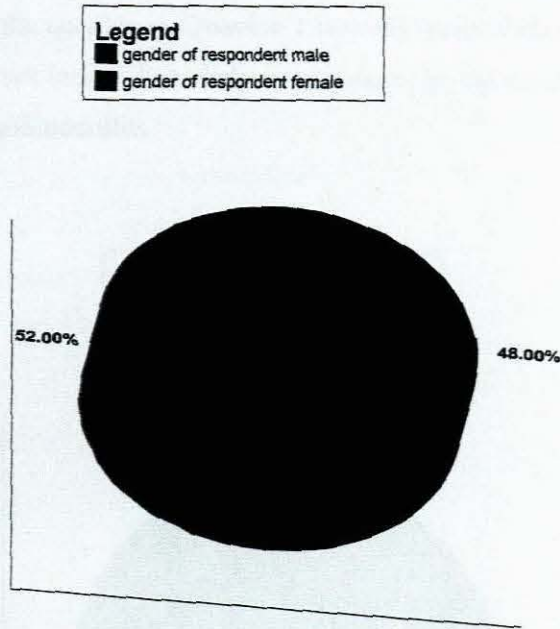
Figure 16: Genders of respondents

The slight increase of female respondents (4%) above male respondents as knowledge managers can be explained in the light of Affirmative Action and Employment Equity policies that favour the preferential employment of females, blacks, and disabled people. The South African parliament has increased the percentage of female members of parliament to 40%. The next

graph (Figure 17) shows the result of whether the jobs of the respondents include knowledge management.

JOBS INCLUDE KNOWLEDGE MANAGEMENT

It was crucially important that this question be included as failure to do so would have invited and resulted in unusable responses from wrong people. Putting the question as Question 1 basically meant if the chosen respondent's job did not include knowledge management he did not have to complete the survey questionnaire.

Legend
Does your job include km? yes
Does your job include km? no

2.00%

98.00%
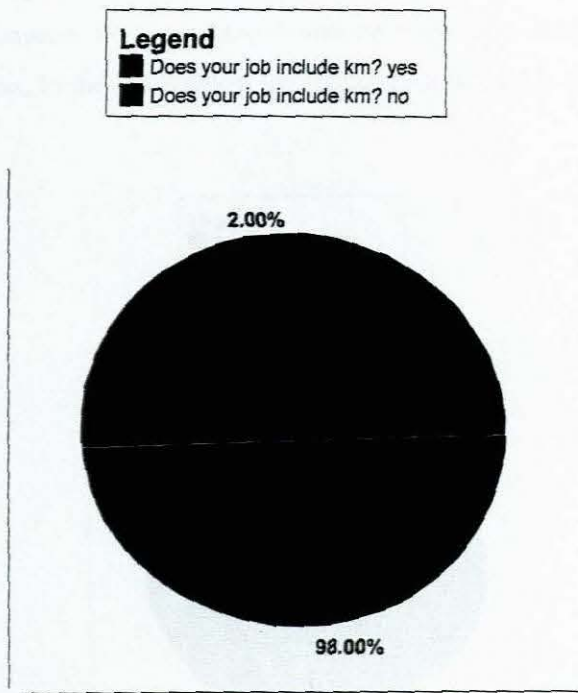
Figure 17: Jobs includes KM

The researcher discovered through many confused calls from the respondents that by the definition given at the beginning of the questionnaire knowledge managers had no clear understanding of the subject. In the graph below (Figure 18) the researcher will give the results of the Sector where the respondents are.

EMPLOYMENT SECTOR

The researcher distributed the survey questionnaire across all the three sectors identified. These were the public, private and non-governmental sectors. The aim was to cover the whole spectrum of managers and get a fair view of how knowledge management is practised in different sectors. Giving the questionnaire to one sector would have given a distorted picture of the situation. In the graph below the results are indicated in this picture.
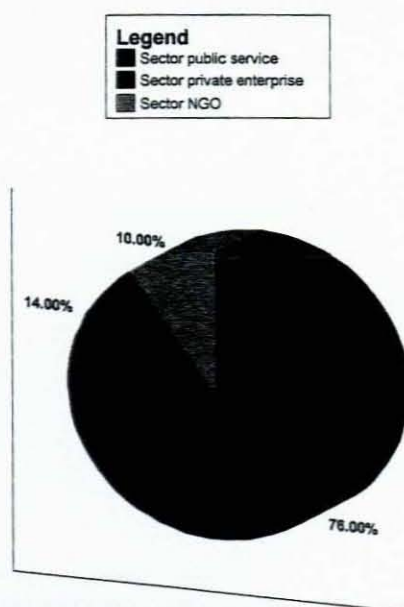
Figure 18: Employment sector

An observation made was that a significant number of respondents, 38 (76%) work in the public sector, while 7 (14%) work in the private sector. The least represented group at 5 out of 50 (10%) was the NGO sector. The cause for this is that the researcher found more willingness from the public sector respondents to answer the survey questionnaire than the private or NGO sector. This was unfortunate as the experience provided by the [1]Knowledge Managers Practitioners Group monthly meeting that the researcher attends indicated that knowledge management is a field that has been embraced fully by the management in the private sector. The public sector is lagging far behind both in the information management system and the new corporate business ideas. In the graph below (Figure 19) we will look at the results of how managers regard themselves.

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[1] The Knowledge Managers Group is a voluntary group of data managers, IT specialists and managers, HR managers, information managers and anyone who is interested in knowledge management. They meet every month in and around Durban and present knowledge management projects and discuss solutions to KM issues.

TYPE OF MANAGER

Legend
- ■ What type of manager do you regard yourself as? knowledge manager
- ■ What type of manager do you regard yourself as? director/manager
- ▨ What type of manager do you regard yourself as? dual knowledge manager/director
- ■ What type of manager do you regard yourself as? no response
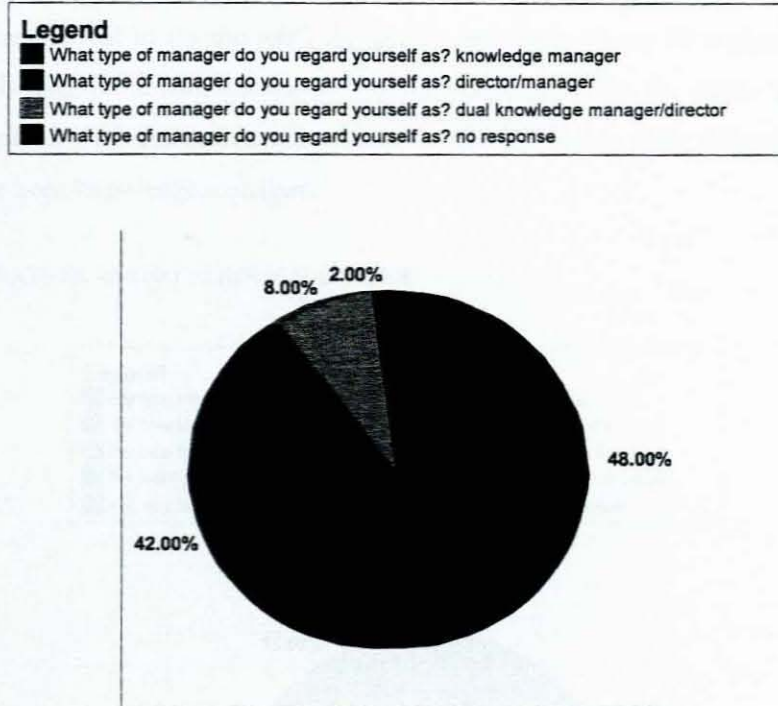
Figure 19: Type of manager

It was noted that 24 (48%) of the manager respondents regard themselves as knowledge managers. Out of 50 respondents 21 (42%) regarded themselves as either managers or directors. Only 4 (8%) of 50 regard themselves as dual knowledge managers and directors simultaneously. If one puts this group (the dual managers) and knowledge managers (48%) together the total is 56 %. This indicates that half the numbers of organisations have knowledge management key responsibilities for their managers. When asked how the knowledge managers learned about knowledge management 19 (38) indicated they trained themselves and only 14 (28%) indicated they were given in

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service training. This may also mean that as many knowledge managers were not trained, knowledge management responsibilities were just added because "someone had to do the job". As can be seen from Figure 19 a negligible small fraction of respondents 1 2%) did not respond. In the graph below (Figure 20) the researcher will look at the results of how long respondents have been knowledge managers.

DURATION AS KNOWLEDGE MANAGER
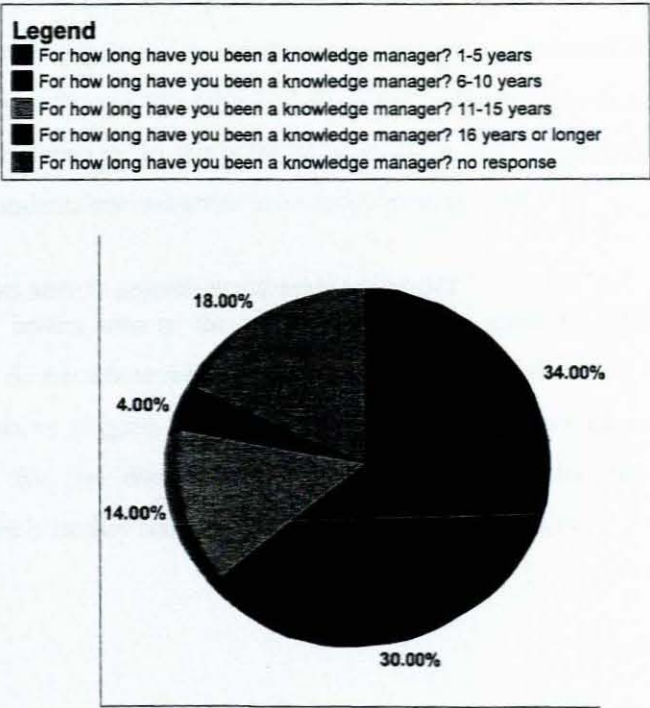
Figure 20: Duration as knowledge manager

There were 17 (34%) respondents who have been knowledge managers from 1-5 years. 15 of 50 (30%) of respondents have been knowledge managers for 6-10 years. 7 (14%) have been knowledge managers for 11-15 years and 2 (4%) have been managers for 16 years or longer. Based on the past graph results it may be concluded that many 'knowledge managers' have recently assumed the term 'knowledge manage', however, all along they have worked on this level their designations were, 'manager'. It was noticeable that nine (18%) respondents did not respond to this question. The researcher associated the failure to respond with the lack of understanding of the term 'knowledge management' as many prospective respondents called to enquire about it even though the term had been defined in the introduction of the survey questionnaire. In the graph (Figure 21) we will look at the results of how respondents learned about knowledge management.

LEARNING ABOUT KNOWLEDGE MANAGEMENT

From the results seen in the above graphs it has come to light that many managers do not know much about knowledge management. As indicated in a graph above (Figure 20) 64% of the respondents have been knowledge managers for less than 10 years. It was important that the researcher investigates how they learned about knowledge management.

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Legend
 How did you learn about KM? self-trained
 How did you learn about KM? in-service training
 How did you learn about KM? diploma course/s
 How did you learn about KM? degree course/s
 How did you learn about KM? no response
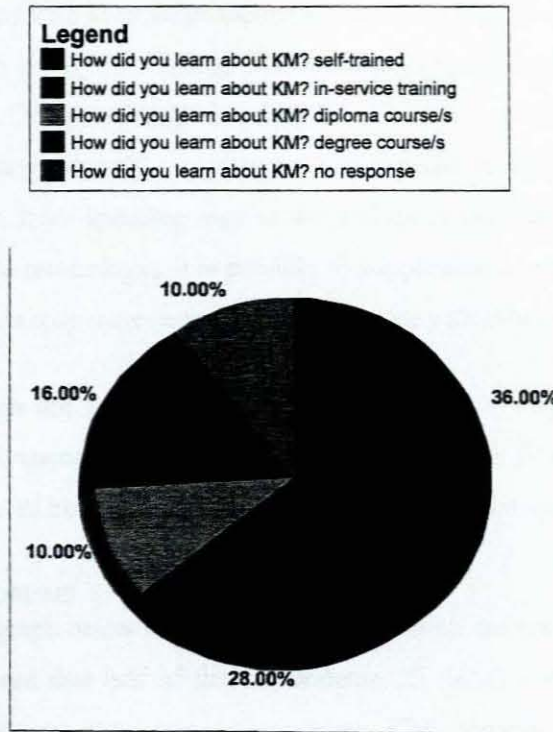
Figure 21: Learning about KM

In the graph above (Figure 24) 18 out of 50 (36%) trained themselves as knowledge managers. 14 of 50 (28%) learned knowledge management through in service training. 8 of 50 (16%) learned knowledge management through diploma while 5 (10%) learned knowledge management through degree. 5 (10%) the respondents did not respond.

It was noticeable that although there are not many trained knowledge managers with 8 (16%) who learned knowledge management through their

degrees and 5 (10%) through their diploma, there is a gradual increase of managers with knowledge particularly when adding those 14 (28%) who got it through in-service training. The number increases noticeably when we add the 18 (36%) self-trained managers. While in-service training is good for continuing education it cannot be compared to the grounding that one receives from spending time at the college or university. However with the available technologies it is possible to supplement interactive courses so that managers may share their problems, practice with other knowledge managers.

Although the 'no response' constituted five (10%) respondents they should be read against the 18% respondents in the graph (Figure 20) who did not respond to how long they have been knowledge managers.

KM FORUMS

In the graph below the results of which Forums are accessed are discussed. It was noted that half of the respondents, 25 (50%) mentioned in the survey questionnaire that they reference no KM Forums. 13 of 50 (26%) of respondents indicated that they reference only one Forum amongst the indicated ones. 6 (12%) of respondents reference two or three Forums. 1, 2% of respondents indicated he or she references four of five Forums.

12.00% 2.00%

26.00%

60.00%
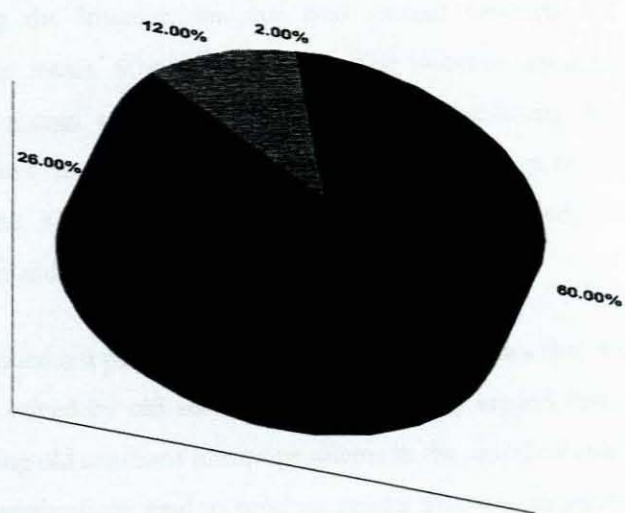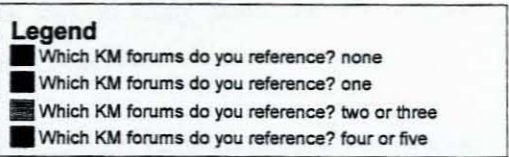
Figure 22: KM Forums

The above results indicate that knowledge managers generally do not read or belong to a professional knowledge management think-tank, or forum. They therefore do not have a place were they discuss or get updated in best practices. There are countless journals both hard copies and online that managers can access at their own pace and time. Journals of knowledge management and reviews on management studies such as:

- *Service Delivery Review- A learning journal for Public Managers* is available free and monthly from the Department of Public Service and Administration.

