

**KNOWLEDGE MANAGEMENT PRACTICES IN RURAL AREAS OF
SOUTH AFRICA**

BY

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**SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS
FOR THE DEGREE OF**

DOCTOR OF BUSINESS LEADERSHIP (DBL)

AT THE

**UNISA GRADUATE SCHOOL OF BUSINESS LEADERSHIP
UNIVERSITY OF SOUTH AFRICA
REPUBLIC OF SOUTH AFRICA**

PROMOTER: PROF OKHAREDIA, A.A

NOVEMBER 2010

DECLARATION

I confirm that this research report “**KNOWLEDGE MANAGEMENT PRACTICES IN RURAL AREAS OF SOUTH AFRICA**” arose out of a research investigation I conducted in three research industries in Limpopo Province (a proxy of the rural areas of South Africa). All the sources consulted during the study have been acknowledged through a complete referencing system. Apart from the contributions of my promoter and the UNISA SBL academics, this research report is a product of my own research work.

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ACKNOWLEDGEMENTS

I would like to express my sincerest gratitude to my wife, Clovely and children, Lunghi, Xitshembiso and Joy. Without their unwavering support this project would not have been possible.

Prof Okharedia, my promoter, has been the pillar of strength behind this study. His professional expertise has enabled me to learn the rigours of research work. I am beholden to him.

The research would not have been possible without the permission granted by the participating entities (research organisations).

I am also grateful to Prof Brown and Prof Serumaga-Zake for their ‘technical support’ in the interpretation of the statistics used in the research report.

My sincere gratitude is also extended to the following people for their words of encouragement during the course of the study:

- Mr Mthebule S.M (My former school-principal and educator)
- Prof Van Niekerk (My mentor at Turfloop Graduate School of Business Leadership)
- Mr Clifford Mdaka (My friend and confidante)
- Pastor Adolph Machimana (My local church pastor)

Honour and Glory belong to God the Almighty!

ABSTRACT

This research report captures a detailed exposition of an investigation on Knowledge Management (KM) practices in public and private sector entities in three industries (health, education and business loans) of Limpopo province – a proxy of the rural areas of South Africa. The investigation was necessitated by a need to understand KM in organisational context experiencing constraints in terms of resources that enable KM. It was found through an intensive literature review that there were very few empirical studies on KM practices of organisations operating in the rural areas, particularly in Africa.

The theoretical framework of the study emanates from the knowledge-based view which has been popularised by the seminal work of Peter Drucker and Nonaka in the early half of the 90s. The knowledge-based view as presented in chapter 2 recognises the strategic role of knowledge in organisations. Its genesis is traced from the theories of classical scholars such as Socrates, Plato and Aristotle. Various empirical studies of entities which have adopted the knowledge-based view are presented in chapter 2 of this report.

The researcher observes from an intensive KM literature study that the average modern organisation could be categorised as knowledge-intensive considering that knowledge workers constitute the majority of its workforce. The definitions of a knowledge-based organisation and knowledge workers are presented in the operational definitions of key concepts. Arising from the identified gaps in KM literature as presented towards the end of chapter 2, this study was conducted as a comparative study between public and private sector entities in three research industries focusing on their extent of ICT application and degree of knowledge-oriented social factors for information and knowledge sharing.

The investigation was guided by three research objectives as discussed in chapter 1 of this research report. The main purpose of the study was to answer two fundamental research questions as reflected in chapter 1. In answering the two research questions, the researcher identified four research hypotheses in line with the findings established from KM literature. These hypotheses are discussed in chapter 2 of this report.

The underlying hypothesised statement guiding the study was to determine whether there were any significant differences in KM implementation between public and private sector entities in the three research industries in terms of four research constructs. These are: application of ICTs for knowledge and information sharing, degree of achievement of knowledge-based outcomes, tacit knowledge acquisition and the degree of knowledge-oriented social factors. Organisational culture, organisational structures, human resource practices and leadership comprised the social factors tested in the study. The research data were collected through a mixed research design approach combining the advantages of a survey instrument and interviews (this is fully reflected in chapter 3 of this research report).

The research results (as presented in chapter 4) pointed to some form of significant differences in KM implementation between public and private sector entities in the education and business loans industry, but there were no significant differences in KM implementation between public and private sector entities in the health industry. Arising from the findings of the study, a model for improved KM implementation is presented in chapter 4 (figure 4.16).

It was found during the investigation that all the research entities approached KM implicitly through KM related practices. KM related practices were found to be far more entrenched in the health industry (both public and private sector entities), the private sector entities in the education and business loans industries than was the case with the public sector entities in the education and business loans industries. In the entities where KM related practices were found to be entrenched, there were concerted efforts towards improved organisational processes. The study has managed to unravel the importance of KM related practices in laying the foundation for a formalised KM approach.

KEY TERMS:

Knowledge Management (KM); knowledge-based view; knowledge-based organisations; knowledge workers; public sector; private sector; Information Communication Technologies (ICTs); tacit knowledge acquisition; knowledge-oriented social factors; implicit KM implementation.

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OPERATIONAL DEFINITIONS OF THE KEY CONCEPTS

It is imperative that all the concepts used in this study are clearly defined so that readers of this research report are able to follow the underlying arguments. Capturing the operational definitions of the key concepts in this study is important, considering the thin line of divide between and among some of the concepts such as data and information, and information and knowledge. The operational definitions of key concepts used in this study are provided below:

Data

The word data is generally defined to refer to the bare facts void of any context (Becerra-Fernandez, Gonzalez & Sabherwal, 2004:13). This implies that unarranged facts become data which is a key input in the information-knowledge process. This is the operational definition that would be used throughout this study. It is on this basis that Becker (2007:42) defined data as “a set of discrete, objective facts about events”. In this study, data is defined as raw and unprocessed facts.

Information

Becker (2007:42) calls information data that have been sorted, analysed, displayed and communicated through language, graphic displays or numeric tables. It is interesting to note that Becerra-Fernandez *et al.* (2004:13) defined information as data in context. In this study information would refer to arranged data related to a particular context. This is in line with Kalkan’s (2008:391) view that information is data within some meaningful context. In essence, information is defined in this study as processed and organised data.

Knowledge

Knowledge can be defined as the capacity of individuals or groups to learn from information (Mercer *et al.*, 2005:130). Kalkan (2008:393) argued that knowledge was often undervalued in most organisations when data, information and knowledge were treated the same.

According to Jakubik (2007:7), knowledge embodies the different categories of skills, know-how, experiences, beliefs and capabilities. Jakubik reckoned that knowledge was defined differently by various authors due to its many dimensions. She demonstrated that knowledge would range from abstract to practice-based knowledge. While the classical definition of knowledge is “justified true belief” (Kalkan, 2008:391), Becerra-Fernandez *et al.* (2004:13) followed the link between data, information and knowledge by indicating that knowledge would refer to information that enabled action and decisions. This implies that knowledge is information with direction. Becker (2007:42) also followed this line of reasoning by defining knowledge as the meaningful links people make in their minds between information and its application in action in a specific setting. Du Plessis (2007:21) defined knowledge as:

...any relevant intellectual capital information, learning, and personal perspective that stimulates, contributes to, or result in greater understanding, deliberate action, new behaviours, better decision-making, adaptation, and further learning.

It is apparent from these definitions that knowledge is associated with the skills, aptitude, experience and values which enable employees to perform their work better. This goes to indicate that knowledge is synonymous with know-how and that it should reflect the process of learning, understanding and application of information (Soo *et al.*, 2002:130). It would be assumed in this study that knowledge would be distinguished from information by associating knowledge with applied information. This implies that Knowledge Management is more about competence development (Paloniemi, 2006:439).

Kalkan (2008:393) warned that failure to develop a working definition of knowledge led to the confusing ranging in some organisations where information management efforts were viewed as if they were Knowledge Management initiatives. Kalkan further pointed out that knowledge “is something more than information” in that “it is closer to action”. For the purposes of this study, knowledge has to do with the process of learning, understanding and applying information. The present researcher assumes knowledge is synonymous with know-how and expertise.

Tacit knowledge

Tacit knowledge is described as the knowledge that is primarily in the heads of people (Becker, 2007:43). While Leonard and Swamp (2004:90) insisted that this type of knowledge could not be “purchased in the open market” as it is stored “in the heads and hands” of people, Kalkan (2008:391) described tacit knowledge as “unspoken and hidden”, and as a result people cannot easily articulate tacit knowledge since it is “difficult to capture, codify, adopt and distribute”.

But tacit knowledge can be very powerful in the learning and innovation process (Mittendorff, Geijelf, Hoeve, De Laat & Niewenhuizen, 2006:299). Lee-Kelley *et al.* (2007:205) further indicated that tacit knowledge was associated with personal know-how which “is not stored” within the organisation but “is held” by the employees (knowledge workers). This type of knowledge consists of implicit mental models and experiences of individuals (Pretorius & Steyn, 2005:41). One important characteristic of tacit knowledge is that it is implicit in the professional and institutional culture of an organisation (Pan & Scarbrough, 1998:56). This is the main type of knowledge that becomes the key focus of this study. In line with the learning organisation approach, tacit knowledge learnt needs to contribute to explicit actionable knowledge (Yeo, 2006:397). Mercer *et al.* (2005:130) insisted that tacit knowledge cannot be learned with a “rulebook or blue prints, it can only be transferred through direct experience”. They also pointed out that tacit knowledge exchange would best be enabled through social interactions. In this study, tacit knowledge is defined as that knowledge which is acquired directly through person-to-person interaction.

Explicit knowledge

Explicit knowledge can be appropriately defined as the ordering of data and information according to well-defined, formalised procedures or rules (Mercer *et al.*, 2005:130). Pretorius and Steyn (2005:41) described explicit knowledge as that knowledge that was documented and consisting of formal models, rules and procedures. Thus, by explicit knowledge reference is made to knowledge that can be produced in a document format, such type of knowledge is generally stored in databases.

Due to its characteristics, explicit knowledge can be easily transmitted via technology than is the case with tacit knowledge (Junnarkar & Brown, 1997:142). They referred to explicit knowledge as externally visible documented tacit knowledge defining it as objective knowledge detached from the situation in which it was initially created. Junnarkar and Brown's definition is adopted for the purposes of this study.

Knowledge workers

A knowledge worker is defined as “any employee possessing specialist knowledge or know-how” (Lee-Kelley *et al.*, 2007:205). According to Martin-de-Castro *et al.* (2007:18), this kind of personnel “presents a series of particular characteristics: it is highly specialised, has superior and extensive training and it focuses on intellectual activities”. Under this category are engineers, teachers, salespeople, nurses and middle managers who are responsible for the productivity of their organisations (Drucker, 1991:74).

According to Patrick and Dotsika (2007:396), knowledge workers are characterised by higher levels of education, specialist skills and ability to apply these skills to identify and solve organisational problems. Patrick and Dotsika further elaborated that knowledge workers were the owners of the means of production in a knowledge-intensive organisation. Holsapple (2003:48) defined knowledge workers as “middle grouping” made up of professionals, technicians and managers who possess mostly abstract, theoretical and esoteric (rare and difficult to imitate) knowledge.

The definition that would be used throughout this study is taken from Harman and Brelade (2000:ix), who defined knowledge workers as those individuals “who do work which is knowledge and information based”. According to Harman and Brelade, these individuals are found at all levels of the organisation. Throughout this study, the concepts knowledge workers and professionals will be used interchangeably.

Knowledge-based organisation

The knowledge-based organisation would be defined in terms of the services sector. As highlighted by Call (2005:19), the services sector composite the knowledge-based economy which constitutes knowledge-based organisations. Nonaka (1991:96) aptly defined the knowledge-based organisation in terms of his knowledge-creating company model.

According to Nonaka, in such a company there is a continuous process of creating new knowledge and embodying that knowledge into new technologies and products. This then implies that a knowledge-based organisation is an organisation that depends on knowledge workers' expertise and competence to achieve its objectives. The definition adopted for this study is in line with that of Holsapple (2003:16), who defined a knowledge-based organisation as an intelligent complex adaptive system with the following characteristics:

- Innovation and creativity
- Much emphasis on individual worker competency and freedom in terms of learning, making decisions and taking actions in their areas of responsibility
- Multiple and effective networks providing sources of knowledge, experience and insight
- A common set of strong, stable values held by all employee
- Learning, knowledge and organisational intelligence becoming important characteristics.

In this study, the knowledge-based organisation is defined in terms of Nonaka's knowledge creation company as an entity where everyone is a knowledge creator and sharer.

Knowledge-based economy

A knowledge-based economy is an economy where the “virtues of knowledge as a new source of competitive advantage are spread” (Ondari-Okemwa, 2004:361). As highlighted by Ondari-Okemwa, the production, distribution and use of knowledge are the main drivers of growth, wealth creation and employment across all industries of a knowledge-based economy.

This definition is consistent with the views of a post-capitalist society where knowledge becomes the main controlling resource (Drucker, 1993:6). In this study the researcher defines a knowledge-based economy as characterised by ‘massive’ investments in knowledge creation and distribution efforts throughout all levels of the economy.

Knowledge invention

This refers to the process of creating new knowledge which involves the tapping of the tacit and highly subjective personal insights so that they are available for use by the organisation as a whole (Nonaka, 1991:97). In this study knowledge invention is described as a human engineered process of creating and developing new knowledge inside the organisation.

Knowledge innovation

Rademakers (2005:131) defined knowledge innovation as the ability of companies to continuously and rapidly renew their knowledge base. According to Nonaka, knowledge innovation is the hallmark of a knowledge-creating company where ideas are given top priority. The key argument in this study is that knowledge innovation is the pre-requisite for the whole (products and processes) innovation process inside the organisation.

Information and communication technologies (ICTs)

Ondari-Okemwa (2004:365) defined ICTs as electronic tools used for transfer, processing, preserving and dissemination of knowledge and information. In this definition, computers, telephone systems, radios and televisions are included. The researcher uses the concept ICT and IT (information technology) interchangeably in this report to refer to various electronic communication tools used by organisations to transfer and share information and knowledge. Examples of ICT tools as mentioned in this study are telephones, cellphones, computers, laptops, internet, intranet and video-conferencing.