- *Management Today-* is available at a price from UNISA in Pretoria.

On visiting the Internet one can find various websites for knowledge management teams, schools or forums. The websites www.brink.com and www.syllabus.com are some of them. Without updating themselves the managers lose out tremendously on the latest knowledge management best practice and KM projects and the sharing of knowledge management information and knowledge.

What is needed is a paradigm shift that expresses the idea that new challenges cannot be solved by old solutions. Trivedi (2002) argued that the problem with applying old solutions to new problems in the world of online learning is that these applications tend to produce results that are "as good as" what we have done before, what is often referred to as the "no significant difference" phenomenon. In other words new wine sits uncomfortably in the old wine skins.

In KwaZulu-Natal there is a monthly meeting of Knowledge Managers Practitioners Group from different sectors of employment. It is a free membership organisation and access to it is available a "vanessam@ckb.co.za. The researcher has benefited tremendously for attending their monthly meetings. In the meetings best practice lessons and projects are discussed and members share ideas and network as well.

The researcher was once invited to attend a Durban Business Women's Association. When one member indicated in the meeting that she had a problem that needed an attorney, someone offered to help, phoned for an advice and the problem was solved before the meeting was over. Networking is one of many benefits of belonging to a professional body and reading more about your field of work.

In the following graph (Figure 23) we will look at the results of where the respondents received their knowledge management qualifications.

PLACE WHERE QUALIFICATION WAS OBTAINED

This question confirmed the results on the above graph (Figure 23). 25 (50%) indicated that again they have no knowledge management qualifications, as they are self-taught. This would explain why in the above graph (Figure 22) 50% indicated they do not reference any forums. They probably do not know which forums to access. 14 (28%) of the respondents received their qualifications from South Africa. There were only 3 (6%) of the respondents who received their qualifications from abroad. 7 (14%) of the respondents did not respond indicating as above that they may be doing the knowledge management job without any qualification or understanding of it.

14.00%

6.00%

50.00%

28.00%

2.00%
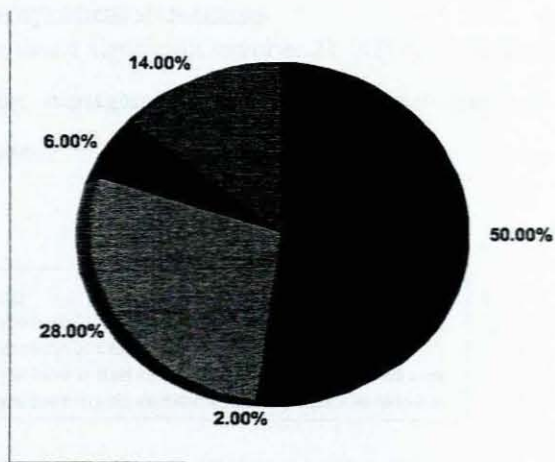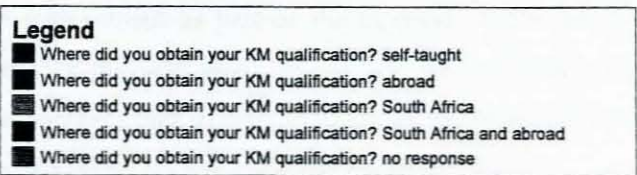
Figure 23: Place where qualification was received

Most knowledge managers, 25 (50%) are self-taught knowledge managers. 14 of 50 (28%) received their KM qualifications from South Africa. 3 (6%) received their KM qualifications abroad. A significant number 7, (14%) of Knowledge managers did not respond while 1 (2%) indicated that he/she received his/her KM qualifications both from South Africa and abroad. It is difficult to compare the number of qualifications from South Africa and abroad, as there are generally not many managers who have had an opportunity to study abroad. The researcher's experience in 2004 was that in Netherlands knowledge management is offered as a course in Business

studies. South Africa is not far behind as universities have begun offering knowledge management as part of the business studies and organisational development. In the next graph (Figure 24) we will look at the results of whether respondents had to train before they are given the title or work as knowledge managers.

TRAINING AS KNOWLEDGE MANAGERS

This graph shows that a significant number 21 (42%) of respondents did not train as knowledge managers. 17 (34%) agreed that they had to train as knowledge managers.

Legend
- Did you have to train as a knowledge manager? yes
- Did you have to train as a knowledge manager? no
- Did you have to train as a knowledge manager? I'm not sure
- Did you have to train as a knowledge manager? no response

6.00%

18.00%

34.00%

42.00%
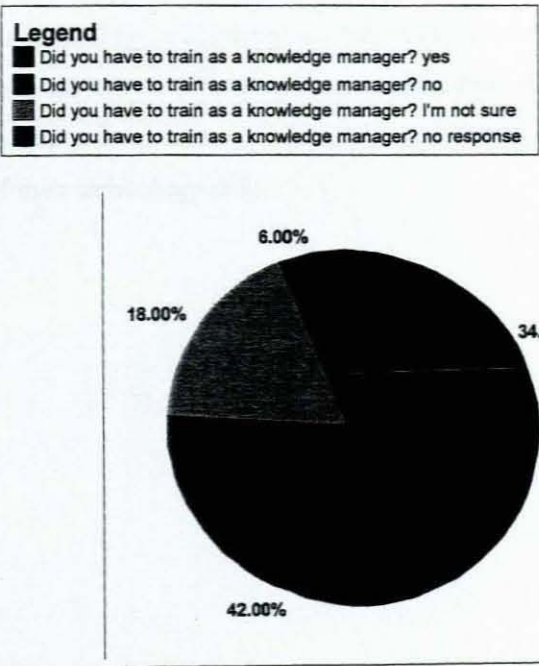
Figure 24: Training as Knowledge manager

This confirms the graphs discussed above that many knowledge managers only had a change of title or given knowledge management responsibilities without training. It is reasonable to mention that the subject per se is relatively new in South Africa. A few universities have introduced knowledge management as a course. The problem is its wide and cross disciplinary nature. It falls under Business Studies, for example, in the University of KwaZulu-Natal (Durban) while in some universities it is located under Communication (University of Zululand, Umlazi branch) while others think it should fall under the Human Resources Department. 9 (18%) respondents indicated that they are not sure whether they received training. 3 (6%) of respondents did not respond.

In the next graph (Figure 25) the result will show us how much of technology knowledge is associated with knowledge management by looking at whether or not the respondents were given the responsibility as knowledge managers because of their technology skills.

TECHNOLOGY SKILLS NEEDED TO QUALIFY
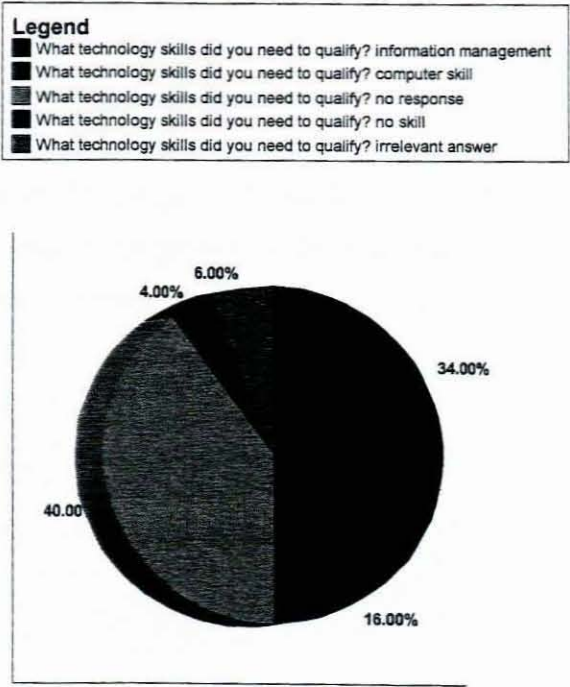
Figure 25: Technological skills

Most respondents 20 (40%) did not respond, probably because they were not trained nor received a qualification on knowledge management. 17 (34%) of the respondents received information management as a technology skill. These were a combination of computer workers as well as information workers, for example, librarians. The researcher believes that the term, "technology skills" was too broad a term and should have been defined more narrowly. 8 (16%) respondents indicated they received computer technology skills. 3 (6%) of the respondents gave irrelevant answers that indicated that

the term 'technology skills' meant different things to different people. 2 (4%) of the respondents indicated that they received no skill for technology. It is given that knowledge managers cannot have all knowledge necessary to implement all management programmes, however, without some technological knowledge the manager would rely entirely on the technology department that might change the knowledge management project to be a complete technology based project. In the following graph (Figure 26) we analyse the results of career path.

Legend
■ What career path did you take to KM? data manager
■ What career path did you take to KM? human resource manager
▓ What career path did you take to KM? education official
■ What career path did you take to KM? information science
■ What career path did you take to KM? administrator
▒ What career path did you take to KM? other
■ What career path did you take to KM? spoilt response
■ What career path did you take to KM? no response

Figure 26: Career path

In this graph 17 (30%) of the respondents took human resource as a career path to knowledge management. 6 (12%) are in different levels of education. There was a split of data manager and information science specialist, 5 (10%)

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respectively and 4 (8%) did not respond. 3 (6%) of respondents took the career path as administrators. 1 respondent (2%) indicated a different response than the ones mentioned. 11 (22%) were spoilt responses. The split amongst data, information, education and HR managers is an indication that knowledge management is a cross-disciplinary subject applicable to a number of careers. The assumption is that human resource departments in these organisations were quick to adapt to include knowledge management and consequently trained their managers on it. In the next graph (Figure 27) we will look at the structure of the organisation.

STRUCTURE OF THE ORGANISATION

The structure of the organisation determines the flow of information. If the structure has multi-layers, communication becomes long, gets diluted and distorted on the way up or down. If the structure is more flat there is a shorter distance the information travels and there is more sharing of information. Hence this question was asked as a way of investigating whether the structure does not impede knowledge sharing.

38.00%

54.00%

8.00%
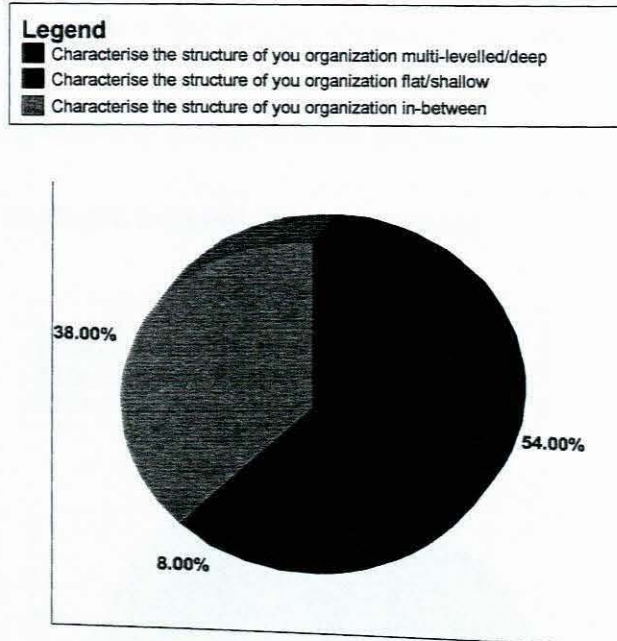
Figure 27: Structure of organisation

In this graph 27 (54%) of the respondents characterised the structure of their organisation as multi-level. This as indicated above may be a cause for a difficult sharing of information. With such a structure information is usually shared through circulars and memos and there is hardly a personal touch. There is a lot of natural filtering, distortion and even censoring of the message as each manager decides what needs to be passed on to the next level. 19 (38%) of the respondents characterised the structure of their organisation as being in-between the multi-level and a flat structure while 4 (8%) characterised their structure as flat thus allowing a free flow of information.

The next graph gives the result of whether there are personnel dedicated to knowledge management. This is important because this person would be able to concentrate on the knowledge management project as well as implementing knowledge management best practice.

Personnel dedicated to knowledge management
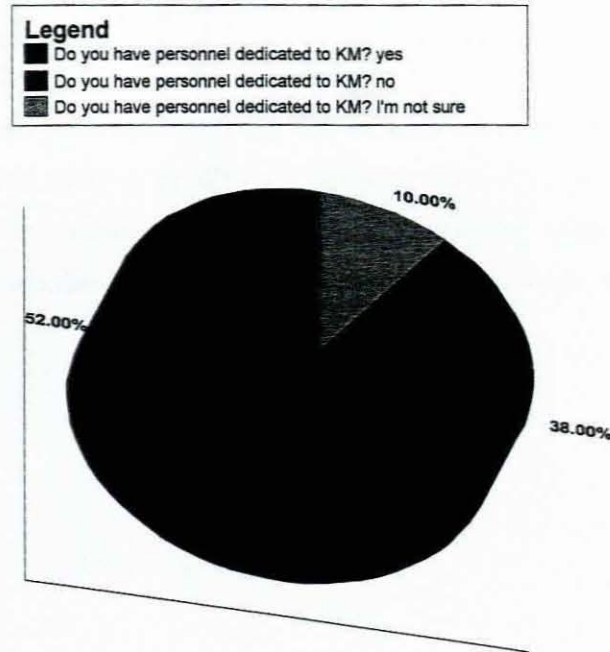
Figure 28: Personnel dedicated to KM

It was interesting to note that a significant number of respondents, 26 (52%) indicated they have personnel dedicated to KM in their organisations. The researcher believes that in comparison to the public sector the private sector has taken up knowledge management and employ knowledge management

personnel. Career adverts for knowledge managers in the national media such as Sunday Times are mainly from the private sector. However, 15 (30 %) of the respondents indicated they do not have personnel dedicated to KM while five out of 50 (10%) respondents indicated that they are not sure whether this is the case or not in their organisations. In the education department, the senior managers have been trained in knowledge management and it is also one of their performance measures used to assess them to renew or end their performance contract.

The next graph deals with the results of how information is stored. This was an open-ended question to allow for different experiences of respondents. Because of the variation of responses the researcher categorised them according to whether they were (i) very accurate, (ii) accurate (iii) inaccurate.

Processing of stored information
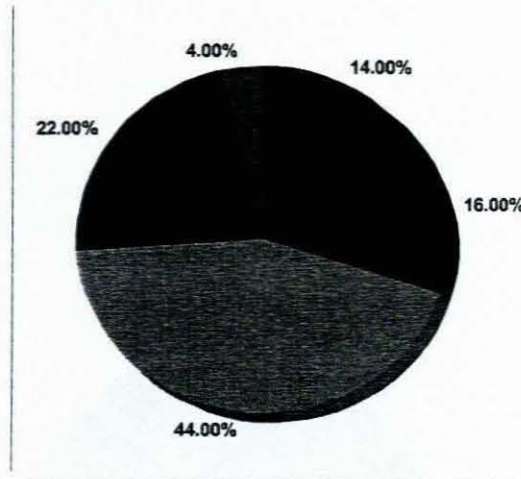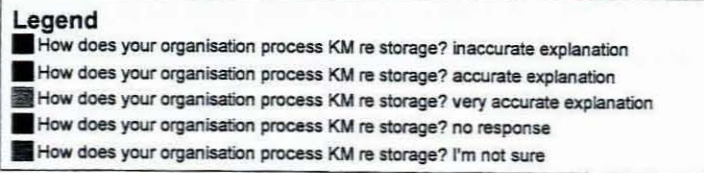
Figure 29: Organisation storage processing

11 (22%) respondents gave a very accurate explanation regarding how their organisations process KM to be stored. These responses included answers such as, "we use special software to store information" and, "building individual and institutional memory". 8 (16%) respondents gave accurate responses. 7 of 50 (14%) respondents gave inaccurate explanations such as "the storage is there but inadequate" while 2 (14%) indicated that they were not sure. 11 (22%) did not respond. The researcher assumes that those who did not respond did not know how their organisation process knowledge for storage as usually one person does this job.

Organisations spend millions of rands buying expensive equipment for storage. What is lacking is converting or repackaging that information for use. The unfortunate part is when organisations outsource a trainer or consultant for a lot of money that in turn use the information and resources that is in the organisation to train managers.

Processing of shared information

Legend
How does your organisation process KM re sharing? no explanation
How does your organisation process KM re sharing? inaccurate explanation
How does your organisation process KM re sharing? accurate
How does your organisation process KM re sharing? very accurate
How does your organisation process KM re sharing? I'm not sure
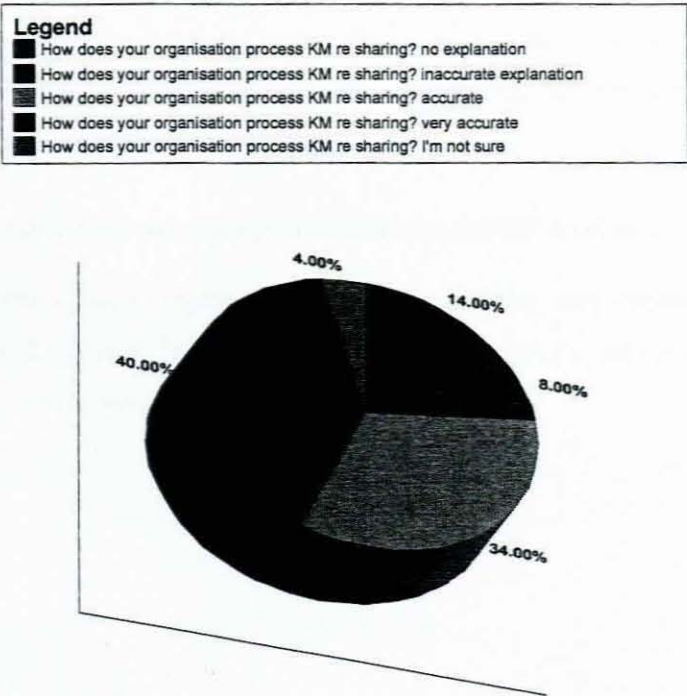
Figure 30: Organisation sharing process

In this graph 20 (40%) respondents gave a very accurate explanation regarding how their organisation process KM to be shared. An example is, "publication of development practice for external dissemination". Many

mentioned the use of circulars, internal in-house magazines, meetings and workshops. It was clear that not many respondents mentioned a planned use of computers as way of sharing knowledge management. 17 (34%) gave accurate explanations. 7 (14%) respondents gave no explanation. 4 (8%) of respondents gave no response while 2 (4%) indicated that they are not sure. The researcher believes that organisations do not do justice when it comes to sharing of formal and stored information. Organisations are good at storing and archiving information and are very guarded about it but do not exploit all the necessary technologies and non-technological forms to share it. In the next graph (Figure 31) we will analyse the results about the special systems to acquire, store and share knowledge management.

SPECIAL SYSTEM TO ACQUIRE, STORE AND SHARE KNOWLEDGE

This is where many organisations falter by acquiring very expensive and complicated systems from the system vendors without influencing the features and functions of such systems.
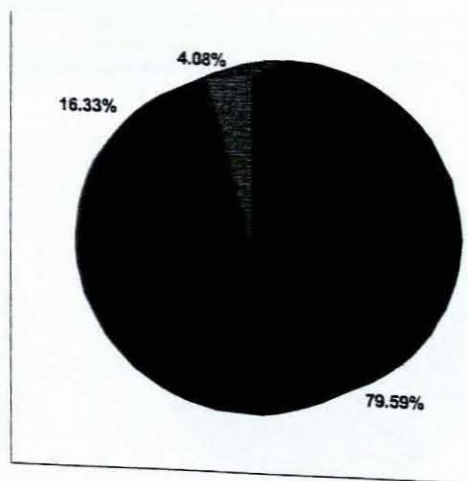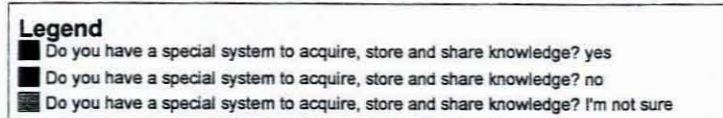
Figure 31: Special system of acquiring knowledge

In this graph 40 out of 50 (80 %) respondents indicated that they have a special system to acquire, store and share knowledge. 8 (16%) respondents indicated that they have no special system to acquire, store and share knowledge while 2 (4%) indicated that they are not sure. The question would be; how effective is the system to share knowledge? What is the use of special systems to acquire knowledge if it is not to be shared? If workers on various levels of the organisation depend on grapevine and other informal information and knowledge exchange then the organisation's special system needs reviewing. In the next graph (Figure 32) we will scrutinise how organisations filter irrelevant knowledge.

Filtering of irrelevant knowledge
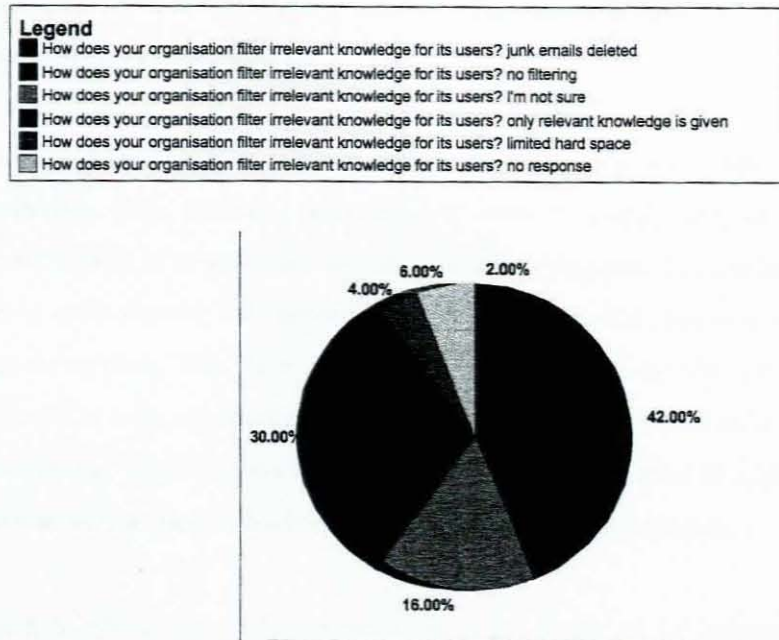
Figure 32: Filtering of irrelevant knowledge

In this graph, 21 of 50 (42%) of respondents indicated that their organisations do not filter irrelevant knowledge. This takes up a lot space in the manager's computers and waste workers' time going through irrelevant information. However, 15 (30%) of respondents indicated only relevant knowledge is given. Many organisations use commercialised systems or customise their systems to filter irrelevant information. Still many organisations unethically check information going through from or to their workers so that workers do not waste time using computers for their family businesses. Worse still is the use of organisation's e-mail by workers to receive or send illicit material.

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In government, in particular the Education Department, the State Information Technology Agency (SITA: 2005) filters all graphics before releasing them to the recipient.

8 (16%) of respondents indicated that they are not sure how their organisations filter irrelevant knowledge. 3 (6%) of respondents did not respond. 2 (4%) of respondents indicated that their organisations use limited space in order to save only limited relevant knowledge. This happens when computer workers only save to the main database and cannot use their computers to save information that can be later removed and saved in their personal discs. However, even this cannot stop computer crime as a person can e-mail information to his home computer as soon as it is written.

In the next graph (Figure 33) we will look at the results of the information communication technology forms used to share knowledge. Numerous forms had been mentioned in the survey questionnaire such as (i) e-mail, (ii) fax, (iii) intranet, (iv) video mail, (v) video conferencing, voicemail and (vi) telephone or cell phone.

Respondents could make more than one choice. The responses were categorised according to the number of responses in order to analyse them.

Forms of ICT to share informal knowledge

Figure 33: Forms of ICT to share knowledge

In this graph 22 (48%) of respondents indicated that they use four to five forms of information communication technology to share knowledge in their organisations. 15 (30%) of respondents indicated they use six or more forms of ICT to share knowledge in their organisations. 10 (20%) indicated they use two or three forms of ICT. Whereas in graph 25 40% knowledge managers had indicated that they did not have any technology skills to get employed as knowledge managers, this was a good indication that either through in-service training or workshops, 48% of them say they now use different forms of ICT. This is also possible through e-learning where the organisation can arrange a video-linked workshop. Managers would not leave their workplace and they would learn how, for instance, to use the web cam.

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Forms of ICT to share informal knowledge

Figure 33: Forms of ICT to share knowledge

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In the next graph we will look at results of the use of e-mails.

Use of electronic mail

The e-mail is one of the hugely used technology services. Thousands, if not millions of e-mail messages are shared between people around the world. Already many organisations are worried about the time spent answering and reading e-mails. Junk electronic mails that sometimes carry viral infections are a great worry to many users. There were various responses from which the respondents could choose as many as they wanted. These were categorised according to the number of choice.

Legend
What is email used for in your organization? none
What is email used for in your organization? one
What is email used for in your organization? two or three
What is email used for in your organization? four or five
What is email used for in your organization? six or more
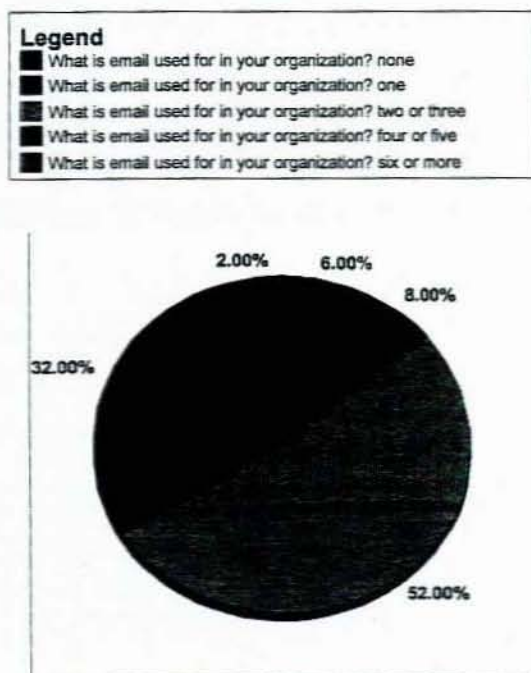
Figure 34: Use of electronic mail

Six responses were given as prompts, (i) informal communication; (ii) unofficial personal communication; (iii) office memoirs and notices; (iv) organisational policy communications; (v) meetings; and (vi) union notices and information. According to Figure 34 the results are that a significant number of respondents (26), 52%, use the e-mail for two or three things. The researcher assumes that the bulk of these e-mail users comes from the private sector as in many government offices having a computer is still a privilege. Sixteen respondents (32%) chose four to five reasons. 4 respondents (8%) only use it for one reason. 3 respondents (6%) do not use it. This is probably because they do not know how to or because they have secretaries who e-mail for them or because they do not know how to. The researcher has experienced helping work colleagues who have computers but do not know how to use the e-mail and 1 (2%) respondent uses it for only one reason.

The next graph (Figure 35) analyses the results of the e-mail retention policy

E-mail retention policy

Legend
■ Does your organisation have an email retention policy? yes
■ Does your organisation have an email retention policy? no
▓ Does your organisation have an email retention policy? I'm not sure

24.00%

38.00%

38.00%
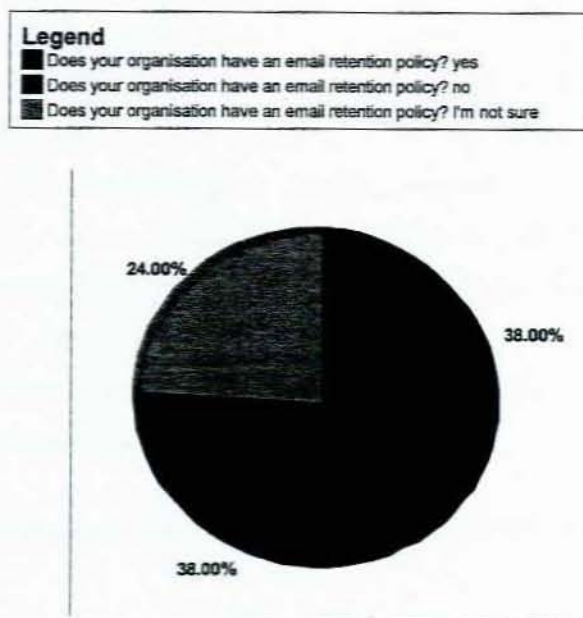
Figure 35: E-mail retention policy

The question in Figure 35 asked whether organisations have an e-mail policy. It was apparent form the responses that there is an equal split of 16 (32) respondents who said 'yes' and 'no'. 12 (24%) indicated that they are not sure. From this question and given responses the researcher assumes that the potential of e-mail as a powerful as well as a destructive force (e-mailing organisation as well as exchanging pornographic mails) has not been taken seriously by at least more than a quarter organisations and that organisational e-mail usage is not communicated well to different levels of managers.