Infrastructure

Infrastructure as defined in terms of IT application refers to the hardware and software which enable the physical communication contact between organisational members (Pan & Scarbrough, 1998:57). The concept has been popularised by its application at Buckman Laboratories as discussed in chapter 2. Aligned to this definition, the concept infrastructure is used in this research to describe all components of an organisation's IT systems. The concepts ICTs and infrastructure will be used interchangeably for the purposes of this study.

Infostructure

This is another concept that has its deep roots at Buckman Laboratories (a knowledge-intensive firm in the USA). Pan and Scarbrough (1998:57) defined the organisation's infostructure as the formal rules governing the exchange of knowledge and information between organisational members. The operational definition of the concept as it applies in this study recognises that the infostructure of a knowledge-intensive organisation is embedded in social networks which are created within the entity to bring organisational members together for knowledge and information sharing. Examples of these would be community of best practices and knowledge sharing meetings.

Infoculture

Pan and Scarbrough (1998:57) defined infoculture as the cultural knowledge defining constraints on knowledge and information sharing embedded in social relations. The concept could also be traced to its application in Buckman Laboratories. It is apparent from the definition that the concept infoculture and knowledge-oriented organisational culture are synonymous. In this study the concept knowledge-oriented organisational culture as described in chapter 2 is used commonly to embrace the concept infoculture.

Efficiency

This is one of the concepts that ultimately explain the key benefits of KM in an organisation. The other is effectiveness. Prokopenko (1987:28) defined efficiency as an organisation's final output compared to its input. The operational definition of the concept efficiency as it applies in this study relates to the capacity of an organisation to achieve higher returns (productivity) as a result of KM implementation.

Effectiveness

The concept 'effectiveness' is defined by Prokopenko (1987:28) to refer to the impact made by an organisation's performance. As highlighted by Berman (1998:9), an organisation could be described as effective if it is able to achieve its stated objectives. The concept effectiveness is used in this study to define the extent of achievement of knowledge-based outcomes in knowledge-intensive organisations. Knowledge-based outcomes are fully elaborated in chapter 2, particularly in the discussion of KM benefits.

Developing economy

According to the United Nations Human Development Reports, a developing economy can be explained in terms of the underdeveloped countries of the world which are characterised by low Human Development Index (HDI) rates signifying low levels of education, poor health facilities and low levels of economic growth. El-Ghannam (2002:52) suggested that the developing countries of the world were facing severe developmental problems because their populations were increasing faster than their average economic growth rates. These countries are classified as Third World countries due to their economic underdevelopment.

El-Ghannam (2002:53) described the developing economy in terms of the following characteristics:

- Chronic absolute poverty
- High levels of unemployment and underemployment
- Wide and growing disparities in the distribution of income
- Low and stagnating levels of industrialisation
- Antiquated and inappropriate educational and health systems
- Severe balance of payments and international debt problems
- Substantial and increasing dependence on foreign aid and technologies (including ICT).

El-Ghannam noted that developing economies could further be grouped into low and middle income countries depending on the level of their economic development. Most of these countries are under-resourced with poorly developed IT infrastructure (Thorp, 2007:76). The present researcher defines a developing economy as one which experience serious resource constraints in the form of ICTs and human capital.

Developed economy

The developed economy represents the rich countries of the world (Ahmed, 2007:354). These countries are highly industrialised with the majority of the population living in towns and cities (El-Ghannam 2002:55). The developed economy represents quite the opposite of the developing economy. Developed countries are rich in human capital as well as a well developed IT infrastructure. This has been confirmed by both Thorp (2007:76) and Ahmed (2007:354). Aligned to this study, the developed economy would be viewed in terms of those countries that have highly qualified people as well as widespread IT connectivity.

Public sector

The public sector and public service are sometimes defined as synonymous. One such definition is made by Farnham and Horton (1996:25) who defined the public sector and public service as a process “whereby public officials, employed by state agencies, implement and execute governmental policies determined by the political authorities, within a framework of law, where efficient use of resources is of only secondary importance”.

This definition, though clearly denoting the key essence of public sector organisations fails to recognise that efficient use of resources is important for productivity improvement in all organisations (public and private sector organisations). In essence, public sector organisations are government created entities with a political mandate. Dornstein (1988:7) defined the public enterprises as a form of government ownership of industries and services. The public sector is defined in this study as “state agencies” in the form of government departments and government owned businesses.

Private sector

Farnham and Horton (1996:26) defined private sector organisations as those organisations created by individuals or groups for market and welfare purposes. The private sector is defined in this study to include profit motivated business corporations as well as non-governmental organisations (NGOs).

Indigenous Knowledge

Lwonga (2009:78) defined indigenous knowledge (IK) as knowledge which is used as the basis for local-level decision making in socio-economic, education, natural resource management, political, agriculture, sports and a host of other activities in rural communities. IK is largely tacit, orally communicated, experiential, unique and embedded in the people’s heads. It is also related to the activities and practices of communities with long histories of close interaction with the natural environment across cultures and geographical spaces (Ngulube, 2003:21). IK in this study refers to local knowledge, rural people’s knowledge and traditional knowledge.

Endogenous Knowledge

Endogenous knowledge refers to the historical experience and a knowledge that is specific to a given cultural set-up and the knowledge that is free from any external or foreign influence (Lwonga, 2009:9). In this study, endogenous knowledge is defined as a branch of the indigenous knowledge system.

Exogenous Knowledge

Lwonga (2009:9-10) defined exogenous knowledge as external information and knowledge which is made available to the rural community from sources outside its boundaries as part of information transfer process to support development. Western knowledge is exogenous knowledge in Africa. In this study, exogenous knowledge is categorised mainly in the form of knowledge from other continents such as Europe, North America, Latin America, Middle East and Asia.

Rural areas

Though the task of defining rural areas is considered challenging, the World Health Organisation (Dolea, Stormont, Zurn, Shaw & Braichet, 2009:6) defined rural areas as those areas which are not urban in nature. In terms of this definition rural areas represent the “under-served areas”, which could be in the form of farms, villages, small towns and open spaces. According to the World Health Organisation’s definition, the distinction between rural and urban is based on two main elements: the profile of the settlement (population density and availability of economic structures) and accessibility from urban areas.

Based on the settlement profile element, Avila *et al.* (2005:3) defined rural areas as those settlements of less than ten thousand persons and the rural space as dominated by farms, forests, water, mountains or deserts. The main economic activity in such areas is agriculture. Perhaps the definition by Dent (2007:207) is closer to that adopted for this study. Dent defined rural areas in terms of the following characteristics:

- Areas remote from concentrated urban groups
- Areas where people tend to live in small and isolated groups
- Areas poorly served by roads and other communications
- Areas low on energy generation and consumption, especially electricity and gas
- Areas where people are heavily dependent on the soil and are engaged in self-sustaining economic activities.

Considering all these definitions, rural areas are defined in this study as those areas which are not urban in nature.

Urban areas

Emanating from the definition of rural areas, it is imperative to define urban areas. Urban areas comprise a city or town and also the adjacent sub-urban fringe (Dolea *et al.*, 2009:6). In this study, an urban area is defined in terms of those areas which have an urbanisation rate higher than 50.

CHAPTER 1: INTRODUCTION AND CONTEXTUALISATION

Knowledge shared is knowledge multiplied

-Robert Buckman (2004:vii)

1.1. PREAMBLE

The field of Knowledge Management is extensively populated with cases of organisations from the economically developed regions of the world. Very little is reflected about Knowledge Management from the developing world, particularly from the African continent. This study investigates Knowledge Management from the context of rural areas of South Africa.

The concept of Knowledge Management has become popular in organisations throughout the world over the last twenty years. There are countless studies recorded every year which capture the importance of Knowledge Management efforts in knowledge-intensive organisations. The majority of the studies on Knowledge Management are conducted in big successful corporations of the developed countries. Knowledge Management (KM) practices of organisations in the developing nations, particularly in rural areas are hardly captured.

While most empirical studies as reflected in chapter 2 reflect Knowledge Management practices of resource endowed organisations of the developed economy, Knowledge Management practices of resource-constrained organisations of the developing economy also deserve attention. This study is an investigation of Knowledge Management practices of organisations operating in rural areas of South Africa with reference to Limpopo Province.

The study is aimed at investigating the extent to which organisations operating in rural areas of South Africa implement KM. As part of the investigation, the study focuses on the tools used for information and knowledge sharing in the research entities. In this regard, information technology (IT) and social variables that enhance information and knowledge sharing are considered vital resources (tools) in KM implementation (Heisig, 2009:11).

Knowledge Management has been credited by KM scholars for the emergence of the knowledge economy. In this regard, Amabile and Kramer (2007:72) have observed that the modern entity “demands knowledge work from its people”. It has also been highlighted by Andresen and Lichtenberger (2007:110) that “in a globalising environment, a workforce with superior skills is a primary vehicle for sustainable competitive advantage”.

These authors have insisted that knowledge has become the new weapon which organisations employ for sustainable competitive advantage. Hence, Firer (2005:1) and Mckenna (1991:67) argued that more modern organisations are continuously transforming from product-based to knowledge-based. The rapid rise in knowledge has a positive effect on products proliferation (Quenlch & Kenny, 1994:155).

Furthermore, Buckman (2004:vi) stated that “knowledge has always meant power: power to survive, power to adapt, power to thrive in a hard environment”. This is the reason why knowledge and its productive effects have assumed a central role in explaining the productivity of modern organisations. It is upon this basis that Van der Loos (2008:8) insisted that the quality of skills (knowledge) in an organisation could be the key driver to business sustainability and profitability. This study reflects the extent to which organisations in rural area of South Africa implement Knowledge Management practices in order to achieve specific knowledge-based outcomes such as efficiency and effectiveness.

The study lays its foundation on KM frameworks already proven in other parts of the world. Though there is not yet a universally accepted theory of Knowledge Management, there are two main models in KM literature; the Western and the Japanese models. These models favour a socio-technical approach to Knowledge Management affording equal consideration to both the human and technical aspects in the knowledge acquisition, sharing and exploitation process (Pan & Scarbrough, 1998:55; Gurteen, 1998:5, and Coakes, 2006:579). It is upon this basis that this study adopts a holistic approach to KM.

1.2. BACKGROUND TO THE RESEARCH PROBLEM

Since this research study is aimed at investigation Knowledge Management practices of organisations in the rural areas of South Africa with emphasis to the predominantly rural Limpopo Province, it is crucial at this juncture to clearly describe the significance of the study's context as it impacts on the research problem. It is argued in this study that organisations in rural areas of South Africa are constrained in terms of IT and human skills as compared to organisations in urban areas.

While human skills can be developed through education, training and experience, and even through KM efforts, IT demands substantial amount of financial resources to acquire. Investment in Knowledge Management could be one of the least expensive ways of addressing the developmental challenges faced by the rural areas of South Africa. Limpopo Province is described as a proxy of the rural areas of South Africa in this study.

South Africa is described, in terms of the Human Development Index (HDI), as a middle income nation (United Nations Human Development Report, 2007/2008). But the legacy of the past has seen the development of a massive industrial economically developed infrastructure in the major cities of the country, with the rural areas still underdeveloped. The rural areas of South Africa bear most of the characteristics of low income developing nations.

1.2.1. Brief overview of the developing economy of South Africa

The United Nations Human Development Report (2007/2008), 2005 indicators ranked South Africa at position 121 amongst 177 other nations in terms of the Human Development Index (HDI). The HDI is a composite measure for life expectancy, education attainment and adjusted real income. In terms of the HDI ranking as captured in table 1.1, South Africa has a medium human development, as compared to Norway, Cuba and Mauritius (examples of countries with high human development). As depicted in table 1.1 Togo, Zambia and Niger are examples of countries with low human development.

While other nations have remained stable in terms of the HDI rankings from 2005 to 2007, South Africa is continuing to drop in the rankings. The level of economic development as determined by HDI for South Africa (2005 to 2007) compared to three high human development and three low human development countries is represented in the following table:

Table 1.1: Comparative Human Development Index between South Africa and six other countries

COUNTRIES	HDI 2005	RANK 2005	HDI 2006	RANK 2006	HDI 2007	RANK 2007
1. Norway	0.968	2	0.970	1	0.971	1
2. Cuba	0.839	51	0.856	51	0.863	51
3. Mauritius	0.797	65	0.801	79	0.804	81
4. South Africa	0.678	121	0.680	128	0.683	129
5. Togo	0.495	152	0.498	159	0.499	159
6. Zambia	0.466	165	0.473	164	0.481	164
7. Niger	0.330	174	0.335	182	0.340	182

Source: United Nations, Human Development Report 2009.

Based on the Human Development Report 2009 (2007 statistics), other developing nations such as Chile (HDI 0.878; ranked 44th), Mexico (HDI 0.854; ranked 53rd), Brazil (HDI 0.813; ranked 75th), Gabon (HDI 0.755; ranked 103rd) and Botswana (HDI 0.694; ranked 125th) performed better than South Africa. One other measure that also confirms South Africa as a developing economy is the Human Poverty Index for developing countries (HPI-1) used by the United Nations Development Programme. The HPI-1 is a measure combining measures of severe deprivation in health, measured by the proportion of people who are not expected to survive age 40, the adult literacy rate represented by people aged 15 and above, people without access to improved water sources and children underweight for age 0-5 years (Human Development Report, 2009).

The Human Development Report (2007/2008) ranks South Africa 55th among 108 developing countries due to its HPI-1 value of 23.5. In line with the objectives of this study, the crucial aspect in the description of South Africa is not restricted to its level of economic development but other characteristics such as IT connectivity, the level of education and skills which are key ingredients in KM. Studies have found that people in the developing economy do not have access to Information Communications Technology (ICT) connectivity and skills sources (namely education and training) the same way as those in the developed world (Thorp, 2007:76). According to Thorp, the low level connectivity and lack of skills in the developing world particularly in Africa is caused by the following factors:

- Heavy handed government regulations and ownership of the telecommunications industry
- Lack of competition and disincentiveness to innovate in the telecommunication industry
- Lack of infrastructure and infrastructure security
- Low income and education levels.