What managers need to know is that e-mail content contains evidence of business decisions, actions and transactions and e-mail messages become documents and records with the same legal requirements. This calls for a clear e-mail retention policy. E-mail records must be subject to the corporate life cycle retention rules. If there is a court case (for example defamation) based on the e-mail messages against another organisation, e-mail messages containing the source of litigation can be used. By capturing e-mail and organisation can file it into corporate knowledge maps. E-mail content is accessible to authorised users thus allowing for better and faster decision making, efficient implementation and execution of business processes, and improved knowledge worker satisfaction.

The next graph reports on whether the organisations have single or multiple databases.

Single integrated or multiple unintegrated database
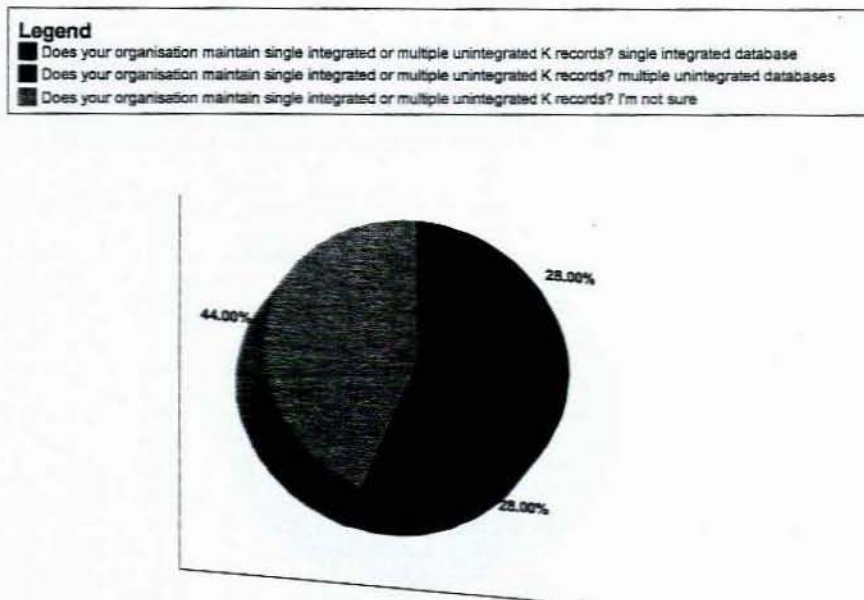
Figure 36: Single integrated or multiple unintegrated database

The graph, Figure 36, indicates clearly that in a significant number of organisations, 22 (44%) of respondents are not sure whether they have a single integrated or multiple unintegrated databases. The message is that knowledge managers have systems they do not know and therefore do not use these systems to their advantage. A significant split of 16 (38%) indicated their systems use integrated as well as unintegrated databases. A single integrated database is easier to handle, as the call-up time for information is quick.

The next graph deals with management support. Without such support there is no change of practice.

Senior management support of KM
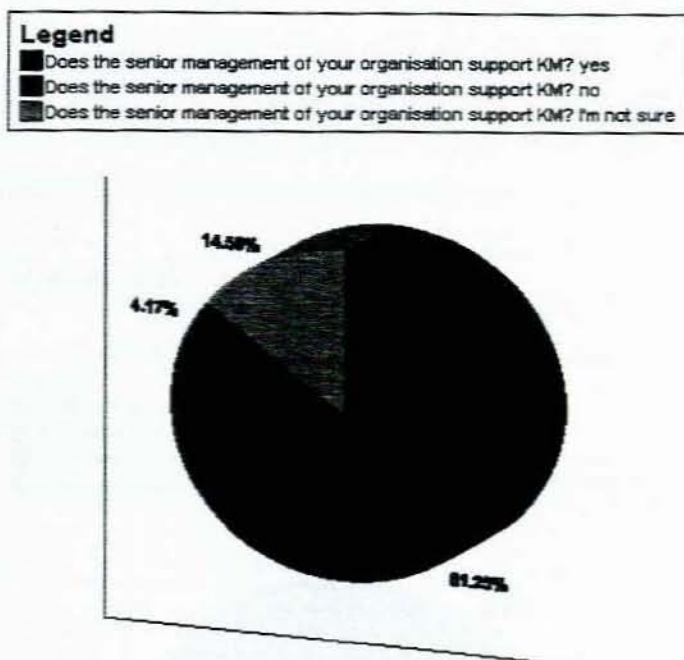
Figure 37: Senior management support of KM

In this graph (Figure 37) the researcher asked a question to the effect whether senior management supports knowledge management. It would be near impossible to implement knowledge management without the support of those in power in the organisation. Senior management decides the strategic direction of an organisation. It was interesting to note that the overwhelming majority of respondents, 40 (81%) indicated a 'yes' while 7 (14%) were not sure. Only 2 (4.17%) indicated the negative. Senior managers need to effect organizational and internal technical climate so that knowledge management is not implemented in an 'ad hoc, trial and error' manner.

The next graph (Figure 38) deals with types of strategic knowledge which organisations keep track of. A choice of possible responses was given as (i) customer records, (ii) supplier records and (iii) personnel records. The responses were categorised according to the number chosen. However, for the respondents who felt limited by the choices there was an 'other' to add to multiple choices as it applies to his or her organisation.

Types of strategic KM

Legend
What types of strategic KM does your organisation keep track of? none
What types of strategic KM does your organisation keep track of? one
What types of strategic KM does your organisation keep track of? two or three
What types of strategic KM does your organisation keep track of? others (explain)

6.00%   4.00%

14.00%

76.00%
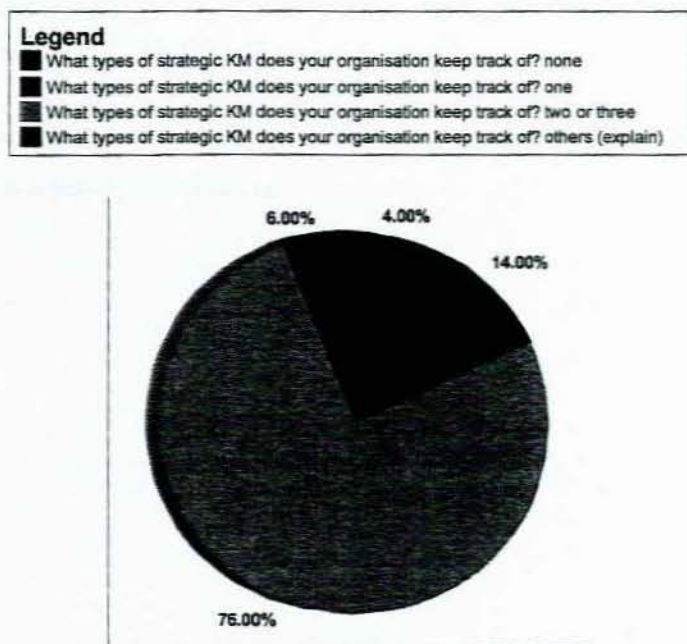
Figure 38: Types of strategic KM

In this graph (Figure 38) a question was asked as to what types of strategic knowledge management the organisations keep track of. The possible

responses were (i) customer records; (ii) supplier records; (iii) personnel matters. An overwhelming number of respondents, 38 (76%) chose two to three types. This indicated that many organisations keep information of their stakeholders in their electronic systems. However, 7 (14%) keep one type of stakeholders while 3 (6%) explained further to say that their organisations also keep other information. It was also significant that 2 (4%) of the respondents indicated there is no information of their stakeholders kept in their systems. This researcher concluded that either this group use computers only for word processing, have no access to the computer or have never checked what their electronic systems keep track of.

The next graph (Figure 39) analyses access to knowledge management records by levels of management.

Access to KM records by levels of management
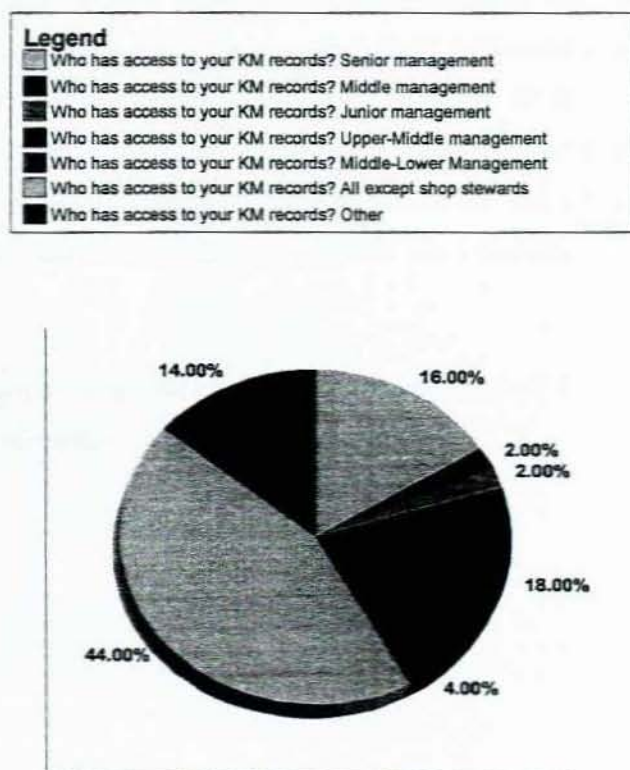
Figure 39: Access to KM records by levels of management

This question was asked in order to find out who has access to knowledge management records in the organisations. This would inform the researcher,

as limitation of access would mean limitation of information and practice. As indicated in Figure 39 it was noteworthy that 22 (49%) respondents say the access is to all except shop stewards. It was not surprising that shop stewards were left out, as they are not part of the management structure. 9 (18%) respondents indicated both middle and senior management to have access to knowledge management. It was interesting that respondents who indicated that senior managers have access to knowledge management were 8 (16%) while 7 (14%) included other people not mentioned in the given responses. If management gives access to formal organisational knowledge, informal exchange guessing and predicting what and where the organisations stand on certain issues like 'restructuring, mergers and salary increase' will become less powerful.

The next graph (Figure 40) provides information on the protection of strategic information.

Protection of strategic information against employee abuse
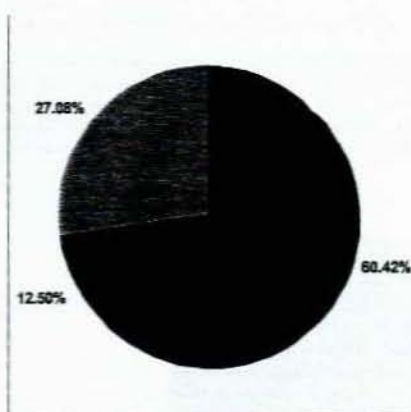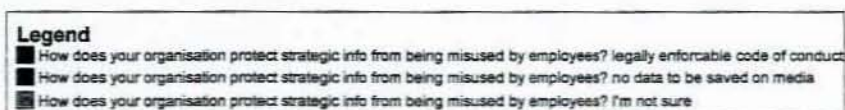
Figure 40: Protection of strategic information against employee abuse

This question was to test the safety of knowledge electronic bases as many companies are losing tons of knowledge, especially in the advent of the memory discs, which can wipe away an organisation's information. This has resulted in companies being very careful about who has access to their database. As indicated in the graph, 30 (60.42%) of the respondents indicated that they have a legally enforceable code of conduct. However, a significant number of 14 (27%) claims they are not sure while 6 (12, 50%) indicated that in their organisations no-one is allowed to save organisation information in personal media.

The next graph (Figure 41) looks at the protection of records against viral infection

Protection of records against viral infection

Legend
■ How are your organisation's KM records protected against viral infections? constant updates of antiviral saoftware
■ How are your organisation's KM records protected against viral infections? firewall
▨ How are your organisation's KM records protected against viral infections? I'm not sure
■ How are your organisation's KM records protected against viral infections? no response
■ How are your organisation's KM records protected against viral infections? constant and firewall

4.00%
14.00%
6.00%
74.00%

Figure 41: Protection of records against viral infection

This question was asked as a result of the huge investments injected by organisations in technological software and against constant computer viral attacks, for instance the recent Sobert virus that left many organisations across the world with total wipeout of their information. Respondents were given a choice of (i) constant updates of antiviral software (ii) firewall (iii) a combination of firewall and constant update (iv) I am not sure and (v) no response. In this graph (Figure 41) a significant number of responses of 36 (72%) indicated their organisations have constant updates of antiviral

software. This is understandable as this is standard practice for many computers. Also the anti-virus software is activated as soon as the computer is switched on and only needs the user to confirm the update. 7 (14%) indicated they were not sure, most probably because these respondents either do not use the computer or there is a technician who does the update. 3 (6%) indicated they have a firewall system while 2 (4%) said they use both the firewall and constant updates. The next graph (Figure 42) summarises the results of the non-technological forms of creation and sharing.

Non-technological forms of KM creation and sharing
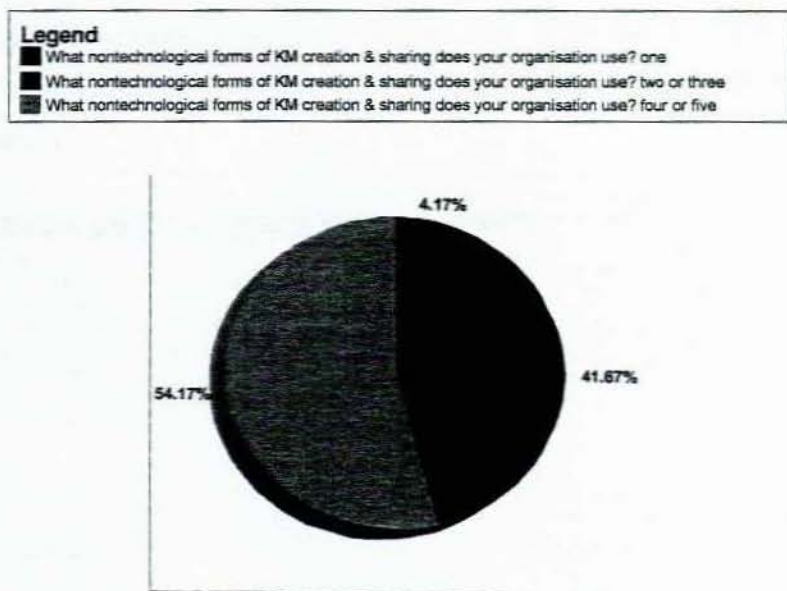
Figure 42: Non-technological forms of KM creation and sharing

In Figure 42 above the question was asked in order to emphasise the point that knowledge management is not technology. Information communication technology enables a quicker and an easier knowledge processing system. Respondents were allowed to choose more than one response. In this graph possible responses given were (i) newsletter, (ii) notice board (iii) meeting (iv)

circular (v) inter office memo and (vi) other. It was interesting to note that 27 (54%) of respondents indicated that their organisations use four or five non-technological forms of creation and sharing. 20 (41,67) indicated their organisations use two or three forms mentioned. Only 2 (4,17%) indicated they only use one form. The next graph (Figure 43) analyses the software used to process knowledge management. This is an indication that many organisations use all available forms to suit differing levels of people. It also indicates that for different messages one can employ a more suitable media. Organisations have adapted to the illiteracy levels of some of their workers by repackaging information either as visuals or written in the language of their workers.

Software used to process KM in organisation
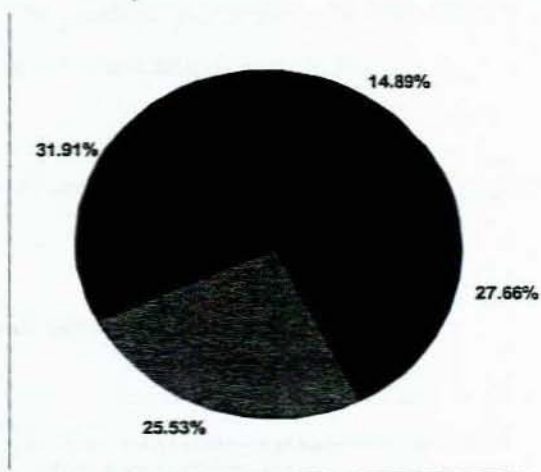
Figure 43: Software used to process KM in organisation

This graph indicates an interesting phenomenon that the researcher had anticipated, and that is, that there is clear difference between knowledge managers whose career path to knowledge management was through non-technological route and those whose path was through pure information communication technology. Those with the background of information communication technology strongly believe, sometimes in exclusion to all else, in the power of information technology service while those without this background are not very knowledgeable about the more involved language of computers. This is evident in this graph (Figure 43) where almost 16 (31,91%) respondents indicated they do not know what software is used to process

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knowledge management in their organisations. There was an almost equal spread of those who said they use commercial products 13 (25,53) and almost 14 (27,66%) of those who indicated they use customised software. Commercial software may not be suitable for specific organisational needs, hence the idea to purchase customised software. Close to 8 respondents (14,89%) indicated they use an in-house product.

The next graph (Figure 44) looks at the communities of practice or learning networks.

Communities of practice as part of KM policy

Legend
■ Does your organisation have communities of practice as part of its KM policy? yes
■ Does your organisation have communities of practice as part of its KM policy? no
▨ Does your organisation have communities of practice as part of its KM policy? I'm not sure
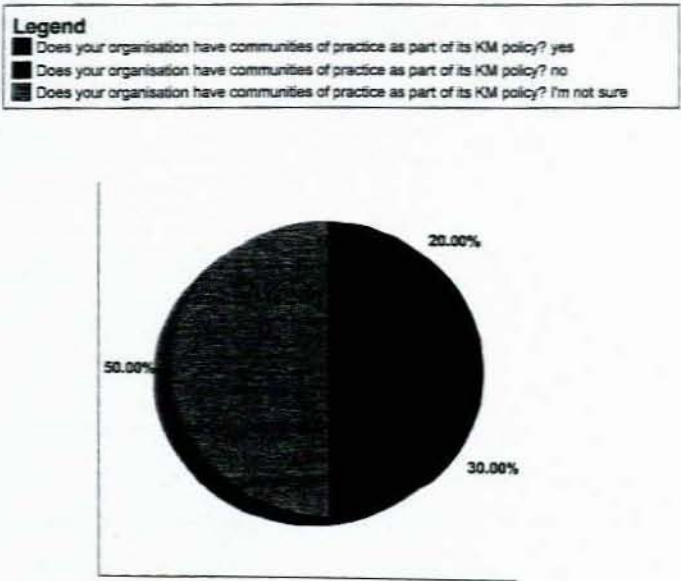
Figure 44: Communities of practice as part of KM policy

Communities of practice or learning organisations or even learning networks are a way for organisations to link people with people (as knowledge assets). It allows for information and knowledge transfer (Wiig 1993:217). It is also a non-expensive and a technological route to the organisational implementation of knowledge management. This question, therefore, was to find out whether organisations have begun implementing knowledge management. It was instructive that 25 (50%) respondents indicated they do not know. Community of practice is done by workers on different levels and therefore impossible for respondent managers not to know it. When one compares the past response with the fact that 15 (30%) respondents indicated that they do not know it can be deduced that many organisations mainly use technology to process knowledge. Only 10 (20%) indicated they have a policy. The next graph (Figure 45) summarises how knowledge workers share informal knowledge.

How knowledge workers share informal knowledge

2.00% 2.00%

96.00%
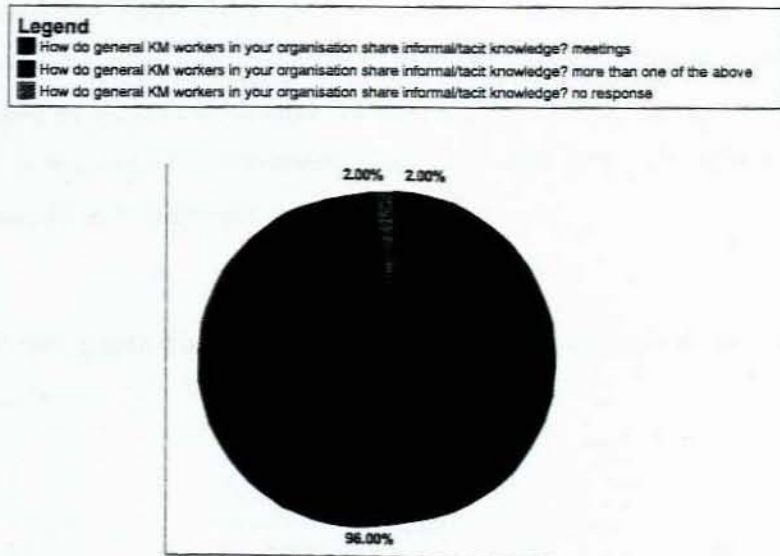
Figure 45: How knowledge workers share informal knowledge

Tacit and informal knowledge is held by individuals and shared everywhere in the shop floor of the organisations. It is also the most influential knowledge which the general workers. Many people especially in the lower echelons of an organization prefer to believe informal knowledge rather than the official version and therefore managers disregard it at their peril. Sallis and Jones (2002) argue that informal knowledge is socially constructed and is kept alive by its constant repeating. When it has lost its usefulness it fades away and dies, and yet much of it has enormous staying power. The message is often in the telling and it plays a crucial role in defining the culture of the organization. One key to successful KM is the exploitation of all forms of knowledge, both

formal and informal. In this graph (Figure 45) respondents had been given four possible responses, which are, (i) meetings, (ii) word of mouth, (iii) shop steward (iv) workshops (v) grapevine. "More than one of the above" was included in order to accommodate those responses that would indicate a number of responses. As expected 48 (96%) respondents chose more than one of the responses. The balance was a split of 1 (2%) each between "no response" and "meetings".

The next graph (Figure 46) reports on the communication officers in the organisations.

Communication officers in organisations

Legend
- Is there a communication office/r in your organisation? yes
- Is there a communication office/r in your organisation? no
- Is there a communication office/r in your organisation? I'm not sure
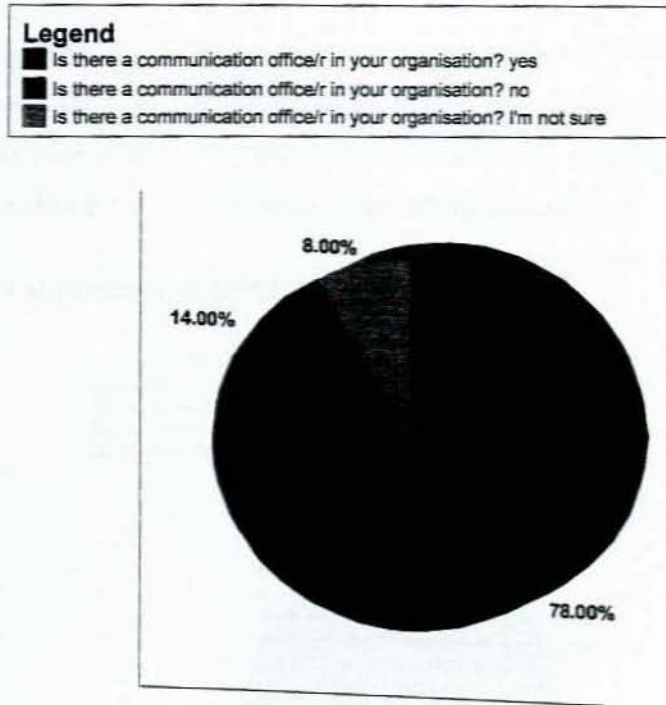
Figure 46: Communication officers in organisations

Communication officers and help desks are employed by organisations in order to eliminate problems, supply correct information and direct or redirect customers to correct queues. This reduces or completely eliminates the 'wrong queue' effect where a customer stands in a queue for twenty minutes before the organisation closes only to be informed when he reaches the point of service that he or she is in the "wrong queue" and should either rejoin another queue or "come back tomorrow". Numerous banks, for instance,

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Standard Bank, has this type of a communication officer going around the queues and helping people to go to correct offices and queues.

In this graph (Figure 47) it was interesting to note that 39 (78%) respondents indicated that they have communication officers. 7 (14%) indicated that they do not have while 2 (4%) said they are not sure. The next graph (Figure 48) summarises the level of provision of knowledge management.

Level of provision of KM in organisations

Legend
■ How do you regard the level of provision of KM in your organisation? inadequate
■ How do you regard the level of provision of KM in your organisation? adequate
▓ How do you regard the level of provision of KM in your organisation? well-provided
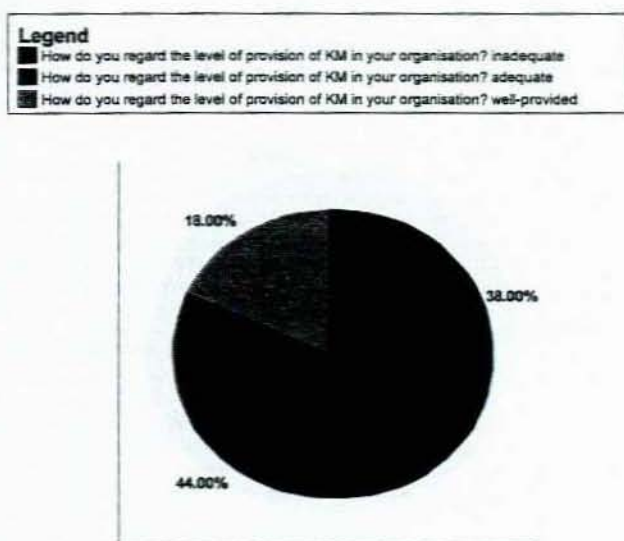
Figure 47: Level of provision of KM in organisations

Although a substantial number of respondents 22 (44%) are satisfied with the level of provision of knowledge management in organisation it was to be expected that almost the same number 19 (38%) would not be satisfied with the provision of knowledge of workers. Many industrial actions indicate this

phenomenon when a rumour started either by half information or fear spread to say the company is closing down whereas the company is doing well but is involved in a merger with another big company can result in a work stoppage. 9 (18%) respondents believe the level of provision is very high.

The next graph (Figure 48) reports on the feedback mechanism.

Feedback mechanism

Legend
■ Is there a feedback-mechanism to customers re information that they submitted? yes
■ Is there a feedback-mechanism to customers re information that they submitted? no
▨ Is there a feedback-mechanism to customers re information that they submitted? I'm not sure
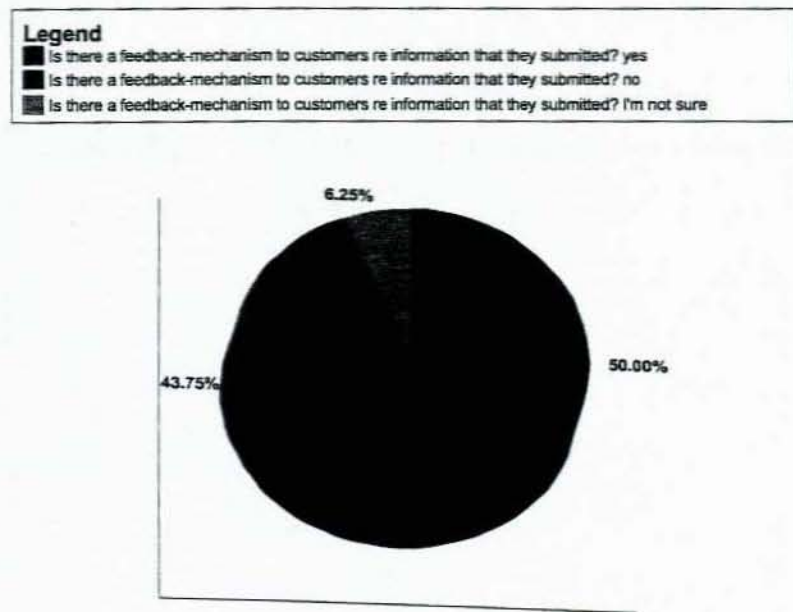
Figure 48: Feedback mechanism

A learning organisation allows for two-way communication. It regards customers as part of its assets. The information received from clients is used to improve customer relations, processes and the products. However, they

also go back to customers to tell them of the progress of their suggestions etc. In the graph above (Figure 48) it was interesting to note that 25 (50%) respondents agreed and said their organisations provide feedback. However, it would seem that close to 22 (43,75%) respondents say there is no feedback. One notices this phenomenon particularly in the public service of employees and the general public who complain that telephones are not answered, documents to process their payment or any other of their welfare issues go missing and that no one dares to pick up a government phone and tell them in which stage of processing their issues are. 3 (6,25%) respondents indicated they are not sure.

The next graph (Figure 49) focuses on the future of knowledge management.

Where KM is taking organisations
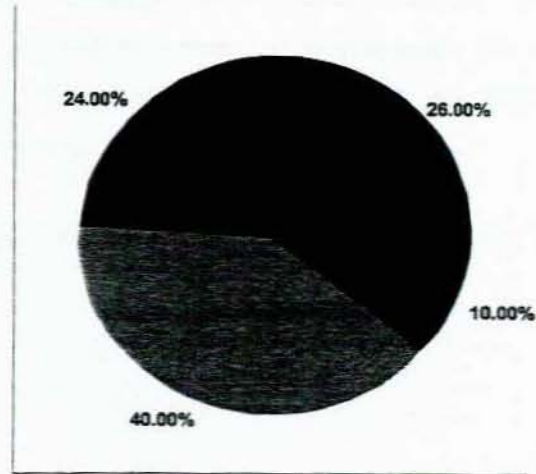
Figure 49: Where KM is taking organisations?