Though Thorp (2007:76-77) believed that mobile technology could be a solution for the poorly laid-out telecommunication infrastructure in the developing countries, Ahmed (2007:345) found that there are band-width constraints in most developing economies. As pointed out by both Ahmed and Thorp, the ICT infrastructure in the developing economy in Africa is still far from ideal. This is due to the fact that most parts of Africa, particularly the rural areas are still without access and that even those parts that do have, their infrastructure is unable to sustain today's applications due to band-width and cost constraints.

Though better in terms of ICT connectivity by African standards, South Africa is not very different from most of these countries. Citing the International Telecommunication Union's world telecommunication indicators of 2006, Ahmed (2007:347) showed that South Africa was ranked seventh (7th) amongst African countries in terms of ICT connectivity. Mauritius, Seychelles, Morocco, Algeria, Tunisia and Egypt were all ranked above South Africa. According to Ahmed, weak communication and social infrastructure faced by developing countries including South Africa do not only block information flow, but ultimately stifle social and economic development.

1.2.2. Limpopo Province as a proxy for the rural areas of South Africa

Limpopo Province can be appropriately defined as an appropriate proxy for the rural areas of South Africa. A brief synopsis of the level of development in Limpopo Province can be reflected in a comparative table with the other provinces of South Africa as follows:

Table 1.2: 2007 Human Development Report for the nine provinces in South Africa

INDICATOR (Human Development Report 2007)	Limpopo	WesternCape	EasternCape	Northern Cape	Free State	Kwazulu-Natal	North-West	Gauteng	Mpumalanga
1.HDI	0.50	0.69	0.53	0.61	0.58	0.56	0.55	0.68	0.54
2.POVERTY INDEX	59.1	16.9	62.0	39.7	50.0	49.4	46.3	22.6	47.5
3.LITERACY RATE	57.3	84.3	63.5	71.3	70.1	66.9	66.3	83.1	63.5
4.URBANISATION RATE	9.4	88.7	38.1	83.3	78.6	47.6	45.3	93.4	41.4

Source: United Nations, Human Development Report 2007.

A comparative analysis of Limpopo Province and the rest of the rural provinces in South Africa reveals the province as having the highest percentage of people living in rural areas. The other rural provinces such as Eastern Cape, Mpumalanga, North West and Kwazulu-Natal are even far urbanised as compared to Limpopo Province. Thus, Limpopo Province is approached as a proxy for these rural provinces of South Africa. The HDI for South Africa has hovered around 0.68 from 2005 to 2007. The provinces with an “HDI below the national average deserve special attention as far as human development is concerned” (Prinslo, 2004:1). Limpopo Province has the lowest Human Development Index as compared to the other provinces. At 0.50, the 2007 HDI for Limpopo Province is within the range of the low HDI for developing nations. This is a clear indication of the low levels of development in the province, reflecting the status of its health care system, the educational levels and Gross Domestic Product.

A more reflective indicator that appropriately denotes Limpopo Province as a rural province is its urbanisation rate. This rate reflects the number of people living in urban areas. In 2007, the urbanisation rate for Limpopo Province was the lowest when compared to the other provinces of South Africa at only 9.4% (Human Development Report 2007/2008). The urbanisation rate for Limpopo Province generally confirms that it is a rural province.

On the other hand, the percentage of people living in poverty as indicated in the 2007/2008 Human Development Report was 59.1% as compared to 22.6% for Gauteng province. The province is only second to the Eastern Cape in terms of the poverty level. Both provinces have a predominantly large rural population. Limpopo Province compares well with other rural provinces such as Mpumalanga, Northern Cape and Eastern Cape in terms of the percentage of persons attending university/technikon. These statistics are reflected in table 1.3 below:

Table 1.3: Percentage of persons attending educational institutions by type of institution per province in South Africa

Province	College	University/ Technikon	Total % attending college, university/ technikon	Other type of institutions (including pre-school, school and ABET)
Eastern Cape	1.2	1.4	2.6	97.4
Free State	2.0	2.6	4.6	95.4
Gauteng	4.4	5.8	10.2	89.8
KwaZulu-Natal	1.4	2.4	3.8	96.2
Limpopo	1.0	1.2	2.2	97.8
Mpumalanga	1.5	1.1	2.6	97.4
Northern Cape	1.6	0.7	2.3	97.7
North West	1.5	1.6	3.1	96.9
Western Cape	2.7	4.8	7.5	92.5

Source: Statistics South Africa, Community Survey 2007.

With a 93.1% of persons attending school, Limpopo Province is the highest in this category. But the province fares badly where it matters most. Only 2.2% attend college and university/technikon. The richer provinces (Gauteng and Western Cape) scored higher in these categories. Gauteng registered 4.4% of persons attending college and 5.8% attending university/technikon, with the Western Cape recording 2.7% and 4.8% respectively for same categories.

As highlighted by Statistics South Africa Community Survey (2007:31) that increased educational participation in terms of those attending college and university/technikon is a crucial factor of employability, labour participation and development, then the developmental gap between the rich and poor provinces in South Africa is not by default. Furthermore, the Statistics South Africa Community Survey (2007:59) shows that Gauteng followed by the Western Cape received most internal migrants. Most of the migrants into Gauteng are said to be individuals born in Limpopo followed by KwaZulu-Natal.

The majority of the people in Limpopo Province live in the rural villages. In terms of the Statistics South Africa Community Survey 2007, out of a population of almost 5.2 million people in the province, 97.5% are Black African. The other population groups (Coloureds, Indians and Whites) comprise just 2.5% of the people in Limpopo Province. A comparison of the population distribution in South Africa amongst the nine provinces is presented as Appendix E in this research report.

Though most of the rural villages in Limpopo Province are electrified, the general level of economic development is less advanced as compared to the urban areas of South Africa. The Community Survey found that out of the 5.2 million people in the province, about 81.0% were using electricity at home. This was well within the national average of 80.0%. The percentage of households using electricity in Limpopo Province was higher than that of Kwazulu-Natal (71.5%) and Eastern Cape (65.5%).

Coupled with the higher percentage of people with access to electricity in Limpopo Province, the Community Survey 2007 indicates that almost 70.5% of the households had access to a cellphone. While the percentage of households with a land line were just 3.1% and with an internet facility at home just 1.8%, the researcher observes that cellphones could offer a viable alternative for information and knowledge sharing by the people of the province. Just like the rest of the rural provinces in South Africa, the economic development of Limpopo Province can be traced to the apartheid system of separate development in the form of former homelands of Gazankulu (Vatsonga ethnic group), Lebowa (Bapedi people) and Venda (Venda ethnic group).

Limpopo Province is South Africa's northernmost province strategically positioned as a gateway to the rest of Africa as it shares borders with other states in Southern Africa such as Botswana, Zimbabwe and Mozambique (Burger, 2009:23). Burger noted that while the province is rich in natural beauty, culture and wildlife (largest section of Kruger National Park along its eastern boundary with Mozambique), it is a province of "dramatic contrasts". It has a strong rural basis which forces its growth strategy to centre on addressing infrastructure backlogs, alleviation of poverty and social development.

The province is gradually transforming into a services-led economy, considering the number of professionals employed in government and the private sector. Just like the rest of modern South Africa, Limpopo Province has modern shopping centres in its capital city (Polokwane) and major towns (Modimolle, Mokopane, Makhado, Musina, Phalaborwa, Thabazimbi and Tzaneen). The map of Limpopo Province is attached as Appendix C in this research report.

Government administrative offices in Limpopo Province are spread across the five districts (Vembe, Mopani, Greater Sekhukhune, Capricorn and Waterberg districts). There is a strong decentralisation of government functions across the five districts and the head office of all the government departments is situated in Polokwane (the only city of the province). Limpopo Province is rapidly developing into an economic hub, considering its vast tourism and mineral resources. The Kruger National Park and Phalaborwa Mining Company are good indicators in this regard.

Having observed from KM literature (as captured in chapter 2), that resource constraints similar to those observed in Limpopo Province can hamper effective KM, the researcher embarked on this study with the aim of investigating whether the implementation of KM initiatives in the organisations operating in the province is negatively affected by these constraints. Similar to the rest of Africa, Limpopo Province has a rich heritage of indigenous knowledge (IK). There are efforts in the province to preserve IK of its ancient people and “fearless” pioneers in the form of museums and national monuments (Burger, 2009:23). Amongst these efforts Burger noted the following:

- Bakone Malapa Museum: a museum near Polokwane where Bapedi tribepeople practice age-old skills for the benefit of visitors
- The Tsonga Open-Air Museum near Tzaneen: a museum where the Vatsonga-Shangaan tribe practise age-old skills
- Mapungubwe (“Place of The Jackal”) Hill near Musina: a world heritage site which used to be a natural fortress from about AD 950 and 1200.

Burger (2009:23-24) further pointed out that various archaeological artefacts including golden objects were discovered in Mapungubwe and the northern part of Kruger National Park in the quest to preserve the traditional knowledge which was once endogenous in these areas. The question that arises is: why is Limpopo Province chosen as a proxy for the rural areas of South Africa?

The province can be seen as a good proxy for the rural areas of South Africa considering the fact that it reflects most of the characteristics of a rural province as depicted in other rural provinces of South Africa. As highlighted by Burger (2009:24), Limpopo Province is a “typical developing area, exporting primary products and importing manufactured goods and services” and it has a high potential and capacity “with appropriate economic development”.

1.3. STATEMENT OF THE RESEARCH PROBLEM

The problem being addressed in this research is that there are misconceptions that due to resource constraints, organisations in the rural areas of South Africa could not successfully initiate and implement Knowledge Management. Having observed the nature of constraints the rural context of Limpopo Province could pose to the successful implementation of KM, the researcher identified a set of variables from successful KM frameworks and investigated how these were being taken into consideration in KM initiatives of organisations operating in the province.

While it is established in KM literature that knowledge is an intergral input in the productivity of modern organisations, problems associated with KM implementation in the rural areas of Africa have been observed by Ondari-Okemwa (2004:362) and Ikoja Odonga (2006:206). Arising from a literature search, the researcher realised that successful KM implementation demands certain enablers (Mertins, Heisig & Vorbeck, 2001:4; Chong, Chong & Wong, 2009:72, and Bishop, Bouchlaghem, Glass and Matsumoto, 2008:22). These include ICTs, knowledge-oriented organisational culture, organisational structures, positive HR practices, experienced and educated personnel and leadership support.

Ondari-Okemwa (2004:263) realised that some of these enablers were limited in the rural areas of Africa. He believed that due to low levels of literacy, lack of political goodwill and low access to computers and the Internet, most African countries could not successfully implement KM. But, Conceição *et al.* (1997:130) argued that due to their underdeveloped telecommunication infrastructure, organisations of the developing economy have to find innovative ways to convert knowledge and technology into assets.

The countries with a better ICT connectivity have been found to be far economically developed than their poorer ICT constrained counterparts. As of June 2005, roughly 73% of the estimated 72,4 million host computers were in the USA, 80% in English speaking nations, and more than 90% of the Internet operated out of Western countries (Ahmed, 2007:354).

Furthermore, Ahmed showed that based on the World Bank's Geographic Information System Report of May 2005, the English language dominated in ICTs with 35,2% followed by the Japanese with 13,7% and the Spanish with 9,0%. A majority of empirical cases on KM reflect organisations from these language groups (the English speaking nations such as United Kingdom and USA, the Japanese nation and the Spanish speaking nations in Europe). This attests to the already recognised link between economic prosperity and Knowledge Management (Nemasivayan & Denizci, 2006:381). Taking into consideration that one of the founding fathers (Drucker as reflected in chapter 2) of the knowledge-based view thought that the priority to improve the productivity of knowledge work was the sole domain of developed countries, recent studies suggest that organisations in developing countries also provide a realist case for effective Knowledge Management implementation.

Though most empirical studies on Knowledge Management capture the experiences of private sector firms, the benefits of Knowledge Management are not solely confined to the private sector. Wiig (2002:225) reflected that the public service could also benefit from Knowledge Management efforts. In spite of the low levels of ICTs in developing countries, the World Bank found that private sector firms in the developing economy invested \$230 billion in telecommunication infrastructure between 1993 and 2003 (Ahmed, 2007:354). Whether these efforts to replicate the conditions of the developed economy in a developing economy would lead to the promotion of knowledge-based outcomes deserve further scrutiny.

It has been found in Knowledge Management literature that Knowledge Management efforts have the capacity to initiate and enhance the development of employee skills through knowledge-based outcomes. This is particularly evident in case studies of those organisations which continuously apply a concerted learning-oriented Knowledge Management approach. It should be realised that knowledge-based outcomes such as learning and competence development have been proved to be essential for productivity, competitiveness and innovations in organisations (Kock, 2007:480).

The organisations of the developing economy, particularly in rural areas, should adopt KM in order to alleviate the problems of shortage of skills and low productivity. Furthermore, most developing nations including South Africa face shortage of skills necessary for economic sustainability. The effects of the brain drain has seen developing countries losing highly qualified and competent doctors, engineers, nurses and educators to developed countries.

There have been widespread complaints by the general public in South Africa about the state of service offered by government departments and their agencies. While public sector professionals appear to be closing the gap and at times overtaking their private sector counterparts in terms of remuneration and benefits, service standards appear not to have improved. The South African government tends to complain about lack of suitably qualified professionals and has continued to channel a lot of resources towards skill development initiatives. Most government departments channel a lot of funds towards employee training programmes. Whether these are able to lead to the promotion of knowledge-based outcomes such as increased learning and productivity by professionals employed in public service could only be established after the evaluation of empirical evidence.

Having worked in the South African public service (Department of Education in Limpopo and Mpumalanga provinces) for more than 18 years, the researcher is well aware of the problems experienced in government departments. These problems are particularly more apparent in rural areas of South Africa where most qualified and experienced professionals are continuously recruited by big corporations in the big cities. This has led to a mini brain drain within South Africa. Limpopo Province in particular has been historically associated with migrant workers who flock to the big cities of Johannesburg and Pretoria for employment. This was historically associated with the Gold mines in Gauteng. But even during this era of the knowledge economy, most of the highly gifted, educated and experienced professionals from Limpopo are working in the big corporations of Gauteng.

Considering the developmental gap between the rich and poor provinces of South Africa and that successful nations and organisations are those that have a “professional attitude” towards knowledge (as reflected in empirical studies cited in chapter 2), it is argued in this study that the answer to the developmental challenges facing rural areas of South Africa lies in KM implementation. The link between Knowledge Management, a knowledgeable and skilled work force (knowledge workers) and increased productivity has been established in literature (Drucker, 1991:70; Cross, Laseter, Parker & Velasquez, 2006:32, and Lee-Kelley, Blackman & Hurst, 2007:205).

The purpose of this study, therefore, is to present empirical findings in order to demonstrate that despite the resource constraints facing rural areas of South Africa, organisations in these areas can successfully initiate and implement KM. This is achieved by analysing the extent of KM implementation between public and private sector entities operating in the rural areas of South Africa (Limpopo Province) with a focus on their application of ICTs and knowledge-oriented social factors for knowledge and information sharing.

1.4. RESEARCH QUESTIONS

Since there is consensus among scholars (Pan & Scarbrough, 1998:55; Coakes, 2006:591; Chong 2006:247 and Lamproulis, 2007:40) that KM is enabled by a combination of technical and social factors such as information technology, organisational culture, structures, people and leadership, this study would like to investigate KM practices of organisations in the rural areas of South Africa with the following two underlying questions:

- To what extent are public and private sector entities operating in rural areas of South Africa using ICTs and social factors to facilitate information and knowledge sharing?
- What is the extent of KM implementation between public and private sector entities in rural areas of South Africa?

1.5. RATIONALE FOR THE STUDY

Arising from the research questions, it becomes imperative that the underlying rationale behind the study should be reflected. The study is influenced by a desire to provide the rural areas context in KM. This would lead to a broadening of KM theory. There would not be sufficient justification for a universal KM model as long as KM is not captured from diverse contexts. With KM fully investigated from the developed economy context and with recent trends towards understanding KM in the developing regions of the world, the rural areas of South Africa provide an avenue towards a deeper understanding of KM from the African context.

In order to have a deeper understanding of KM in rural areas of South Africa, the researcher observes that a holistic approach to KM should be considered. Though there are two dominant perspectives in Knowledge Management theory and practice (the IT domain and the human domain), the IT domain is the overwhelming view in Knowledge Management theory. The human domain appears to have just recently started to enjoy the attention of Knowledge Management scholars. Of particular note is the IDOM case which reflects that knowledge acquisition can happen through a social construction and organisational learning process (Arambaru & Sáenz, 2007:73). This is further reflected in Pastoors' (2007:3) argument that "organisations have to move towards a more open approach where control is loosened in favour of space; where flexibility is encouraged and more attention is given to social factors in order to enable employees to learn and share and create knowledge".

This study follows the knowledge-oriented perspective and goes a little further than Arambaru and Sáenz by focusing on an extensive study of multiple cases reflecting the Knowledge Management practices of both public and private sector organisations in the rural areas of South Africa. The study is approached from the knowledge-based view which considers knowledge as a strategic resource for sustainable competitive advantage by modern entities. Various studies have been conducted over the last two decades trying to understand how this happens. Wiig (1997:9), Grant (1996:121), Metaxiotis, Ergazakis and Psarras (2005:7), and Arambaru and Saénz (2007:77) have ascribed that adopting a knowledge-oriented strategy can lead to the development of a more productive workforce.

The view that organisations should marshal the skills and expertise of their members in order to remain competitive and more productive is widespread in Knowledge Management literature. Noting that a successful firm is the one that is able to “manage its learning process efficiently and that in the present knowledge-based economy, the competitive advantage of the firm does not come from market power, but from knowledge-based assets and from the way in which they are deployed” (Martin de Castro *et al.*, 2007:44), the crux of this study is to unravel the nature of KM implementation in organisations operating in rural areas of South Africa.

Considering the benefits arising out of successful KM implementation, the researcher argues that organisations in rural areas of South Africa stand to gain a lot from KM. The benefits of Knowledge Management to organisations are elaborated in the literature review (chapter 2) and among them is increased organisational learning whereby continuous learning and teaching is built into the employee’s job. In order to holistically cover Knowledge Management efforts of the organisations in the rural areas of South Africa, this research is conducted as a comparative study between public and private sector organisations. The study is narrowed to Limpopo Province.

1.6. AIM OF THE STUDY

As highlighted in the statement of the research problem, less is written about KM in the rural areas of South Africa, while a lot of empirical studies conducted in South Africa reflect KM from the context of organisations operating in the urban areas. This research is conducted with the aim of understanding KM as it is practised in the rural areas of South Africa. Since the investigation is undertaken as a comparative study of the extent of KM implementation (focusing on application of ICTs and knowledge-oriented social factors for information and knowledge sharing) between public and private sector entities in the rural area context of South Africa, its findings could be used by researchers and practitioners to improve KM implementation in organisations operating in under-resourced contexts.

The study adopts a holistic approach to KM which assumes that successful KM implementation is rooted in a broad range of factors (Metaxiotis *et al.*, 2005:10). As established from literature, there are five key factors forming the framework of this investigation which are considered important in successful KM implementation. These are: information technology, organisational culture, organisational structures, human resource practices and leadership. The five factors represent both the technical and human domain perspectives of KM which are viewed critical by Knowledge Management scholars in building effective Knowledge Management efforts. The study is therefore rooted in the learning-oriented domain of Knowledge Management which emphasises the development of employee competence and expertise as part of the knowledge-based outcomes.

The study acknowledges that IT alone cannot effectively promote knowledge-based outcomes. Even in the organisations of the developed economy, it has been found that the “increasing complexity of new resources makes it extremely difficult for any one firm to encompass the necessary (IT) resources and capabilities for a successful” technology driven knowledge strategy (Elmuti, Abebe & Nicolosi, 2005:117). The study aims to investigate the degree to which organisations of the rural areas in South Africa implement KM. The research investigation is conducted within the private and public sector organisations in Limpopo Province in order to reflect a comparative analysis of Knowledge Management practices of these entities.

1.7. RESEARCH OBJECTIVES

Since the study is aimed at determining the extent to which both technological and social variables are used by organisations of the rural areas of South Africa to enhance KM, it would lead to the development of a Knowledge Management model for organisations operating in the rural areas of South Africa. The study acknowledges the fact that the majority of authors have focused on the value of ICT as a key driver for Knowledge Management. It recognises the role of both IT and social variables in KM.

Due to their resource constraints, organisations of the rural areas of South Africa need to focus on alternative measures if they were to successfully unleash the productivity of their knowledge assets. The researcher argues in this study that these alternative measures should be rooted in a holistic approach to KM. While KM has been extensively researched from the developed economy and urban areas contexts, it is recognised in KM literature that organisations operating in the rural areas, particularly in developing countries remain outside the radar of KM scholars. Arising from the gap in KM literature in terms of the developed-developing economy, urban-rural organisations and private-public sector contexts, this study is conducted based on the following objectives:

- Objective 1:

To evaluate the extent of application of ICTs and social factors for information and knowledge sharing between public and private sector entities in three research industries in rural areas of South Africa (Limpopo Province)

- Objective 2:

To investigate the nature of KM implementation in three research industries of Limpopo Province by observing the degree of achievement of knowledge-based outcomes as well as tacit knowledge acquisition between public and private sector entities

- Objective 3:

To present a comparison of KM practices between public and private sector entities in three research industries of Limpopo Province aimed at suggesting a model for enhancing KM implementation in these entities.

In order to achieve these objectives, the study is undertaken in three industries (Health, Education and Business Loans) of Limpopo Province as a comparative study of KM practices between public and private sector organisations.

1.8. SCOPE OF STUDY

In line with the main research questions and the research objectives, this study investigates the degree of application of ICTs and knowledge-oriented social factors for information and knowledge sharing as well as the extent of KM implementation between public and private sector entities in three industries (Health, Education and Business Loans) in the rural areas of South Africa (Limpopo Province). Aligned to what is later presented in chapter 2, the study considers ICTs and social factors as enablers (tools) of information and knowledge sharing. On the other hand, KM implementation is associated with tacit knowledge acquisition and KM benefits. Therefore, the scope of the study is limited to an investigation of the role of ICTs and social factors in KM as well as understanding the degree of tacit knowledge acquisition and achievement of KM benefits in the research entities.

As a comparative case by case analysis of KM practices of public and private sector organisations in Limpopo Province, the study is concerned with the understanding of KM implementation in the rural areas of South Africa based on a holistic approach to KM. Arising from the holistic approach to KM, the study investigates the extent to which IT, knowledge-oriented organisational culture, structures, HR practices and leadership are taken into consideration in the research entities in order to promote KM (tacit knowledge acquisition and achievement of knowledge-based outcomes). The scope of the study is limited to testing the four research hypotheses as highlighted at the end of chapter 2.

This study is about Knowledge Management practices of organisations of the rural areas in South Africa. This is not an attempt at a general study of information management, corporate culture, organisational structures, human resource management and leadership. It is only the links between these aspects and KM which are admitted to this study.

1.9. THE FIELD OF STUDY AND THEORY UNDERPINNING THE INVESTIGATION

It is imperative now to reflect on the relevant discipline in which the present research problem is rooted. In this regard, the section focuses on an identification of the relevant field of study for this research, a comprehensive definition of the concept Knowledge Management and a brief overview of the theoretical underpinning upon which the research problem draws its framework. The full theoretical background and literature review is provided in the next chapter. As highlighted in the research objectives, this study is aimed at understanding KM practices of organisations operating in the rural areas of South Africa. This then requires a deeper understanding of the traditional field of study and the theory underpinning KM.

1.9.1. The underlying field of study

This study is deeply rooted in the field of study of strategic management with special emphasis on the emerging Knowledge Management discipline. The link between strategic management and KM has been aptly captured by Chong *et al.* (2009:71) when indicating that knowledge drives strategy and strategy drives KM. Strategic management is about the direction of organisations (business firms) relating to their choices of how they survive (Rumelt, Schemdel & Teece, 1991:6). According to Tompson and Strickland (2003:7), strategic management involves five interlinked tasks. These are:

- Developing a strategic vision and business mission
- Setting objectives
- Crafting a strategy to achieve the objectives
- Implementing and executing the strategy
- Evaluating performance, monitoring new developments and initiating corrective adjustments.

The central concept in strategic management is the concept strategy. In this regard, Mintzberg (2001:11) defined strategy in terms of the five Ps as follows:

- Strategy as a Plan
- Strategy as a Pattern of behaviour
- Strategy as a Position
- Strategy as a Perspective (personality of the organisation).

In line with the five Ps, “good strategy and good strategy execution are the most trustworthy signs of good management” (Tompson & Strickland, 2003:2). According to Tompson and Strickland, strategic management is not just a box of tricks or a bundle of techniques, it is a process of analytical thinking involving commitment of resources to action.

It is apparent that the tasks of strategic management are meant to professionalise the workplace and the workforce by focusing on efforts leading to the achievement of the organisation’s objectives. This is similar to what Drucker (1991:75-76) called the productivity revolution. According to Drucker, the productivity revolution is aimed at making knowledge workers (professionals in knowledge-based organisations) more productive. In this regard, Drucker suggested three underlying questions to unleashing the productivity of knowledge workers. These are:

- i. What is to be accomplished by the job task?

This is a question that requires a thorough definition of the tasks involved in a particular job, eliminating all those things that do not add value to the job.

- ii. What value is the job supposed to add?

Drucker reflected that knowledge work “is not just work”, it is a demanding responsibility that requires “a craft and a skill”.

iii. What works?

This question requires a definition of the level of performance expected from the employees.

It is apparent that Drucker's three questions are in line with Tompson and Strickland's notion of "good strategy and good strategy execution". It is, therefore, not surprising that Drucker's views led to the now famous efforts by modern organisations towards knowledge-based outcomes. The emerging field of Knowledge Management is giving the field of strategic management "good strategy and good strategy execution".

Knowledge Management would thus be approached as a sub-discipline of strategic management. This recognises the fact that Knowledge Management practices are a strategy that an organisation adopts in order to become and remain competitive. In this study, Knowledge Management is viewed as a Plan, a Pattern of behaviour, a Position and it embodies the Personality of the knowledge-based organisation.

1.9.2. Defining Knowledge Management

Various authors have attempted to define the concept 'Knowledge Management' with a view to reflecting its key focus. The majority of the definitions refer to the three main Knowledge Management processes, namely knowledge acquisition, sharing and application. Reference can be made to the definition by Pretorius and Steyn (2005:41) who noted that Knowledge Management is the acquisition, creation, packaging and application of knowledge.

Becker (2007:42) defined Knowledge Management as the way data, information and knowledge are captured, stored and shared and how they are applied to help the organisation strengthen its competitive advantage. This researcher adopted the definition by Gurteen (1998:6) as follows:

Knowledge Management is an emerging set of organisational design and operational principles, processes, organisational structures, applications and technologies that helps knowledge workers dramatically leverage their creativity and ability to deliver business value.

This definition is also supported by Claver-Cortés, Zaragoza-Saéz and Pertusa-Ortega (2007:46) who defined Knowledge Management as:

... the set of business policies and actions undertaken for the purpose of favouring the creation of knowledge, its transfer to all firm members and its subsequent application, all of it with a view of achieving distinctive competencies which can give the company a long-term competitive advantage.

These definitions appropriately point that Knowledge Management is more of a business strategy as it captures the key essence of the organisation in the form of organisational design, processes, structures, applications and technologies. In this study Knowledge Management would be defined to reflect the practices of competence development as well as organisational practices of embedding the organisation's knowledge base in ICTs, organisational culture, structures, HR practices and leadership.