In Figure 49 the question was open to allow the knowledge managers' experiences to come to contribute to the understanding of electronic communication in knowledge management. The researcher will express some of the ideas verbatim. 20 (40%) respondents gave very accurate answers. 12 (24%) gave accurate answers while five (10%) and 13 (26%) respectively gave inaccurate answers and no explanations. Some of the very and accurate responses were: (i) "it will unfortunately lead to information overload"; (ii)"as

a high technological organisation the use of paper might be limited or reduced".

If filtering is not done, information overload becomes a serious issue. Hence many organisations and governments have begun to plan for a 'paperless future'. One of the hospitals in Durban, known as Chief Albert Luthuli Memorial Hospital, has begun paperless "patient processing" routines until the said patient is admitted or is treated as an outpatient. The concept of telemedicine in the United States as well as being implemented in South Africa is a paperless process.

The next graph (Figure 50) reports on the knowledge management policies in organisations.

KM policy in organisations

Legend
- Does your organisation have a KM policy? yes
- Does your organisation have a KM policy? no
- Does your organisation have a KM policy? I'm not sure
- Does your organisation have a KM policy? no response

2.00%

30.00%

38.00%

30.00%
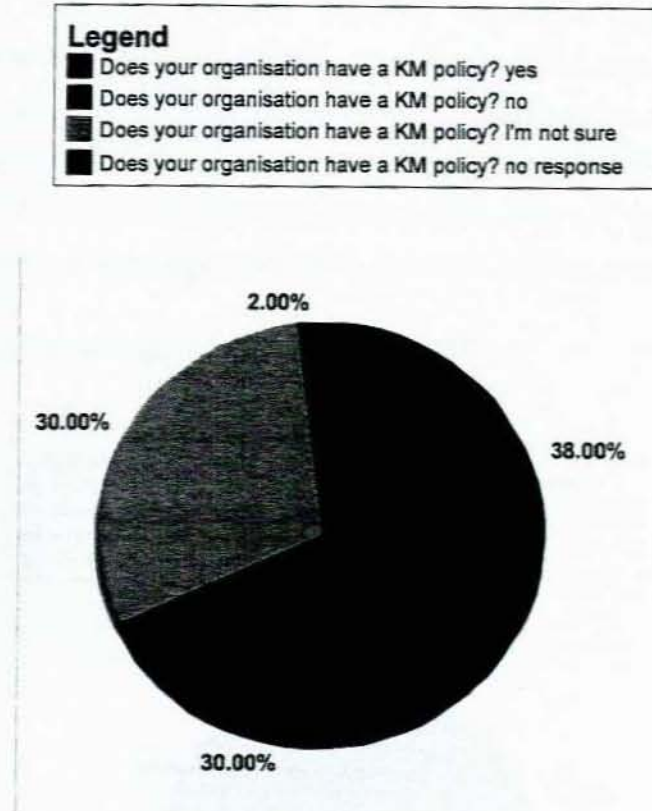
Figure 50: KM policy in organisation

Knowledge management, as a relatively new organisational concept, must first be bought and supported by senior management. This demands a paradigm shift, a buy-in be senior management in recognising that we have moved from the Industrial age economy to a knowledge economy. Without a policy or set of guidelines known as a knowledge management roadmap there would be no organisational change and development. Therefore the question asked in

Figure 50 regarding the existence of knowledge management policy in the organisation meant to assess the seriousness of the implementation of knowledge management. Although 16 (38%) respondents agreed when contrasted with 15 (30%) and 15 (30%) of those who said there is no policy and those who said they are not sure respectively, it still implies a lack of a decided and focused implementation of a knowledge management process. Only 1 (2%) person did not respond. The next graph (Figure 52) summarises the organisation's workshops' contribution to knowledge management.

Organisations workshops' contribution to KM

Legend
■ Do your organisation's workshops contribute to KM no KM workshops
■ Do your organisation's workshops contribute to KM yes
▓ Do your organisation's workshops contribute to KM no
■ Do your organisation's workshops contribute to KM I'm not sure

12.00%

12.00%

40.00%

36.00%
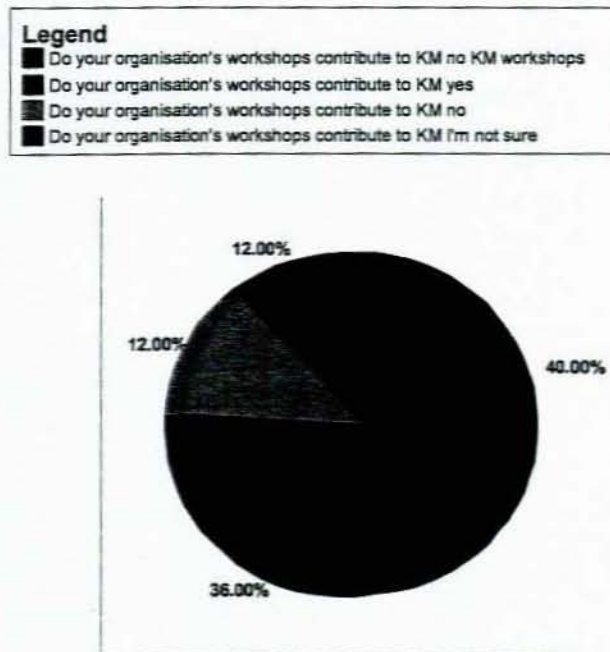
Figure 51: Organisations' workshops contribution to KM

Almost all organisations invest hugely in the workshops, seminars and conferences with the intention to inform, skill and update their workforce. Managers spend a large part of their working time attending these workshops. This question was posed in order to find out whether the workshops are chosen according to the performance skills and needs of the worker. In terms of the above graph 20 (40%) respondents said they have no workshops. It would be interesting to know how these organisations update the skills of their workforce. 18 (36%) believe that their workshops contribute to knowledge management. This poses a question as to what reasons are workshops for if not to create, store and share knowledge. There was a split of 6 (12%) each between those who felt their workshops do not contribute to knowledge management and those who are not sure. The next graph (Figure 52) reports on the number of KM workshops each year.

Number of KM workshops attended each year.

22.00%

42.00%

36.00%
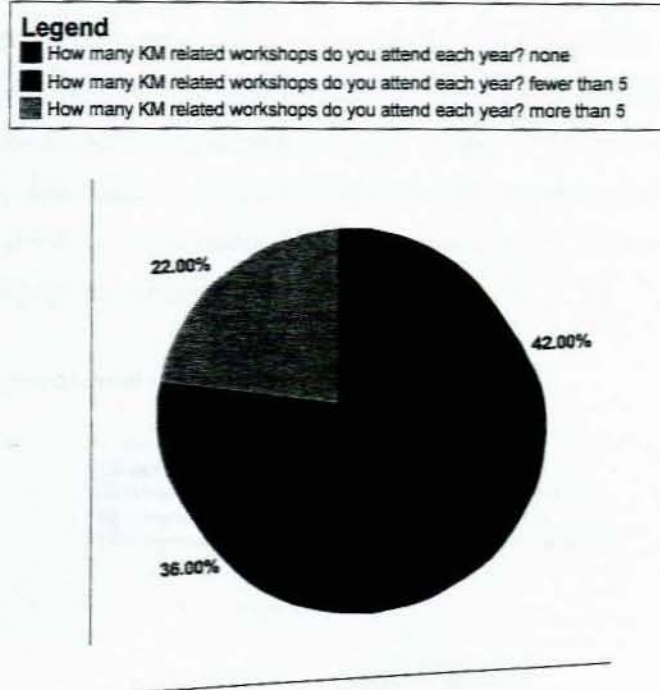
Figure 52: Number of KM workshops each year

The responses in Figure 52 agree with the last graph on Figure 51 where 36% respondents indicated that they had KM workshops. 21 (42%) respondents say they have no workshops. This could be because of the specificity of 'km workshops'. It could also mean that there are workshops, but they are not for knowledge management. 18 (36%) indicated in their organisations they has fewer than five km workshops while 11 (22%) say they have more than 5 KM workshops per year. The researcher believes that for knowledge management

and its implications to be fully understood and implemented both the policy and 'km specific workshops' will need to be implemented. This could be done as part of the continuing education process and would involve less expenditure than the traditional workshops where attendants have to go out somewhere and be accommodated in a hotel. With the digital interactive, distributed learning processes can teach people in different branches at the same time. Using an electronic whiteboard the consultant teacher can receive comments from and respond to concerns of practice. The next graph (Figure 54) reports on the organisational in-service training.

Organisational in-service training
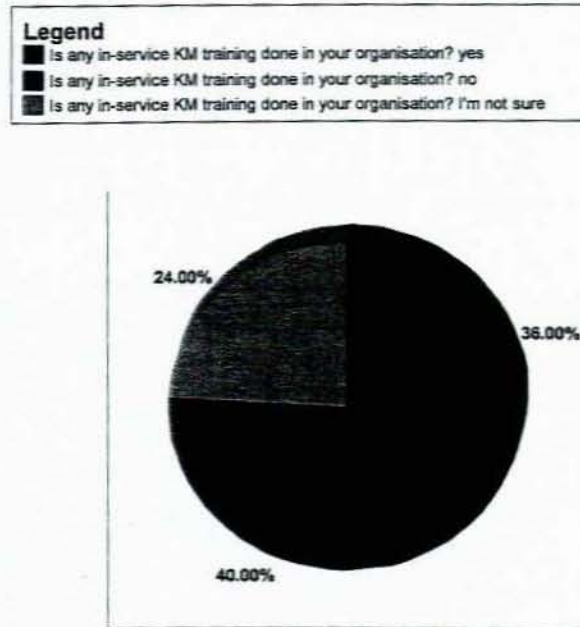
Figure 53: Organisational in-service training

The responses in this graph further highlight and confirm the two above paragraphs in regard to the workshops and in-service training. 20 (40%) respondents indicated that there is no in-service training in their organisations while 12 (24%) indicated they are not sure. Without in-service training or workshops the other alternative is that information and training is shared through e-mail and other informal means. However, the absence of a two-way communication and instant response, which is provided by the workshops and in-service training, imply that the organisation has a top-down communication approach. Workers are told what to do and when to do it and no regard is considered for their own professional and personal growth, in particular in regard to KM workshops. The next graph (Figure 55) summarises the employment of competitive intelligence.

Employment of competitive intelligence in organisations
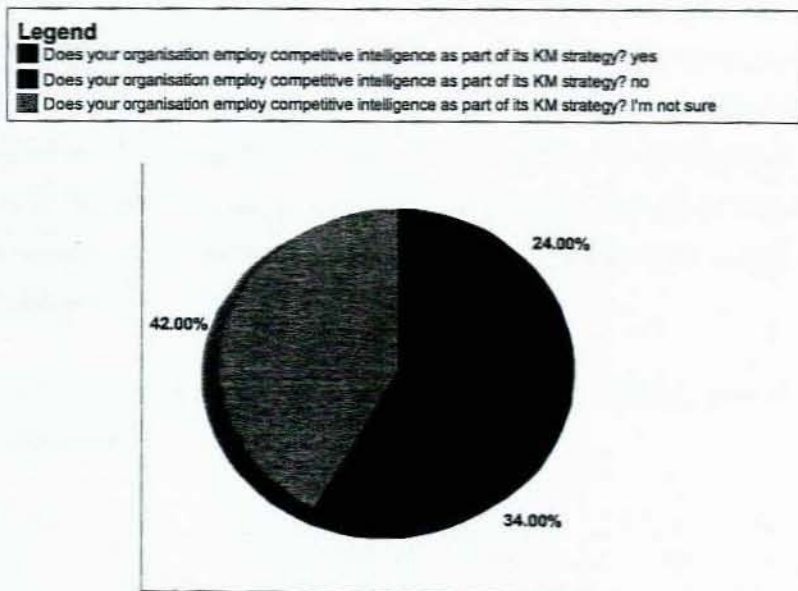
Figure 54: Employment of competitive intelligence in organisation

Competitive intelligence in certain organisations, like the public sector, is a relatively new term. Competitive intelligence provides organisations with actionable information regarding competitors' activities and is a key part of an overall analysis of the operating environment. Learning networks across organisational structures can enrich organisations in competitive intelligence without doing anything unethical. For instance the government can arrange cross-organisational best practice exchange on issues of common interest. This was indicated by the number of respondents who had agreed to respond to the survey questionnaire who phoned the researcher before answering the questionnaire asking how the term applied to their work. This has been

confirmed in the graph above by 21 (42%) of responded and said they are not sure. One would expect people at the level of managers to know if such a policy existed in their organisations since competitive intelligence is a very sensitive issue that includes such issues as patent rights. Therefore organisations would regard it as privileged information. 17 (34) said they do not have competitive intelligence. 12 (24%) agreed that they have it. The next graph illustrates the importance placed on knowledge management records by organisations.

The next graph (Figure 55) reports on the control of access to knowledge management records.

Control of access to KM records

Legend
How is access to your KM records controlled? password
How is access to your KM records controlled? recorded
How is access to your KM records controlled? other (explain)

4.17% 4.17%

91.67%
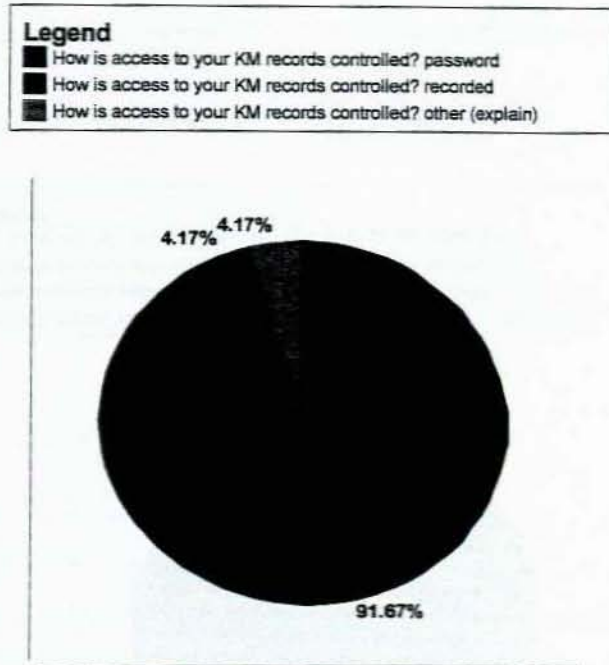
Figure 55: Control of access to KM records

All organisations protect their knowledge in their database from being exposed to anyone from outside their organisations or even from people within their organisation who would abuse it. Providing passwords does this and various systems, which record the person, who last used the computer. In Figure 55 it became very clear that organisations are concerned with security of their information. 40 (91, 67%) of respondents say access to their knowledge records is controlled by the password. 2 respondents (4.17%) indicated that it records control access. 2 indicated other responses not indicated. One said it is "only dedicated staff" and other indicated, "it is not

controlled". The next graph deals with the question of whether an ethical policy constrains an organisation's KM strategy. The next graph (Figure 56) shows the results of whether ethical policy constrains the organisation.