One other definition which is more reflecting of the essence of this study is made by IBM and Lotus, defining Knowledge Management as a discipline that systematically leverages content (IT) and expertise (human domain) to provide innovation, responsiveness, competency and efficiency (Call, 2005:20). Call argued that Knowledge Management was less of a "technical problem and more of a cultural problem". This implying that it is a mistake to assume that Knowledge Management is just about technology as it is also about people and processes.

The definition adopted in this study recognises both ICTs and the social variables as equally important in Knowledge Management. Furthermore, the definition adopted in this study recognises the main objective of Knowledge Management being to help knowledge workers dramatically leverage their productivity and deliver business value. Drucker (1991:77) also recognised this by indicating that it was "generally accepted in theory that the workers' knowledge of their job is the starting point for improving productivity, quality and performance".

The operational definition adopted in this study can be summarised from Martin de Castro *et al.* (2007:32):

The term ‘Knowledge Management’ has usually designated the group of decisions that aim to achieve organisational learning, allowing in turn enlarging and improving the knowledge stocks that could entangle competitive superiority.

In line with the strategic management agenda adopted in this study, Knowledge Management is associated with a system and series of competitive moves involving the design and execution of different range plans in order to enlarge the knowledge base of the firm. These moves are rooted in the organisation’s technical as well as social sub systems (Soo, Devinney, Midgley & Deering, 2002:131). Included in the agenda of Knowledge Management is resource allocation that allows the organisation to learn effectively.

In essence, this would imply all endeavours aimed at the achievement of the organisation’s goals by making the knowledge factor productive (Kalkan, 2008:392). Therefore, Knowledge Management is defined in this study to reflect all knowledge-based efforts undertaken by an organisation in order to make the people within the organisation more productive so as to improve efficiency and effectiveness within the organisation.

1.9.3. The knowledge-based view

The various definitions of the concept “Knowledge Management” generally point to the importance of knowledge in improving both the productivity of knowledge workers as well as that of the organisation as a whole. Though knowledge is as old as humankind, it was not until the mid 1980s that managing organisational knowledge began to enter the vocabulary of modern management theory (Wiig, 1997:6).

According to the knowledge-based view of an organisation, knowledge and information have become the underlying sources of competitive advantage (Patton, 2007:33). This implies that knowledge stocks and the learning capabilities of organisations become key economic factors (Martin de Castro *et al.*, 2007:1).

While explicit strategies on the management of knowledge in organisations has started gaining ground as an after effect of World War II technology boom, the productive value of knowledge has long been discussed in theory. The classical scholars such as Socrates, Plato and Aristotle have provided modern researchers with the theoretical basis upon which they can base their views on knowledge. Thus, the knowledge-based view can be subdivided into two main phases:

- The pre-information technology phase, highlighting the views of Socrates and other classical authors
- The post IT phase emanating from the IT boom following World War II.

These phases are fully discussed in the next chapter. The post IT boom knowledge-based view can be traced to the seminal work of Drucker (1991) and Nonaka (1991). The work of the philosopher Michael Polanyi; *The Tacit Dimension* (1966) is recognised as the bridge between the theoretical basis of the pre-IT phase and the post IT knowledge-based view.

Polanyi (1966:5) introduced the art of knowing which involve both practical and theoretical knowledge. His views on tacit knowing have later been adopted by Nonaka (1991:99) who introduced the model of knowing involving the confluence between tacit and explicit knowledge. This model mooted four basic patterns for creating knowledge in an organisation. These are: socialisation (confluence from tacit to tacit knowledge), combination (from explicit to explicit knowledge), articulation (from tacit to explicit knowledge) and internalisation (from explicit to tacit knowledge).

It was not until Drucker (1991:79) developed a model for a systematic approach to the development of ‘craft and skill’ for knowledge and service workers as part of his quest to improve the productivity of knowledge work that Western organisations and scholars started to recognise that knowledge has a special place in the productivity of organisations. This led to more organisations adopting a knowledge inclined strategy.

There have been great developments ever since on the academic front by scholars trying to develop a knowledge-based theory of the firm. According to Grant (1996:110), the knowledge-based view focuses on knowledge as the most strategically important resource of the firm. However, it should be noted that the knowledge-based view cannot be regarded as an extension of the resource-based view because unlike the other resources, not all aspects of knowledge can be managed (Gurteen, 1998:6). Hence, Metaxiotis *et al.*, (2005:14) alluded to the fact that because “knowledge originates and is applied in the human mind”, it is the most difficult to manage. This study is aligned to the knowledge-based view’s emphasis on adding competitive value to products and services by applying human expertise (Wiig, 1997:9).

Among its benefits, KM has been credited with providing the avenue for the development of human expertise through information and knowledge sharing sessions. The argument in this study is centred around the factors which need to be taken into consideration in enhancing KM. Various authors have investigated and suggested those factors. Coakes (2006:591) emphasised ICTs and social factors, Aramburu and Sàenz (2007:72-81) found knowledge-oriented organisational structures and HR practices as important KM approaches while Chong (2006:233) has been much more holistic in realising that KM depended on certain success factors such as knowledge-oriented organisational structures, culture, HR practices, leadership and information systems.

1.10. OUTLINE OF THE RESEARCH REPORT

This research report is presented in five main chapters. Chapter 1 is aimed at providing the context and background to the study. This is done through a clear statement of the research problem complemented by a detailed exposition of statistics used to prove that the selected research entities truly operated in a rural area context of South Africa. Chapter 2 provides the basis for understanding the theoretical framework as well as an overview of the empirical studies upon which this research revolves. The chapter reflects the genesis of the knowledge-based view as well as cases of KM implementation by organisations throughout the major regions of the world. The four research hypotheses are also explained towards the end of the chapter.

In chapter 3, the research design process is thoroughly highlighted. The sampling procedures, methods of data analysis as well as the manner in which reliability and validity have been achieved through the data collecting instruments are also discussed in the chapter. The findings arising from the research investigation, incorporating data collected through both the survey questionnaires and interviews are presented in chapter 4. The hypotheses testing procedures are explained and presented in the chapter. Finally, there is a detailed synthesis of the research report in the form of recommendations and implications of this research in chapter 5. Areas for future research investigations are also highlighted in the chapter.

1.11. SUMMARY

This chapter was meant to provide the introduction to the study by highlighting the research problem, the context upon which the investigation would be conducted as well as the objectives of the study so as to reflect the specific theoretical domain upon which the study hinges. The researcher has also provided the basis for a justification of the research problem by providing statistical evidence of the context of the rural areas of South Africa. Furthermore, the researcher has briefly highlighted some of the ground-breaking studies that have impacted on the present research. The chapter also reflected on the research problem through the research questions and the research objectives.

The next chapter presents a detailed theoretical framework of the study as well as empirical evidence of KM approaches of various organisations throughout the globe. The researcher embarked on this study with a keen desire to reflect on the KM practices of entities operating in the rural areas of South Africa so as to contribute towards a deeper understanding of KM implementation in these entities. The study is undertaken as a comparative study of KM practices between public and private sector entities in three research industries (health, education and business loans) in Limpopo Province (a proxy of the rural areas of South Africa).

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. INTRODUCTION

The research problem has been described and contextualised in the previous chapter. A brief synopsis of the relevant discipline upon which this study draws its theoretical underpinning and the identification of the roots of that theory have also been captured in the previous chapter. In this chapter, the researcher places the research problem within its theoretical perspective and reflects on the various empirical studies conducted by other scholars which have a bearing on this study.

The chapter traces the genesis of the knowledge-based view and provides a detailed review of the literature that reflects on the research problem. This culminates in the identification of the research gaps as well as the research hypotheses driving the present investigation.

2.2. THE GENESIS OF THE KNOWLEDGE-BASED VIEW

The knowledge-based view has been identified in the previous chapter as the underlying theory that addresses the research problem for this investigation. In this section the historical development of this view is traced.

The knowledge-based view, though is officially recognised as part of the post World War II developments characterised by advances in information technology, can be traced back to the pre-technology era. This section would thus elaborate on the views of various scholars which ultimately led to what is presently known as the knowledge-based view.

The classical scholars (Socrates, Plato and Aristotle) laid the foundation upon which modern scholars such as Drucker and Nonaka have based their theoretical statements about the valuable role knowledge plays in the productivity of modern organisations. The two overlapping phases in the historical development of the knowledge-based view, as identified from the literature, are described in this study in terms of the pre and post IT knowledge views.

2.2.1. The pre-IT phase knowledge view

Knowledge is as old as humankind. The classical scholars made great strides in explaining knowledge and the art of knowing (learning) before information technology came into existence. Among the classical scholars, Plato wrote extensively about knowledge in his work the *Republic* (380 BC). Being a disciple of the Greek philosopher, Socrates, Plato was schooled in the dialectic art used by Socrates. It is alleged by classical commentators that Socrates himself never wrote his own works, but that most of the views on Socrates' thinking are written by Plato. "Plato writes where Socrates did not but he writes the words of Socrates" (Phillips, 2000:46).

Socrates described knowledge as "care of the mind" and believed that the main reason why some people could not succeed in life was due to "bad training and bad company" (Ferguson, 1970:293). Socrates laid the foundation that would later lead to the modern dichotomous reference of knowledge in terms of codified and tacit knowledge. It was Socrates who distinguished between true opinion (beliefs) and knowledge (Cottingham, 1996:12). Cottingham indicated that Socrates believed that "true opinions do not stay long in our minds, but they can be fastened into our minds through recollection" so that they become knowledge. True knowledge as defined by Socrates meets the same definition as that of tacit knowledge while codified knowledge can be associated with Socrates' beliefs (tacit and codified knowledge are defined in the operational definitions of key concepts in the research methodology chapter).

It is apparent when analysing the contribution of various classical writers (from Socrates to George Hegel) that the authors never disagreed to the definition of knowledge, but there was no consensus as to how people acquire knowledge. But the disagreement into the process of knowing forced the majority of scholars to accept two forms of knowledge. Socrates, Plato and Aristotle would refer to beliefs (opinions) and knowledge while later the German philosopher Immanuel Kant in his *Critique on Pure Reason* (1781) would refer to two forms of knowledge which are:

- A priori knowledge: knowledge independent of sensory experience
- Empirical knowledge: knowledge possible only through experience (Cottinham, 1996:43).

These two forms of knowledge were later to be adopted by modern writers when Nonaka introduced the concept codified and tacit knowledge in his work *The Knowledge Creating Company* in 1991. Though Knowledge Management theory is presently steeped in this dichotomous debate of viewing particular aspect of knowledge as codified and another form as tacit, the central argument in this study is that there is only one knowledge form, but with various dimensions. This is apparent considering Soo *et al.*'s argument that there is only one form of knowledge which is true knowledge:

True knowledge, by definition is non-codified. As soon as it becomes codified and transmitted it ceases to be knowledge and becomes data. It can only become new knowledge when combined in some unique ways leading to an actionable outcome (2002:131).

The definition adopted in this study is in line with Soo *et al.* and it closes the debate around two forms of knowledge. The only form of knowledge is non-codified knowledge and codified knowledge is called information for the purpose of this study. But the most important aspect to consider with the pre- information technology view of knowledge is how the various authors defined knowledge and their views of how people acquire knowledge.

2.2.1.1. The classical definition of knowledge

As illustrated in the operational definition of key concepts, the classical definition of knowledge is “justified true beliefs”. In line with this definition, Socrates would argue that “true opinions (beliefs) can be aroused by questioning and turned into knowledge” (Cottingham, 1996:12).

The German philosopher, Jacob Friedrich Fries (writing during the 19th century) made a clear distinction between beliefs and knowledge in his work *Wissen, Glaube und Ahndung* (*Knowledge, Beliefs and Aesthetic sense*):

In everyday consciousness belief is much weaker than knowledge, for knowledge forces itself upon us through the strength and evident nature of its intuitions and never leaves us as long as we live (Richter, 1989:69).

According to Fries, knowledge is thoroughly valid. This implies that knowledge is of a higher degree when compared to beliefs and aesthetic sense. This is clearly rooted in Plato's argument that true knowledge is more stable and permanent and must relate to reality (Cottingham, 1996:13). Plato viewed "knowledge as the most powerful of all faculties" which is infallible, incorrigible and absolute (Vlastos, 1971:72).

The influence of Socrates is apparent in the classical definition of knowledge. As highlighted earlier in this section, classical writers are generally in agreement in defining knowledge but consensus has never been reached as to the actual process of knowing.

2.2.1.2. The classical art of knowing

When analysing the views of various classical writers on the art of knowing, two groups of dichotomous theorists stand out:

- The innatist (*a priori* knowledge): influenced by Plato's idea of innate knowledge as that which is within us in the form of "true thoughts which only need to be awakened into knowledge by putting questions" (Cottingham, 1996:1). Plato "thought our *a priori* knowledge was a result of an immediate acquaintance in a previous disembodied state with the relevant truths" (O'Connor & Carr, 1982:9)
- The empirists (*posteri* knowledge): emanating from Aristotle's argument that knowledge develops "naturally from sense perception" (Cottingham, 1996:19).

Phillips (2000:62) appropriately observed that the Western thought throughout its formative stages has been dominated by these two “towering traditions”. According to Phillips, the innatists emphasise ideas, rationality and the mind while the empirists focus on the material things, sensible experience and bodily passions. It is apparent that the key building block behind knowledge according to the innatist is reflection, while sensation is regarded as the foundation of knowledge by the empirists.

In line with the innatist theory, Plato indicated that “knowledge comes from teaching rather than persuasion, but from recollection rather than teaching” (Vlastos, 1971:10). The influence of Plato’s innate knowledge theory is apparent in Polanyi’s work, *The tacit dimension* (1966). Just like Plato who described knowledge as practical, Polanyi (1966:20) argued that tacit knowledge is rooted in practical operations. It is the tacit nature of knowledge that captured the imagination of Japanese scholars such as Nonaka (1991 and 1994), and Nonaka and Takeuchi (1995).

The notion of innate knowledge as originated from Plato formed the basis of René Descartes’s *Mediation on First Philosophy* (1641). As reflected by Descartes, knowledge originates internally within the mind rather than away from the senses (Cottingham 1996:26). As a reaction to the idea of innate knowledge, John Locke wrote in his *Essay Concerning Human Understanding* in 1690 that “the senses are the primary source of all knowledge” (Cottingham, 1996:27). As indicated by Cottingham, John Locke’s ideas led to the development of the empirist conception of *empeiria* a Greek word meaning experience. Cottingham noted that Jock Locke was of the idea that “observation via the senses, plus the mind’s subsequent reflection on the data so acquired, constitutes the basis of all knowledge we have, or can have”.

While John Locke sought to disprove of the doctrine of the innatist, he succeeded in proving that the senses can improve the ‘innate capacities’ of the mind. Cottingham observed how Locke “sets out his own account” of how people come to knowledge of general propositions:

... the senses first ‘let in particular ideas’ and furnish the ‘yet empty cabinet’ (the image here is of the mind as a chamber that is entirely empty until data from the senses enter it); the mind then gets to work on these materials, abstracting from the particular and learning the use of ‘general names’ (1996:27).

John Locke, just like his predecessor Aristotle, viewed the mind as a *tabula rasa* and that the senses and experience provide the inscriptions into the human mind (Cottingham, 1996:33). On the other hand, the German philosopher Gottfried Leibniz defended the innate theory of knowledge in his *New Essays on Human Understanding (Nouveaux Essais sur l'entendement humain)* published in 1704. Gottfried Leibniz sought to answer the question:

Whether all truths depend on experience, that is on induction and instances or if some of them have some other foundation? (Cottingham, 1996:34).

As captured by Cottingham, Leibniz found as an answer to the above question that the senses though necessary for all our actual knowledge, they are not sufficient to provide all knowledge. In this regard, Leibniz agreed with John Locke that the “two sources of our knowledge” are the senses and reflection (Cottingham, 1996:38). The only difference of opinion between Locke and Leibniz is about which of the two deserves much emphasis. Locke maintained the senses should dominate while Leibniz was of the view that reflection should be of paramount importance behind human knowledge.

Notwithstanding the narrowing of the theoretical gap between the innatists and the empirists due to the work of both John Locke and Gottfried Leibniz, David Hume in his work *An Enquiry concerning Human Understanding* (1748) argued that sense experience “must be the basis of all knowledge concerning matters of fact or existence” (Cottingham, 1996:37). While Locke and Leibniz were more integrative in their approaches by accommodating the two dominant classical strands on knowledge, Hume was to argue that though the senses alone are not to be depended on, they are the proper criteria of truth and falsehood. According to Hume, reason (reflection) should only be accommodated for the purpose of correcting any shortfall in the senses (Cottingham, 1996:39).

Amongst the work of classical authors who attempted to bridge the gap between the rationalists (innatists) and the empirists, the *Critique of Pure Reason* (1781) by the German philosopher Immanuel Kant is much convincing. Kant illustrated that the two forms of knowledge (innate/priori knowledge and empirical/posteriori knowledge) were intertwined when arguing that:

Thoughts (priori) without content (posteriori) are empty; intuitions without concepts are blind, the understanding can intuit nothing, the senses can think nothing. Only through their union can knowledge arise (Cottingham, 1996:44-45).

Considering the views of the various classical writers, it is apparent that knowledge and knowing cannot be comprehensive if viewed in terms of often diverge dichotomous theorist. In this regard the various theoretical strands of knowledge should be viewed as various stages of the common knowledge denominator. Hence the work of George Hegel, *Phenomenology of the Spirit* (1804) deserves more emphasis in this study. Rather than debating the various approaches to knowing, Hegel indicated that knowledge “comes about via a process” (Cottingham, 1996:46). Cottingham described Hegel’s four main stages of knowing as follows:

- Stage 1: sense-consciousness - whereby a person comes into acquaintance with objects via the senses
- Stage 2: perception - involving a cognitive grasp of the ‘world’ through making some judgement
- Stage 3: understanding - a conception which involves recognising the causal powers underlying properties of things
- Stage 4: self-consciousness - interacting with objects as purposeful and self-conscious agents. Hegel refers to this stage the “native land of truth”.

The classical writers have laid a solid foundation upon which this study draws its theoretical framework. This study does not approach knowledge from a single ideological framework, but embraces both the innatists and empirists approaches as part of a single process. It recognises that in order to build the capacity of knowledge workers to improve their productivity, a comprehensive Knowledge Management approach needs to be adopted.

Polanyi (1966:6-7) justified this line of reasoning by pointing out that the “*wissen*” and “*können*” (in German) meaning knowledge of a more intellectual (innate knowledge) and practical (empirical knowledge) nature “have a similar structure and neither is ever present without the other”. As highlighted by Polanyi there is only one art of knowing covering both the practical and theoretical aspects of knowledge. In such a model knowing should be viewed as a process with various stages embracing both priori (human reasoning) and posteriori (knowledge through experience).

2.2.2. The post IT phase knowledge view

While the classical writers could be described as focusing on the importance of knowledge to an individual, the post-IT phase scholars are recognised for their role in observing the importance of knowledge in organisational performance. Drucker (1993:3) and Wiig (1997:9) indicated that the “present emphasis” on Knowledge Management resulted from the economic, industrial and cultural developments which took place since World War II.

Wiig (1997:6) has observed that the increasing important role of knowledge in the competitiveness and success of organisations started to gain ground around the mid-80s. This was accompanied by a flurry of publications and empirical studies which proved that knowledge has become a fundamental factor behind the success and all activities of an organisation. In line with the knowledge-based view, Wiig argued that an organisation would become more competitive and successful if it could develop ‘a quality’ knowledge content. According to Wiig, such ‘a quality’ knowledge content is rooted in the expertise and competence of the organisation’s employees. The underlying assumption in this study is that KM helps boost employee expertise and competence.

Wiig (1997:8-9) highlighted the historical developments leading to the knowledge-based view in six phases as follows:

- Phase 1: The agrarian economies where people were solely producing products for consumption and exchange
- Phase 2: The natural resource economies dominated by exploitation of mineral resources
- Phase 3: The industrial revolution emphasising efficiency of the production process
- Phase 4: The product revolution wherein emphasis has been on entrenching product leadership positions
- Phase 5: The information revolution which emphasises IT as a tool to reinforce operational excellence and product leadership
- Phase 6: The knowledge revolution which puts more focus on the application of human expertise to add competitive value to products and services.

The sixth phase has catapulted modern organisations into Drucker's knowledge revolution. Drucker (1991:69) has appropriately observed that the knowledge revolution will dominate the 'management agenda' for several decades. The emphasis by modern organisations on knowledge and information could be traced to phases 5 and 6 of Wiig's six phases in line with the historical developments in the knowledge-based view.

Rademakers (2005:130) captured these six phases into three main economic revolutions:

- Agricultural revolution of over 8000 years (first wave)
- Industrial revolution of the 18th century (second wave)
- The knowledge revolution (third wave).

Rademakers observed that the knowledge revolution could be traced back to the 1950s. He insisted that due to the third wave revolution, knowledge has become a key force that holds over the competition, enabling innovation and organisational development.

Just as reflected by Drucker, Rademakers pointed out that improved quality and productivity emanated from a more informed and knowledgeable workforce:

Business leaders realise that continuously leveraging and renewing the corporate knowledge base makes the difference between excellent performance or muddling through- or even worse, failure (Rademakers, 2005:130).

Hence, Drucker has already alluded to the dominance of the productivity challenge in the management agenda. He has reflected that the knowledge revolution is concerned about improving the productivity of knowledge workers. Drucker (1993:8) referred to this as an “economic challenge”. It is an economic challenge as it relates to efforts by organisations to improve their productivity by improving the productivity of their knowledge workers.

Furthermore, Drucker (1993:6) called Rademakers’ third wave knowledge revolution phase as a “post-capitalist new world order”. He argued that in the post-capitalist world-order the real controlling resource would not be capital nor land nor labour, but knowledge. Drucker is credited with coining the concepts “knowledge work” and “knowledge worker”. According to Drucker (1993:8), knowledge workers are the knowledge executives “who know how to allocate capital to productive use”. They “own the means” and “tools of production” in the form of their knowledge, which they “take” wherever they go. The key aspect in this study is to understand those factors which enhance the productivity of knowledge workers in rural areas of South Africa. Thus, it is “generally accepted in theory that the workers’ knowledge of their job is the starting point for improving productivity, quality and performance” (Drucker, 1991:77). As part of solving the productivity challenge, Rademakers (2005:131) argued that companies should continuously and rapidly renew their knowledge base.

According to Rademakers, organisations still playing by the “old rules of the game of industrialisation” are slowly being displaced by those with new business models and organisational systems tuned to the requirements of a knowledge-driven economy. Rademakers went further into the knowledge-based view debate by analysing the third wave of the knowledge revolution phase into two distinct but overlapping phases:

- Initial phase: this is driven by information collection, adaptation and distribution
- 2nd phase: emphasises knowledge transfer, exchange and creation.

The two phases of the knowledge revolution have led to the dichotomous views wherein information management practices are sometimes confused with Knowledge Management practices. Metaxiotis *et al.* (2005:6) noted that the Knowledge Management literature should separate information and knowledge. Nonaka (1994:15) addressed this divide by distinguishing between information and knowledge as follows:

Information is a flow of messages, while knowledge is created and organised by the very flow of information, anchored on the commitment and beliefs of its holder.

This study assumes the view that knowledge is different from information. This suggests that Knowledge Management will not be solely approached from the information collection, adaptation and distribution perspective, but also from the human competence and expertise development perspective.

It is without doubt that the IT boom following World War II led to the availability of vast quantities of information as ICT connectivity allowed organisations to tap information without restrictions imposed by time and space with workers no longer concentrated in one local location, but distributed throughout various parts of the world (Coakes, 2006: 579-580). The key question that needs to be asked here is whether this constitutes Knowledge Management or information management. Rademakers (2005:131) argued that corporate success is “to a large measure determined by the knowledge resources enabling them to make sense of the information chaos”. What Rademakers posits is that Knowledge Management is different from information management, and this suggests that the knowledge revolution has never been about “just information” management, but is about “making sense” of the information at an organisation’s disposal. Drucker referred to this when describing his ‘post-capitalist society’:

But in the knowledge society into which we are moving, individuals are central. Knowledge is not impersonal, like money. Knowledge does not reside in a book, a databank, a software programme; they contain only information. Knowledge is always embodied in a person; carried by a person; created, augmented or improved by a person; applied by a person; taught and passed by a person; used or misused by a person (1993:210).

In this regard, Drucker (1993:211) insisted that the educated person would become the knowledge society's representative. The knowledge revolution has already dominated the management agenda for more than eighteen (18) years ever since Drucker made his prediction about the 'post-capitalist society'. Drucker's views laid a solid focus for a knowledge-based agenda of the firm which has ultimately triggered the present study. In order to understand how the knowledge-based agenda has dominated modern organisations, the next section presents a synopsis of KM from organisations operating in the various regions of the world.

2.3. KM EMPIRICAL STUDIES IN VARIOUS PARTS OF THE WORLD

This section presents KM empirical studies conducted in various regions of the modern world. The main aim of this synopsis is to reflect that KM is not the sole domain of only just a particular few selected countries, but that it is applicable in various countries of the world. This has been aptly reflected by the writers Latiff and Hassan (2008:19) in their chronicle of various knowledge powers throughout history. Their statistics point to the following knowledge powers throughout history:

India 3000BC to AD 500: This era was dominated by India. The key knowledge areas were medicine, religion, mathematics, science, astronomy, painting, agriculture, music, dance, sculpture and literature.

China 3000BC to AD 1000: The Chinese dominated in knowledge areas that focused on paper making, gunpowder and weapons technology, printing, compass, philosophy, medicine, architecture, poetry, astronomy, religion and historiography during this era.

Greeks 700BC to BC 300: The Greeks were the world superpower in knowledge areas such as historiography, religion, political science, mythology, alchemy, chemistry, philosophy and literature during this period.

Islamic world AD 750 to AD 1150: This was a period where the Muslim World acted as a major site for a cross fertilisation of ideas in knowledge areas such as historiography, religion, medicine, astronomy, mathematics, sciences, literature, geography and travel.

Italian AD 600 to AD 1600: The Roman Empire was the dominating knowledge power during this period while specialising in areas such as the arts, sculpture, sciences, historiography, architecture and religion.

British AD 1700 to AD 2000: The British have been in the forefront in key knowledge areas such as mathematics and the sciences, weapons development, engineering, metal working, astronomy and maritime science during this period.

America AD 1800 onwards: The modern knowledge era is dominated by the USA in a number of areas including military science, metallurgy, nuclear science, computer science, political science, food and agricultural science and engineering.

As highlighted by Latiff and Hassan, the history of knowledge powers has shifted between continents over the years encompassing those countries which are today classified as developed and those categorised as developing.

2.3.1. KM in the developed countries

Though classical authors laid the foundation of the knowledge-based view, KM theory in developed countries could be traced to the seminal work of both Peter Drucker and Ikujiro Nonaka in the early half of the 1990s. Drucker could be rightly called the father of the Western theory to KM while Nonaka could be classified as the father of the Japanese theory to KM.

Drucker (1991:69) predicted that the greatest challenge which will dominate the management agenda of organisations in the developed countries in the ‘next’ several decades was how to improve the productivity of knowledge workers. He observed that knowledge would become the real controlling resource in these organisations. Drucker (1993:3) reflected that the “post-capitalist society” was ushered in the developed countries shortly after World War II.