Constraint of ethical policy on the organisation
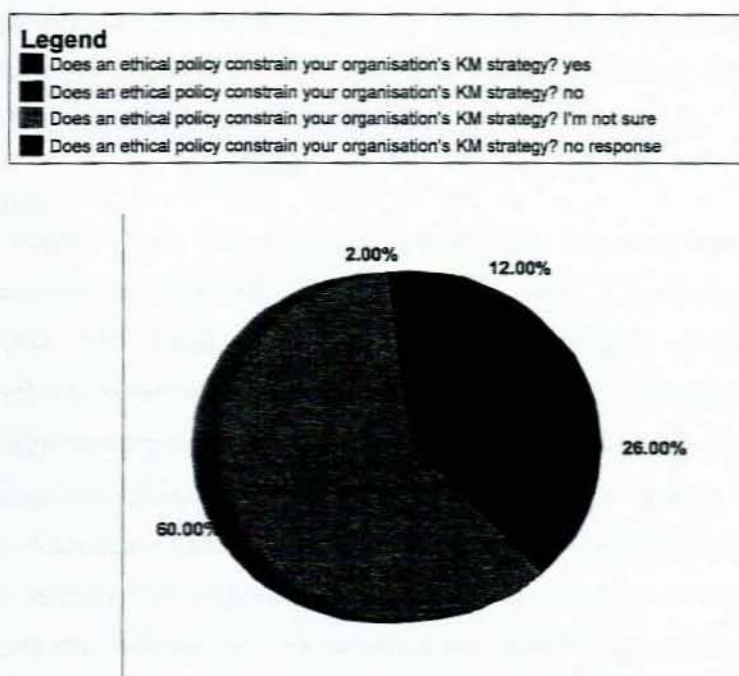
Figure 56: Constraint of ethical policy on the organisation

The responses in this graph were noteworthy, that 30 (60%) respondents indicated that they are not sure whether they think an ethical policy has constraint on the organisation. The responses in this graph can be read together with the graph (Figure 50) about km policy where 15 (30%) respondents and 15 (30%) respectively indicated they did not know and "not

sure" respectively. This seems to be a problem that a significant number of managers do not know the policies governing the information and knowledge flow in their organisations. In this graph (Figure 45) 13 (26%) respondents denied that there is any ethical constraint on knowledge management. 6 (12%) agreed that the ethical policy does affect their organisation knowledge management strategy. 2 % did not respond. Managers need to be brought to the planning of any project, to buy into and understand why certain decisions, for instance, who has to have access to certain information are taken.

SUMMARY

In this chapter results were analysed. It was apparent that many knowledge managers were never trained to be knowledge managers. They had to train themselves and attend workshops once they had been given KM responsibility. While senior management supports the implementation of knowledge management there is a relative lack of policy direction regarding knowledge management implementation, e-mail policies of sharing of the subject. While many technologies are used by over 50% organisations there is no link between those technologies and a knowledge management roadmap. The researcher believes that the establishment of knowledge management policies will resolve these issues.

In the next chapter the researcher will give recommendations and conclusions.

Chapter 10

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

In this last chapter the researcher gives a synthesis and summary of the dissertation. This is based on the literature survey and the empirical conclusion of fieldwork. Following will be the general conclusions, observations, recommendations and suggestions for further research.

SUMMARY OF THE STUDY

In this study the researcher set out to conduct an empirical study on the role and the impact of electronic communication in knowledge management. He hypothesised that knowledge management as a field of study and organisational practice was new and confusing and that many managers confused it with technologies.

Strassman (1997) and Tuomis' arguments that many organisations have poured millions into buying technologies with the intention of effecting performance was used as a base for determining the role of technologies in knowledge management.

The researcher tested the views of assumed knowledge managers in KwaZulu-Natal to empirically find their understanding and application of electronic communication in knowledge management.

GENERAL OBSERVATIONS AND RECOMMENDATIONS

The study revealed a number of interesting issues from the survey. These will need to be addressed by organisations in order to survive in the changing

world of the knowledge economy, as knowledge has become the key economic resource and the dominant and perhaps even the only source of competitive advantage (Drucker 2002:20). Today organisations survive not on their core products but on their competences.

It was apparent from the study that there are differences in practice of knowledge management in the organisations in KwaZulu Natal. It was promising that although 50% of the knowledge managers were self-taught there was 81% of senior management support to implement knowledge management.

LEADERSHIP AND MANAGEMENT NEEDED TO IMPLEMENT KNOWLEDGE MANAGEMENT

Organisations need managers with a change management paradigm. Bantsi (2002) emphasises the point by quoting Albert Einstein who argued that, "the significant problems we face cannot be solved by the same level of thinking that created them". Organisations that fail to shift cultural attitudes will not remain knowledge focused; again, efforts will be short-lived. Although changing the organization climate has been outlined as the most difficult aspect of knowledge management, (Davenport 2000) it is one that must be embraced for KM success. Organisations cannot be unaffected by the knowledge economy which is characterised by the speed and the overwhelming amount of information and knowledge.

Case (2002) observes that what most organizations don't realize is that they already have the ingredients of a knowledge culture. People are, by nature, social beings that spend much of their workday talking to each other, passing along information, and transferring knowledge in formal and informal meetings. Much like communities of good friends, organisations are made of

knowledge communities, groups of employees who band together around work issues. Leadership is important for engendering the spirit and practice of innovation by visibly driving this process and 'walking the talk' (Bantsi: 2002). Leadership and management support will turn unproductive workers to very productive and enthusiastic workers. Work in the knowledge economy involves people who apply their judgements, skills and creativity personal assets that are beyond the complete control of employers. It is impossible to monitor and instruct this kind of knowledge work in the way that managers could when work was the completion of repetitive manual tasks. The more work involves the application of knowledge and creativity, the more traditional forms of managerial control become irrelevant (People Management: 2003).

The only way to create a culture that is simultaneously more collaborative is if knowledge workers are able to manage their own work. In this regard organisations need to become learning organisations and allow for communities of practice to take place. This is where people who work on a project or do the work in their different sections that need cooperation come together to share their experiences, decide how to solve problems related to their work and learn from each other.

ESTABLISHING A LEARNING ORGANISATION
When asked about the existence of the communities of practice in their organisations it was apparent that many organisations (30% no and 50% not sure are not implementing it). Yet 54% of the managers indicated that in their organisations they use 4 to 5 non-technological ways in sharing knowledge. This indicates that organisations have hardly begun to turn tacit knowledge to

explicit knowledge by engaging workers to share their best practices. Therefore corporate memory remains dormant.

Knowledge managers should not disregard the power of informal information exchange. They should lead a learning organisation where a sharing culture is the norm. Storytelling should be structured to chart the vision, the policies and practices of the organisation. Scholtz (2003) confirms the above, "through the grapevine, we have been telling each other stories about work for as long as we care to remember". Change agents can effectively use the formal and informal corporate myths and parables to unseat the unproductive, outdated behaviours in favour of more profitable outcomes.

Storytelling could be an antidote for South Africa's organisations in dealing with cultural diversity. Telling, and engaging with our own and other people's stories, can be a very effective way of bringing about a deep understanding and respect for group dynamics, diversity and the role of leadership. Scholtz (2003) states that organisations that are competent at making sense in chaotic conditions, and defining sense for others through storytelling and sharing of knowledge across all levels of management, have a major competitive advantage.

The study revealed that half the numbers of managers do not have any forums they access about the subject of knowledge management. This would explain the reason why many respondents either phoned and asked the researcher more about knowledge management as a subject or declined to answer the questionnaire citing lack of knowledge about it. It is important

that a reference section with relevant magazines and CD ROMs be circulated through the organisation's intranet or hard copies to all relevant managers.

THE IMPORTANCE OF E-LEARNING FOR KNOWLEDGE MANAGERS

Knowledge managers should always look ahead in order not to be left trailing the digital age. If they do so they will always be entirely led by their technical staff in making decisions that affects the implementation of knowledge management. Using e-learning, for example, web-based knowledge management depositories and electronic performance support systems can provide just in-time and just-enough online advice (Training and Development 2002). An effective e-learning programme changes culture, workplace behaviour, retention, and, ultimately, the organisation so that it can become more competitive. Knowledge managers, as learners, need opportunities to practice new skills and become comfortable with applying them. Newly employed managers may be given reasonably short knowledge management based projects so that they may practise, for instance, on how to implement a best practice project in their division. That is one reason skill practice is an important complement to e-learning programme. But even more important is attaining the buy-in from the learner-managers so that they will be motivated to apply the learning.

INTERNET AND E-MAIL AS STORAGE AND SHARE SUPPORT SYSTEM TO KNOWLEDGE MANAGEMENT

96% respondents agreed that they use more than one form to share knowledge in their companies. However since this information is not filtered (42%) knowledge managers are swept under a barrage of information and consequently do not know which information is relevant or good for them. The lack of policy on filtering presents a handful of other problems such as personnel who watch, send and receive pornographic material. In KwaZulu

Natal the State Information Technology Agency (SITA) provided a list of unacceptable activities that government officials using Internet are not allowed to use (SITA 2005), for example:

- Private or personal for profit activities;

- Unauthorised not-for-profit business activities; and

- Use for, or in support of, unlawful/prohibited activities as defined by laws or regulations.

The implementation of sophisticated monitoring software at a large local retailer proved the human resources director's worst fears: employees were spending up to three hours a day surfing the Web often viewing pornography (Mersham and Skinner 2001). Too many e-mails take a lot of time for workers. If an organisation receives loads of e-mails then there is a problem in the organisation itself (Kaufman 2002:23). Kaufman suggests that too many e-mails be referred to sub folders so that they may be read at a convenient time.

Knowledge managers should use all options for electronic communication and avoid falling into the rut of communicating via one mode. For example, one could follow up an e-mail containing detailed information with a clarifying phone call (Kaufman 2002:56). If a manager gives overly long voicemails or e-mails, there is a risk that the receiver will delete them before done. Protection of knowledge is of strategic importance to organisations. This is filtering of information by allowing a certain amount of information to be saved and, saving certain kind of information on the central database.

Another way could be purchasing programmes that prevent spamming into the system.

The Electronic Communications and Technology Act of 2003 (DPSA 2004) states that no one should receive unsolicited communication and that there should be an option to unsubscribe or cancel (Sunday Times 2004:11). Employers can introduce a well-drafted Internet-user policy that protects its legitimate proprietary interests while respecting employees' reasonable and legitimate expectation of privacy.

To stop this practice many large organisations now have e-mail monitoring policies that allow management to view the contents of any employee's computer screen from their own desktops or through their information technology departments. This practice by companies may lead in ethical cases being taken up to court by employees as invasion of privacy.

The study also revealed that many organisations have specialised, commercialised and even in house software which is used to store and share knowledge. The safety of information in the computers is highly guarded and restricted to everyone inside organisations as long as one has a password.

LACK OF KNOWLEDGE MANAGEMENT POLICIES
It was found that together 64% organisations either did not have the policy or were not sure whether policies existed in their organisations. It would be difficult to implement knowledge management if managers are without a policy. Most organisations surveyed allow access to more than one form of electronic communication, for example, intranet, Internet, e-mail, video conferencing and other forms. The researcher concluded that these

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technologies were acquired for the day-today word processing and no cognisance was taken for storage and sharing of knowledge.

Knowledge management policies guide and give direction on the management of knowledge in the organisation. Policies would indicate the following:

- The organisation's definition of knowledge management;

- Which information needs to captured and organised;

- What information should be discouraged from being captured because of its minimal value and the fact that adds to information overload;

- What information is best left with an individual, but 'electronically signposted' so that others can make contact with the person to access that person's stock of knowledge;

- What the organisation knowledge map looks like;

- What the mechanisms for 'competing the loop' are so that information is interactive (Mersham and Skinner 1999).

THE IMPORTANCE OF A HELP DESK OR CALL CENTRE

Two questions had been asked in the survey questionnaire regarding a full-time help desk as well as the availability of a communication officer. There are three reasons why the support environments as defined by help desks, human resources groups, and other support organizations serving customers,

employees, partners, and/or vendors are necessary (Primus knowledge solutions 2002). A help desk is the perfect microcosm in which to identify best practices for a successful knowledge management initiative. First, support groups, particularly help desks, are the most rigorous question-answer environment within any organization. Second, most help desks record the time it takes to successfully solve an issue or answer a question, which in turn helps evaluate the effectiveness of the technologies and processes being used. Third, in today's support centre, there is a need to provide self-service options, in which customers find their own answers. This could be via an interactive computer or the availability of a repetitive programme on how to do a certain procedure as found in banks. Both self- and assisted service, require that the most relevant information reaches the user in as few steps as possible. How can support centres succeed with knowledge management initiatives?

There are six keys best practices to success:

- Knowledge access, capture, use, and improvement are a natural part of the support center's work processes.

- Existing information throughout the organisation even from isolated silos is available to the people seeking it.

- Executives actively support the knowledge initiative and commit the necessary resources to ensure long-term success.

- Management recognizes that knowledge-based support may entail a shift in cultural values and facilitate the transition.

- The knowledge initiative rewards knowledge workers for their participation.

- The knowledge management system includes analytical tools to report results and document areas that need improvement.

For a help desk to succeed with knowledge management, the solution must mimic the natural work processes of the support agents, whereby knowledge is accessed, captured, and improved as an intrinsic part of how agents interact with customers to solve problems. In other words, the software not only assists an agent for the problem at hand, but also extracts additional knowledge from the interaction to improve content for subsequent interactions. Without a viable help desk/communication officer strategy, organizations will be hard-pressed to meet the demand for high-quality, flexible service in an era dominated by competitive alternatives for dissatisfied customers.

USING TECHNOLOGY TO MANAGE KNOWLEDGE

This study also revealed that there are no knowledge management workshops (40%). Without policies and workshops, technology and technicians are left to run the organisations. To achieve the organisation's objective of knowledge management through electronic communication the people who are to use the technology programme need to be involved from the beginning. The major implementation hurdle in a knowledge-sharing system is not the technology but it is getting people used to it. Throughout implementation their opinions must be solicited and respected, their concerns must be addressed and their feedback must be fed into the final delivery. Creating a feedback mechanism informs the knowledge management systems about the

loopholes in regard the content, accessibility, convenience and relevance of knowledge being shared.

There is also a danger of knowledge managers with scant technological skills. In the study many managers indicated that they were first in Human Resource Departments as well as in information sectors before they were given the responsibility of knowledge managers. When asked about technological skills needed for them to become knowledge managers 40% did not respond. However 52% indicated that they have a person fully dedicated to knowledge management. The danger is that even though there are personnel dedicated to knowledge management projects the manager does not know what information is stored, how it was stored and how to access it. Should the person dedicated to this job decide to leave the organisation he may have e-mailed all the information to his home address and left the organisation without very crucial information and knowledge.