As highlighted by Drucker, in the post-capitalist society, capitalists and proletarians have been replaced by a new class comprised of knowledge workers and service workers. Drucker (1993:8) argued that the “economic challenge” of the post-capitalist society would therefore be the productivity of knowledge work and knowledge workers while “the social challenge is the dignity of service workers”. According to Drucker, the “answers to the challenges of post-capitalist society and post-capitalist polity will not be found in the Third World” but in the developed world. This assumption has indeed triggered the present study. The researcher observes that it was no coincident that most Western organisations started implementing measures to improve the productivity of their knowledge workers almost during and after Drucker prediction of a “knowledge revolution”.

As highlighted by Drucker (1991:70), the country that is able to lead in increasing the productivity of its knowledge workers will “dominate the twenty-first century economically”. The researcher reflected on KM empirical studies and noted that organisations from the highly economical developed regions of the world have been in the forefront of the knowledge revolution.

2.3.1.1. KM in the United States of America

Perhaps when Drucker made the assertion that the country that will lead in increasing the productivity of its workers will “dominate the twenty-first century economically” he was referring to the United States of America. With its advanced technological development, the US appears deeply ingrained in the Western traditions to modern management arising from the ‘machine age’ popularised from the era of Frederick Taylor to Herbert Simon, where an organisation is viewed as a “machine for information processing” (Nonaka, 1991:96). While IT is believed to be an off-shoot of the information processing era, exponents of KM in the US warn against the risks of “overstating the effect of new information technology and understating mundane organisational factors” as this could lead to a static model of KM disconnected from the changing business contexts (Pan & Scarbrough, 1998:55). This section is meant to reflect on a few empirical studies on KM in the US so as to understand the overriding KM framework of organisations operating in that country.

2.3.1.1.1. Knowledge-sharing at Buckman Laboratories

Buckman Laboratories is based in Memphis, Tennessee and the company was established in 1945 as a manufacturer of specialist chemicals for industrial systems (Pan & Scarbrough, 1998:56). As observed by Pan and Scarbrough, “today” the company has diversified into various businesses from pulp and water processing and water treatment to leather and agriculture with branches in more than 102 countries globally. Ever-since its inception, the company recognised that the creative application of knowledge required skilled, knowledgeable people (Ellis & Rumizen, 2002:14). This is the reason why Buckman Laboratories prides itself on employing people who have the best knowledge and expertise (Rumizen, 2003:1).

Buckman Laboratories has played a pioneering role in the field of KM. To attest to this, the company has won major awards due to its KM efforts. The company obtained gold in the Arthur Andersen LLP Enterprise Awards for Best Practices in Knowledge Sharing in 1996, the Computerworld Smithsonian Award for visionary use of IT in 1997, and the global Most Admired Knowledge Enterprises in 2002 to 2004 (Buckman, 2004: viii-ix).

Ellis and Rumizen (2002:14) noted that behind the company’s KM efforts was the urge to raise the bar on performance. Apart from Ellis and Rumizen, Pan and Scarbrough (1998:55-66) present the experience of Buckman Laboratories in order to address the gap in terms of the interplay between IT and context-dependent realities facing business organisations. As observed by Pan and Scarbrough, Buckman Laboratories became a suitable case for a model to KM because unlike many other firms, it has been able to demonstrate important tangible benefits arising from an implementation of KM. These benefits included dramatic improvement in customer response times and product innovation rates.

Arising from the intensive study of the KM practices in Buckman Laboratories, Pan and Scarbrough (1998:55) developed a socio-technical model of KM “that highlights the interplay between the organisational context and KM tools”. Pan and Scarbrough warned though that this interplay has to be carefully guided and managed to achieve positive results for an organisation.

In order to make a clear understanding of KM at Buckman Laboratories, Pan and Scarbrough conducted interviews with Bob Buckman and 42 other associates of the firm based in Memphis, Tennessee. Emanating from the data collected, Pan and Scarbrough (1998:56) outlined the major milestones in the development of Buckman Laboratories' KM programme as highlighted in table 2.1 below:

1960	Distribution of Idea Trap, a notebook for jotting down creative ideas
1984	First attempt at e-mail
1985	First remote access to company's mainframe
1986	Introduction of laptops
1987	Successful implementation of global e-mail
1989	Creation of Knowledge Transfer Taskforce
1991	Start of efforts to implement CompuServe for commercial use
1992	Implementation of K'Netix®, the company's knowledge sharing system
1996	New CEO, Steve Buckman, takes over leadership
1997	Establishment of Learning Centre: an interactive distance learning programme, a centre where knowledge and learning initiatives converged
1998	Adoption of new mission and development of key business processes
1999	Installation of new information technology infrastructure
2000	Development of teaching/facilitation processes Adoption of After-Learning Review: a reflective learning process
2001	Implementation of Buckman After-Action Review (BAAR) Customer engagements around knowledge and learning

Source: Ellis and Rumizen, 2002:13

Rumizen (2003:1) noted that before the advent of the internet and e-mail, the sharing of knowledge within Buckman Laboratories was facilitated through travelling where the company's associates had to travel huge distances to acquire and share knowledge with their colleagues in other parts of the world. Rumizen also observed that there were serious shortcomings in the company's knowledge sharing efforts since it took long for associates to traverse the world.

The K'Netix® drastically altered the course of knowledge acquisition and sharing within Buckman Laboratories. As highlighted by Bob Buckman himself, the role of the K'Netix® knowledge network ensured that:

By connecting people through a network, you replace the depth of knowledge offered in a multi-tiered hierarchy with the breath of knowledge that is the sum of the collective experiences of employees (Pan & Scarbrough, 1998:56).

That the K'Netix® was effective as a KM programme could be summarised through Ellis and Rumizen (2002:12) when observing that:

Overall, since the inception of our knowledge sharing system K'Netix®, we've experienced a 50 percent rise in sales from new products, which indicates a dramatic rise in profitability from innovation.

In their analysis of KM at Buckman Laboratories, Pan and Scarbrough (1998:57-58) observed that though earlier studies emphasised the role of IT in KM, a growing number of studies were starting to provide powerful arguments for a more holistic view of KM recognising the interplay between social and technical factors. Aligned to the above, Pan and Scarbrough reflected on a socio-technical perspective to KM as observed in Buckman Laboratories in terms of three major layers. The three layers include the company's infrastructure, infostructure and infoculture. The operational definitions of these concepts are provided at the end of chapter 3 of this report.

Hereunder follows the configuration of these layers as they apply in Buckman Laboratories:

i. Infrastructure

The search of a system to support the sharing of both explicit and tacit knowledge was started at Buckman Laboratories by Bob Buckman in 1991 (Pan and Scarbrough, 1998:58-59). Emanating from the search, the K'Netix® knowledge system was introduced to enable the company's associates to share knowledge, thereby facilitating the delivery of enhanced services to the company's customers. As highlighted by Pan and Scarbrough, the K'Netix® is a computer-based knowledge sharing system facilitated through the company's intranet.

ii. Infostructure

Pan and Scarbrough (1998:59-60) observed that since the K'Netix® was not designed to be a static repository, it provided for a feedback loop where customer queries that could not be answered by the technical-sales people or field-based associates were to be posted on a 'forum'. The 'forum' consisted of a specialist group who were to devote time to capturing their knowledge into a re-usable form. The authors also noted that apart from the 'forum' the company created a Learning Centre for delivering and facilitating world class training and educational opportunities when and where needed.

iii. Infoculture

Acknowledging that a knowledge-enterprising culture is one of the most important factors leading to the success of a KM project, Bob Buckman noted that "What happens in Buckman is 90% cultural change" (Pan & Scarbrough, 1998:61). It is interesting to note that though the K'Netix® was considered the key KM system within Buckman Laboratories, the company realised that effective knowledge sharing depends on the willingness of its people to share knowledge and information. Aligned to the above, Pan and Scarbrough noted that at Buckman Laboratories, "employees who share their knowledge will be the most influential and will be sought out by others within the company".

In promoting the knowledge-enterprising culture at Buckman Laboratories, Buckman put in place a Code of Ethics. The Code of Ethics was considered the ‘glue’ that holds the company together by providing the basis for respect and trust, which are key ingredients in a knowledge-enterprising organisation (Pan & Scarbrough, 1998:62).

Furthermore, Pan and Scarbrough observed that every associate was viewed as a knowledge creator and sharer at Buckman Laboratories. Pan and Scarbrough (1998:62) further noted that knowledge entrepreneurship was rewarded and inquiry and innovations promoted at Buckman Laboratories. Apart from the three major layers of the company’s KM system, Pan and Scarbrough noted the role of management and leadership as key to the success of the company’s KM initiatives.

One of the most “important items for effective sharing of knowledge is a clear and conscious knowledge strategy” (Pan & Scarbrough, 1998:62). They realised that at the core of the company’s KM strategy was the anticipation of knowledge creation and knowledge sharing which were built into the mindset of the company and its people. In line with the management and leadership role in KM, Pan and Scarbrough (1998:64) observed that at Buckman Laboratories strategic efforts were made to ensure that every employee knew that an important part of working for the company was to learn as much as possible. They further recognised that its leaders served as role models for learning and knowledge sharing. Leaders were also expected to create a corporate knowledge culture and managerial mindset promoting co-operation and knowledge flow throughout the company.

Pan and Scarbrough (1998:65) realised that routine exchanges between management and associates more open and honest at Buckman Laboratories. As a role model for knowledge creation and learning, Bob Buckman became a “pioneering figure in the field of Knowledge Management for his vision and continuous efforts in promoting knowledge sharing inside and outside his organisation” (Pan & Scarbrough, 1998:63-64).

The Buckman Laboratories' case clearly illustrates that KM really deserves a holistic approach recognising other factors beside IT, such as organisational culture, organisational structures and leadership support as building blocks of an organisation's KM initiative. Though IT (through K'Netix®) was used to initiate KM at Buckman Laboratories, effective KM in the company depended also on infoculture, infostructure and leadership support. It is apparent that effective knowledge sharing within Buckman Laboratories requires "not just the capacity to move information but the ability to find it and the culture to assure people that sharing (rather than hoarding) was right and natural" (Buckman, 2004:viii).

2.3.1.1.2. The roots of KM at Hewlett-Packard (HP)

Sieloff (1999:47-48), a KM programme manager at Hewlett-Packard Co, Palo Alto, California analysed the historic roots of KM in his company. As observed by Sieloff, HP has long been known for its strong culture. According to Sieloff, HP's culture comprise of a set of business practices that encourage innovation and knowledge sharing. Having first-hand experience of the strong culture at HP, Sieloff highlights its features as follows:

- Small, autonomous business units to encourage hands on management, face-to-face relationships and physical co-location
- Management by walking around where managers were expected to live among their people, be visible and accessible
- Open office environment with most people working in open office landscapes with no or low partitions
- Loyal empowered people
- Permission to experiment and fail
- University towns chosen as sites for the company to encourage close relations with local academic community.

Sieloff (1999:48) also observed that the founders of the company Bill Hewlett and Dave Packard never thought of the above features as part of a KM strategy. These were considered as good people management strategies. As noted by Sieloff, these “good people management” strategies laid the foundation of a corporate culture that encourages knowledge creation and sharing. Sieloff realised that though the culture at HP encouraged informal management of knowledge in localised, face-to-face environments, in terms of KM it was weak as it was not attuned to demands of more formal or global KM strategies. Sieloff also observed that arising from the demands of globalisation inspired by the exponential growth of the company during the late 1970s and early 1980s, HP embraced the data-driven discipline and formality of Total Quality Control (TQC). As a result local learning was accelerated. This was enhanced by the adoption of a matrix management structure to encourage the flow of knowledge within various functional communities of practice (CoPs) in the company. These CoPs were a platform for best practice sharing sessions. Furthermore, elaborate systems were put in place to capture and consolidate companywide information.

Sieloff (1999:49-50) realised that these KM related initiatives were still not adequate for effective knowledge sharing and creation because by the late 1980s and early 1990s the company’s business units were becoming larger, more specialised and more geographically distributed. Sieloff noted that:

In this environment you couldn’t just walk over to your neighbour to find out what was going on. Knowledge had to flow effortlessly across time and space, and between people who might not even know each other (1999:50).

As a result, HP started to invest heavily in a technology infrastructure so as to provide connectivity for all employees. This helped in supporting the global sharing of informal information and knowledge, and the company quickly replaced policy and procedure manuals with on-line document collections. While applauding the company’s pervasive connectivity infrastructure (e-mail, voicemail, Internet and Intranet), Sieloff (1999:52-53) observed that these have done very little to “help the receivers digest and use the information more effectively”. In this regard, Sieloff believed a holistic approach to KM should be adopted at HP in order to reinforce the company’s pervasive knowledge culture.

The present researcher observes from the two cases presented above that KM demands a holistic approach. Both Pan and Scarbrough and Sieloff agreed in their papers that a holistic approach to KM could close any significant gap in KM application. Arising from this debate, Hansen, Nohria and Tierney (1999:107) scrutinised two major approaches to KM as observed in various US companies. These are knowledge codification and personalisation strategies.

i. Codification strategy

As analysed by Hansen *et al.*, the knowledge codification strategy meant that knowledge was carefully codified and stored in a database where it could be accessible and easily used by anyone in the company. They observed that the codification strategy could be followed through a process of knowledge documentation in paper format or electronically.

ii. Personalisation strategy

This is when knowledge is closely tied up to the person who developed it and is shared mainly through direct person-to-person contacts (Hansen *et al.*, 1999:107). Hansen *et al.* (1999:109) observed from a number of US companies that the choice between the two KM strategies “reflects a company’s competitive strategy” in that:

Those that pursued an assemble-to-order product or service strategy emphasised the codification and re-use of knowledge. Those that pursued highly innovative customised service offerings or product innovative strategy, invested mainly in a person-to-person knowledge sharing.

Based on their investigation among US companies, Hansen *et al.* (1999:110) found examples of companies pursuing the codification strategy including consulting companies Anderson Consulting and Ernst & Young, health group Access Health and computer company Dell. On the other hand, the investigation revealed the use of the personalisation strategy in companies such as consulting companies Bain, Boston Consulting Group and McKinsey, health group Memorial Sloan-Kettering Centre in New York and computer company Hewlett Packard.