THE FUTURE OF ELECTRONIC COMMUNICATION IN KNOWLEDGE MANAGEMENT

One way of changing the workplace around is by changing the work climate to that of a learning organisation. Dlamini (Sunday Times, 2004) says that we need a new debate about knowledge workers and how to create them to make South Africa and the African continent prosper. The technical skills and capacity for innovative thinking the knowledge capital-that Japan has built since the end of World War Two has created the world's second biggest economy.

Koulopous (2001) mentions five things to look for in knowledge management technology as:

- Context sensitive- understanding the context of the knowledge requirement and tailor the knowledge accordingly;

- User sensitive- be able to organise the knowledge in the way most useful to the specific knowledge seeker;

- Flexible- be able to handle knowledge in any form, including different subjects, structures and media;

- Heuristic- should learn about its users and the knowledge it possesses as it is used;

- Suggestive- be able to deduce what the client's knowledge needs are, and suggest knowledge associations that the client is not able to make.

It is important to note that neither technology nor money is a sustainable source of competitive advantage. Knowledge is (Dlamini: Sunday Times, 2004). In the modern economy organisations and countries use their ability to generate and manage the technology industry. Strassman (197) concluded that, "it is not computers that make a difference but what people do with them".

The challenge is for universities and organisations in Africa to create enough knowledge workers. The challenge is to turn all educational institutions into world-class centres that will produce knowledge relevant to domestic and world industries. Knowledge management must become a priority for government, and public policy should be geared towards encouraging knowledge production.

For governments the efforts to bring service delivery to people through user interfaced computer portals so that they access their services by using a combination of their thumb print and voice prompted services is a step in the right direction. The community of practice or learning networks already advocated by the Department of Public Service and Administration will make the sharing of knowledge a reality.

De Villiers and Michel (Management Today 2004) suggest a structure for the development of an integrated system for the management of knowledge within an enterprise. These are:

- Developing a core capability and competence framework that is identifying and classifying the relevant knowledge elements;

- Identification of the opportunity and determination of capability;

- Determination of current status of intellectual and financial capital;

- Establish and bridge the knowledge gap;

- Employment and utilisation of the enterprise's knowledge base;

- Protection of knowledge;

- Develop an integrated knowledge management system;

- Continuous support of the system;

- Entrenching the principles of a learning organisation;

This knowledge management map links both the technologies already existing in an organisation with people. It regards technology, as an enabling mechanism for communication, that will create a rich corporate memory so that those generations to come will benefit from.

SUGGESTIONS FOR FURTHER RESEARCH
The study revealed numerous interesting questions, which were closely related to the study and can be suggestions for further research. They were:

- The impact of workshops and seminars in the implementation of knowledge management in the education department.

- The gap in knowledge management implementation between the private as well as the public sector.

CONCLUSION
The researcher recommends that for organisations that introduce electronic communication for knowledge management, a change strategy or new system rollout must be accompanied by a thorough examination of the peoples' skills. This could incorporate a communication plan, leadership and change training strategy, as well as a stakeholder management policy to ensure all users take ownership of the new system. Although these organizations realize the importance of knowledge management, they do not understand how to establish a successful knowledge management environment. Those who show most commitment to knowledge management have used technology as the key driver for knowledge management implementation and development. While this approach is fine for short-time rewards, the technological stance on its own will not offer long-term benefits to the organisations. The optimum approach for knowledge management adoption within

organisations is that of climate and technology combined. If management fully understands this process they will have a buy-in and begin experimenting and assisting their employees through each stage of knowledge management.

ADDENDUM A: QUESTIONNAIRE

Voluntary Questionnaire for Managers and Directors

Electronic Communication in Knowledge Management
Where e-Communication could take organisations

Department of Communication Science

University of Zululand (Durban Campus)

Researcher: Sipho Lombo

Study Leader: Prof. R.M. Klopper

To the respondent

1. I need your help to understand how electronic communication is used in Knowledge Management (KM) in your organisation, and where, in your view this usage could take organisations.

2. What you say in this questionnaire will remain private and confidential. No one will be able to trace your opinions back to you as a person.

3. In the broadest possible sense in information age societies knowledge management is a framework within which an organisation views all its processes as knowledge-driven processes. These processes involve the creation, dissemination, renewal, and application of knowledge for organisational sustenance and survival.

4. If your job entails functions that involve KM, please complete this survey.

This questionnaire has five parts:

1. Part 1 asks for written permission to use your responses for academic research.

2. Part 2 asks general personal particulars like your age, gender and home language.

3. Part 3 asks your activities as a Knowledge Manager.

4. Part 4 asks technologies used for creating and sharing Knowledge Management.

5. Part 5 asks about the usage of the organisational knowledge.

6. Part 6 asks about KM policies.

How to complete this questionnaire

1. Please answer the questions as completely as possible. Also, please be sure to read and follow the directions for each part.

2. Use a PEN (not a lead pencil) to complete the questionnaire.

3. Please do not alter any responses that you have made.

Thank you very much for your willingness to fill in this questionnaire.

PRACTICE QUESTIONS

A. My designation includes "manager or director":

    ❑ Yes

    ❑ No

This is where the real questionnaire begins

PART 1: PERMISSION TO USE MY RESPONSES FOR ACADEMIC RESEARCH

*This information will be **kept strictly confidential**. Your personal identity will not be revealed to anyone, also when the results of the survey are published.*

I hereby give permission that my responses may be used for research purposes provided that my identity is not revealed in the published records of the research.

Initials and surname _____   Postal address:

_____

_____   Postal code:

_____

Contact numbers: Home: _____ Cell: _____

PART 2: GENERAL PERSONAL PARTICULARS

Please tell us a little about yourself

Please mark only ONE option per question below.

1. Does your job include knowledge management functions?
      ❑ Yes
      ❑ No

2. I am a:
      ❑ Male
      ❑ Female

3. My age is between:
      ❑ 20-30
      ❑ 31-40
      ❑ 41-50
      ❑ 51-60
      ❑ 61-70

4. I work in:
      ❑ Public Service
      ❑ Private Enterprise
      ❑ A Non-governmental organisation (NGO)
      ❑ As a Private Consultant

5. I work as a
- ❏ Junior Manager
- ❏ Middle Manager
- ❏ Senior Manager

PART 3: ACTIVITIES AS A KNOWLEDGE MANAGER

6. Do you regard yourself as a:
   - ❏ Knowledge Manager
   - ❏ Director/ Manager

7. How long have you been a Knowledge Manager?
   For _____ years and _____ months

8. How did you learn about KM?
   - ❏ Self trained
   - ❏ In-service training
   - ❏ Certificate
   - ❏ Diploma
   - ❏ Degree

9. What KM Forums do you reference?

   - ❏ Journal of Knowledge Management Research and Practice

   - ❏ Journal in thought and practice

   - ❏ Bitpipe.com

   - ❏ ZDNet.com

   - ❏ Magal.com

   - ❏ Knowledge business

   - ❏ Others, please list:

   _____
   _____
   _____

10. Where did you obtain your KM qualification? Please indicate the institution.
    - ❏ Self-taught
    - ❏ Abroad: _____
    - ❏ South Africa: _____
    - ❏ Africa: _____

11. Did you have to train as a Knowledge Manager?
    - ❏ Yes
    - ❏ No
    - ❏ I'm not sure

12. What technological skills did you need to qualify as a Knowledge Manager? Please explain briefly.

_____

_____

_____

13. By what career paths did you arrive at KM?
  ❑ Data Manager

  ❑ Human Resource Manager

  ❑ Other, please briefly explain

_____

_____

_____

14. How would you characterize the structure of your organisation?
  ❑ Multi-levelled (deep)

  ❑ Flat (shallow)

  ❑ In between

15. Do you have personnel dedicated to KM Unit in your organisation?
  ❑ Yes

  ❑ No

  ❑ I'm not sure

16. Briefly explain in your words what KM means in your organisation?

_____

_____

_____

17. Briefly explain how your organisation process KM under these topics:
  ❑ Acquisition

_____

_____

_____

  ❑ Storage

_____

_____

_____

12. What technological skills did you need to qualify as a Knowledge Manager? Please explain briefly.

_____
_____
_____

13. By what career paths did you arrive at KM?
- ❑ Data Manager
- ❑ Human Resource Manager
- ❑ Other, please briefly explain

_____
_____
_____

14. How would you characterize the structure of your organisation?
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- ❑ Flat (shallow)
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16. Briefly explain in your words what KM means in your organisation?

_____
_____
_____

17. Briefly explain how your organisation process KM under these topics:
- ❑ Acquisition

_____
_____
_____

- ❑ Storage

_____
_____
_____

❑ Sharing

_____
_____
_____

18. In what ways does your organisation allow for knowledge sharing? Please briefly explain

_____
_____
_____

19. Is your Knowledge management strategy dependent on information communication technology?
    ❑ Yes

    ❑ No

    ❑ I'm not sure

Please briefly explain

_____
_____
_____

20. Do you have a special electronic system to acquire, store and share knowledge?
    ❑ Yes

    ❑ No

    ❑ I'm not sure

Please briefly explain

_____
_____
_____

21. How does your organisation filter irrelevant knowledge for the users?
Please briefly explain

_____
_____
_____

PART 4 TECHNOLOGIES USED FOR CREATING AND SHARING KNOWLEDGE IN YOUR ORGANISATION

22. Which forms of electronic communication technology does your organisation use to share knowledge in your organisation? (Mark all the relevant options)

- ❏ E-mail
- ❏ Fax
- ❏ Internet
- ❏ Intranet
- ❏ Video mail
- ❏ Other, please briefly explain:
- ❏ Teleconferencing

- ❏ Telephones or cell phones
- ❏ Videoconferencing
- ❏ Voicemail
- ❏ Subscription digital television

_____
_____
_____

23. To which forms of electronic communication technology do you personally have access to share knowledge in your organisation? (Mark all the relevant options)

- ❏ E-mail
- ❏ Fax
- ❏ Internet
- ❏ Intranet
- ❏ Subscription digital television
- ❏ Teleconferencing

- ❏ Other, please briefly explain:
- ❏ Telephones or cell phones
- ❏ Video
- ❏ Video mail
- ❏ Voicemail

_____
_____

24. How frequently do you use your electronic communication technologies to share knowledge with your colleagues?

- ❏ Constantly
- ❏ Often
- ❏ Sometimes

- ❏ Rarely
- ❏ Never

25. What is e-mail used for in your organisation? (Mark all the relevant options)

- ❏ Informal communication
- ❏ Unofficial personal communication
- ❏ Office memoirs and notices

- ❏ Organisational policy communications
- ❏ Meetings
- ❏ Union notices and information

26. Does your organisation have a policy on how long e-mail messages are kept before they can be erased?

☐ Yes ☐ I'm not sure

☐ No

27. Does your organisation keep all knowledge on a single integrated knowledge records or more than one non-integrated?

☐ Single integrated database ☐ I'm not sure

☐ Multiple unintegrated

28. In your view does the senior management of your organisation support KM?

☐ Yes ☐ I'm not sure

☐ No

29. What types of strategic knowledge does your organisation keep track of? Mark all relevant options.

☐ Customer records ☐ Personnel matters

☐ Supplier records ☐ Other, explain briefly

_____
_____
_____

30. How is access to your knowledge records controlled?

☐ Password ☐ Through one person

☐ Recorded ☐ Other, please explain briefly:

_____
_____
_____

31. Who has got access to your knowledge records? Please mark all the relevant options.

☐ Senior Managers ☐ Shop stewards

☐ Middle Managers ☐ Junior Managers

☐ Other, please explain briefly:

32. How does your organisation protect strategic information from being misused by unscrupulous employees?

☐ Signing a code of ethical conduct enforceable by law

☐ Not permitting data to be saved on floppy disc or CDR

☐ I' m not sure

_____
_____
_____

33. How regularly are your organisation's knowledge records backed up?

- ❑ Never
- ❑ Daily bases
- ❑ Weekly
- ❑ I'm not sure

34. How are your organisation's knowledge records protected against viral infections?
- ❑ Constant update of antiviral software
- ❑ By using a Firewall
- ❑ I'm not sure
- ❑ No policy in place
- ❑ I' m not sure

35. What non-technological forms of knowledge creation and sharing does your organisation use?

- ❑ Newsletters
- ❑ Notice boards
- ❑ Circulars
- ❑ Other, please briefly explain:

- ❑ Meetings
- ❑ Inter office memoirs

_____
_____
_____

36. What Knowledge management software does your organisation use to process knowledge?
- ❑ In-house software
- ❑ Customized software
- ❑ Commercial product
- ❑ I'm not sure

PART 5: USAGE OF THE ORGANISATIONAL KNOWLEDGE

37. Does your organisation have Communities Of Practice (COP) as part of its KM policy?
    - ❑ Yes
    - ❑ No
    - ❑ I'm not sure

38. How do general knowledge workers in the organisation share informal/tacit knowledge? Please mark all relevant options

    - ❑ Meetings
    - ❑ Word of mouth
    - ❑ Shop stewards
    - ❑ Workshops
    - ❑ The grapevine
    - ❑ Other, please briefly explain:

    _____
    _____
    _____
    _____

39. Is there a communications office/r in your organisation?
    - ❑ Yes
    - ❑ No
    - ❑ I'm not sure

40. Is there a fulltime helpdesk in your organisation?
    - ❑ Yes
    - ❑ No
    - ❑ I'm not sure

41. If you need information for the work you do, is there a section in your organisation to get it?
    - ❑ Yes
    - ❑ No
    - ❑ I'm not sure

42. Do you regard the level of provision of knowledge in your organisation as
  - ❑ Inadequate
  - ❑ Adequate
  - ❑ Well provided
  - ❑ I'm not sure

43. Is there a feedback mechanism to tell customers what has happened with information given or received?
  - ❑ Yes
  - ❑ No
  - ❑ I'm not sure

44. Observing the use of electronic communication for knowledge management in your work where do you think electronic communication is taking your organisation? Please explain briefly

_____

_____

_____

_____

PART 6: KM POLICIES IN YOUR ORGANISATION

45. Does your organisation have a KM policy?
❑ Yes

❑ No

❑ I'm not sure

46. In your view do your organisation's workshops contribute to knowledge management?
❑ We don't have KM workshops

❑ Yes

❑ No

❑ I'm not sure

47. How many KM-related workshops do you attend each year?

❑ Fewer than 5

❑ More than 5

❑ None

48. Is any KM in-service training going on in your organisation?
❑ Yes

❑ No

❑ I'm not sure

49. Does your organisation employ competitive intelligence as part of its KM strategy?

❑ Yes

❑ No

❑ I'm not sure

50. Does an ethical policy constrain your organisation's KM strategy? Please motivate:

❑ Yes

❑ No

❑ I'm not sure

_____

_____

_____

Thank you for answering the questionnaire.

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