Hansen *et al.* (1999:112) also noted that “companies that use knowledge effectively pursue one strategy predominantly and use the second strategy to support the first”. According to their observation, it was a case of an 80-20 split between the two strategies. They warned that managers who tried to excel at both strategies run the risk of failing at both. Furthermore, Hansen *et al.* (1999:116) advised that KM benefits would be higher when KM was coordinated with an organisation’s HR practices, IT and competitive strategy. The key impetus emanating from their study is that IT and social aspects (notably organisational structures) should be considered if organisations have to successfully implement KM.

All the empirical cases reflected thus far prove that KM in a US company is a socio-technical matter. IT plays an enabling role in KM by increasing the speed and reach of information sharing flow within various dispersed units of a US company.

2.3.1.2. KM in Japanese companies

Nonaka (1991:96) referred to the Japanese company as a ‘knowledge-creating company’. In his argument, a ‘knowledge-creating company’ is defined by its ability to create new knowledge, disseminate the knowledge quickly throughout the organisation and embodying the knowledge into technologies and products. Nonaka explained his theory of a knowledge creating company by contrasting the Western management model with the Japanese model.

While the Western model advocates the view that the only ‘useful’ knowledge is formal and systematic (codified knowledge), the Japanese model makes recognition that:

...creating new knowledge is not simply a matter of ‘processing’ objective information. Rather, it depends on tapping the tacit and often highly subjective insights, intuitions, and hunches of individual employees and making those insights available for testing and use by the company as a whole (Nonaka, 1991:97).

Having conducted research over the years on Japanese companies, Nonaka and Takeuchi (1995:3) were convinced that knowledge creation has been the most important source of these companies' international competitiveness. Nonaka and Takeuchi (1995:53) described organisational knowledge creation as the capability of "a company as a whole to create new knowledge, disseminate it throughout the organisation, and embody it in products, services and systems". They also observed that though Japanese companies were not as "efficient, entrepreneurial or liberated" as their Western counterparts they have become successful because of their skills and expertise at organisational knowledge creation.

According to Nonaka and Takeuchi, organisational knowledge creation is the key to the distinctive ways of making Japanese companies innovate. They further indicated that Japanese companies were good at bringing about innovation continuously, incrementally and spirally:

Faced with a crisis, Japanese companies have historically turned to organisational knowledge creation as a means of breaking away from the past and moving them into new and untried territory of opportunity (Nonaka & Takeuchi, 1995:4).

Nonaka and Takeuchi juxtaposed the phenomenon of organisational knowledge creation in Japanese companies to the Western tradition of 'information processing'. In this regard, they argued that Japanese companies have a different understanding to knowledge. Japanese companies recognise that the "knowledge expressed in words and numbers (codified knowledge) represents only the tip of the iceberg".

As a result, Nonaka and Takeuchi (1995:8) viewed knowledge as being primarily 'tacit'. They questioned the widely held Western view that knowledge can be taught through education and training by insisting that "the most precious knowledge can neither be taught nor passed on". Their deduction is that the most powerful learning comes from direct experience. In this regard, managers in Japanese companies "emphasise the importance of learning from direct experience as well as through trial and error".

Nonaka and Takeuchi (1995:11) emphasised that Japanese companies were able to create new knowledge through the knowledge conversion process. The four modes of knowledge conversion are now popularly adopted by many Knowledge Management scholars. These are:

- Socialisation: tacit to tacit
- Externalisation: tacit to explicit
- Internalisation: explicit to tacit
- Combination: explicit to explicit.

The tacit-explicit knowledge conversion cycle (SECI model) is of key interest to the researcher as it forms the basis of converting information to knowledge and knowledge to information. As highlighted by Nonaka (1991:98), the starting point in the process of knowledge creation is tacit knowledge, while the end point is explicit knowledge. Nonaka argued that the key towards building a knowledge-creating company is the “employees” sense of identity with the enterprise and its mission”. As observed by Nonaka, the role of management in Japanese companies is to mobilise employee commitment in order to tap into their tacit knowledge. According to Nonaka, such managers need to be comfortable with images and symbols because “a company is not a machine but a living organism”.

As highlighted by Nonaka, a knowledge-creating company is all about ideas as it is all about ideals. This implies that knowledge invention becomes a way of behaving, a way of being where “everyone is a knowledge worker or entrepreneur” (Nonaka, 1991:99). Arising from the tacit-explicit knowledge conversion cycle, Nonaka argued for “another way” of managing knowledge as commonly found at highly successful Japanese companies such as Honda, Canon, Matsushita, NEC, Sharp and KAO. KM practices in two of these companies (Honda and Matsushita) are presented hereunder:

2.3.1.2.1. KM at Honda

According to Nonaka (1991:99), the typical Japanese company could be appropriately called a knowledge creating company as the main concern about KM in these companies is the conversion of tacit knowledge into explicit knowledge. Nonaka referred to this process “a way of express(ing) the inexpressible”. As observed by Nonaka, Japanese firms tend to project their thinking in terms of figurative language. The theory of Automobile Evolution, a slogan coined by the project leader (Hiro Watanabe) of a project that led to the evolution of the Honda City, Honda’s distinct urban car, is a good case in point (Nonaka, 1991:100). The use of figurative language to convert tacit knowledge into explicit knowledge is more evident during product development. Nonaka highlighted this process as observed during the evolution of the Honda City as follows:

- Top management at Honda inaugurated the development of a new concept car with the slogan “Let’s gamble”
- A new product development team consisting of young engineers and designers (average age of 27) was formed to conceptualise the slogan
- The project team leader (Hiroo Watanabe) coined another slogan “Theory of Automobile Evolution” to express the team’s ambition
- After team members discussed the slogan, they captured its meaning in another slogan “man-maximum, machine maximum”
- The slogan gave birth to a product concept called the “Tall Boy” which eventually became the Honda City.

The story of the Honda City demonstrates how Japanese companies use figurative language at all levels of the company and in all phases of product development to convert tacit knowledge into explicit knowledge. Nonaka (1991:103) also pointed out that since new knowledge “is born in chaos”, the main job of managers in a typical Japanese firm was to orient this chaos towards purposeful knowledge creation. In Japanese companies, senior managers give voice to the company’s future by articulating metaphors, symbols, and concepts that orient the knowledge-creating activities of employees.

This is aptly captured through the words of Hiroshi Honma, a senior researcher at Honda who indicated that “Senior managers are romantics who go in quest of the ideal” (Nonaka, 1991:103). The “Let’s gamble” slogan being an example of that ideal. Apart from the role of senior managers in the knowledge conversion process, Nonaka (1991:104) noted the strategic role of middle managers in a knowledge-creating company as follows:

As team leaders, middle managers are at the intersection of the vertical and horizontal flows of information in the company. They serve as a bridge between the visionary ideals of the top and often chaotic market reality of those on the front line of the business.

2.3.1.2.2. KM at Matsushita Electrical Industrial Co

The Matsushita Electrical Industrial Co. is famous for its Matsushita Home Bakery, the first fully automatic bread-making machine for home use brought into the Japanese market in 1987 (Nonaka & Takeuchi, 1995:95). Nonaka and Takeuchi observed that as part of its knowledge strategy, Matsushita Electrical Co. introduced a three-year plan called ‘ACTION 61’. An acronym for **A**ction, **C**ost reduction, **T**opical products, **I**nitiative in marketing, **O**rganisational reaction, **N**ew management strength and **61** years of Emperor Hiroshito’s era. As observed by Nonaka and Takeuchi, the objective of ‘ACTION 61’ was to improve the competitiveness of Matsushita’s core business. Three divisions were introduced as a result of ‘ACTION 61’.

Nonaka and Takeuchi (1995:122-123) noted the following enabling conditions for knowledge creation which were behind the success of Matsushita Electrical Industrial Co.’s ‘ACTION 61’:

- Redundancy of information by improving its communication infrastructure
- Free flow and sharing of information among different functional groups
- Enhancing autonomy and commitment to innovation
- Enhancing intention and fluctuation/chaos by setting extremely challenging goals.

Nonaka and Takeuchi (1995:123) argued that challenging goals introduce the chaos necessary to trigger knowledge creation throughout the company. The conditions for enabling knowledge creation as in Matsushita Electrical Industrial Co.'s 'ACTION 61' are quite familiar to the social variables that are considered to be the key building blocks in the knowledge model proposed in this study.

It is quite interesting to note that while IT is still considered an enabler in KM because of its role in enhancing the flow of information and knowledge in Japanese knowledge-creating companies, the biggest emphasis in these companies is on the knowledge conversion process (whereby figurative language is used to convert tacit knowledge into explicit knowledge). This emphasis puts more focus on the social factors (organisational structures, HR and leadership to reinforce innovation through knowledge entrepreneurship as a building block to KM) within the Japanese firm. This has not been the case in US firms reflected thus far.

2.3.1.3. KM in the United Kingdom (Britain)

Having highlighted KM in the US and Japan, it is therefore imperative to reflect on KM issues as observed in UK organisations. This is done with the purpose of identifying similarities and differences in KM approaches of these countries. A review of empirical studies of KM implementation in organisations operating in the UK is presented as follows:

2.3.1.3.1. Cultural space and technology: KM in a small size creative UK organisation

Having undertaken an interview investigation with 13 interviewees from a small creative organisation in the UK, Lamproulis (2007:42) urged KM practitioners to realise that "the creation of knowledge within an organisation fundamentally depends on the culture of it". Lamproulis embarked on the investigation with the purpose of understanding how the cultural artifacts of space and technology enhance the creation of knowledge leading to innovation.

The targeted organisation was chosen because of its innovative products, its profitability, its award winning ability and having well-known clients such as the Royal Bank of Scotland, Virgin Atlantic and Standard Life (Lamproulis, 2007:34). The results of the interviews revealed the following findings as far as the impact of physical space and technology in knowledge creation and sharing are concerned:

i. The impact of physical space and layout on knowledge sharing

Lamproulis (2007:37-38) observed that the physical space and layout in the case study influenced the creation of knowledge in a number of ways. Firstly, the physical space and layout enhanced informal communication among staff. Secondly, the physical space and layout led to staff members feeling relaxed and focused in their work because when “people are close together, one can share a joke while working”. Thirdly, the physical space and layout facilitated “open interaction” among employees. Everybody could walk around and interact with whoever he/she wanted to talk to. Fourthly, since the physical space and layout in the organisation consisted of a flat structure, no rooms, high desks, high chairs and spacious place, these made it easy to have a conversation with a colleague even when seated. Lastly, the physical space in the organisation created a feeling of equality among staff members. All staff members were located in one floor (level) and there were no offices to close.

ii. The impact of technology on knowledge creation

Lamproulis (2007:40-41) noted that technology in the case organisation was able to enhance the creation of knowledge. They found that technology enhanced the efforts of staff. The staff saw technology as an “added help that can complement their own efforts in the construction of innovations”. Technology also increased the speed and efficiency of work because “technology makes quicker and easier the retrieval of knowledge” (Lamproulis, 2007:40). The author saw technology as a tool for staff to visualise an idea since it was used for developing and searching new ideas within the organisation. Lamproulis argued that though technology is important for information and knowledge sharing, the most important capital in an organisation are the people who express their abilities by generating new ideas.

Therefore, this implies that technology could not substitute face-to-face interaction of staff. “Staff members place more emphasis on first hand experience and learning by doing rather than through the use of technology, such as databases, e-mail and telephone” (Lamproulis, 2007:41). As such, Lamproulis insisted that the best way of storing knowledge is the human mind. Through personal contact employees are able to transfer experience, intuition and knowledge while explaining insights and solutions.

As observed by Lamproulis (ditto), “technology is used by the staff of this case in a way that aims to not substitute the human mind but rather expand it”. Lamproulis (2007:42) urged senior management to encourage the use of technology to support and formulate staff jobs “without allowing technology to become the main medium of performing the interaction and communication of staff, the perception of ideas, the transfer of knowledge and its translation into innovation”. This case reveals that though technology is used as an enabler in KM, it should not be viewed as a substitute for the knowledge that resides in the human mind.

That technology plays an enabling role in KM was also observed by Coakes (2006:591) based on the findings of a research investigation conducted in two British companies with multinational operations. The study was aimed at understanding the value of technology for knowledge storing and sharing.

2.3.1.3.2. Technology and KM at H2C: case of a transnational UK entity

H2C is a construction business operating transnationally in an environment characterised by project management (Coakes, 2006:587). Coakes observed that KM was intergrated into the company’s project processes for sustained competitive advantage. Furthermore, there was an IT enabled infostructure called HottWeb to facilitate distribution of organisational knowledge within the entity. HottWeb operated as a subway beneath H2C’s business operations supporting the enterprise and its business strategies (Coakes, 2006:588).

Coakes (ditto) also found that the company applied an eight-step knowledge transfer model involving creating, identifying, collecting and organizing best practices and internal knowledge, sharing and understanding these, adapting and applying these to create new knowledge. Coakes (2006:587-588) also observed that the company's KM system, HottWeb, featured a central intranet which carries users to any of the company's six portals:

- i. Technical Service News: is an electronic, interactive publication summarising the latest technical innovations, legislation and best practices in the company
- ii. The Technical Help Desk (THD): this is an on-line facility through which the company's R & D departments offers its specialist technical expertise
- iii. Site Set-up: is primarily an information portal and interactive guidance tool assisting project managers to set up new construction sites
- iv. Repository of standard forms and business stationery
- v. Extranets on specific project basis: these are vortals, collaborative project web sites bounding virtual communities of practice (CoPs)
- vi. Information Centre portal: this portal is available to the company's entire workforce via e-mail, providing extensive range of library services and other on-line services such as the British Standards and Construction Information via the intranet.

Coakes (2006:589) noted the purpose of KM at H2C as:

- To establish a systematic approach to sharing technical excellence and best practice
- To generating added value
- To differentiating enterprise from competitors.

Coakes also noted that the massive investment by H2C in a KM system helped the company reduce defects since KM tend to support quality management.

2.3.1.3.3. Technology and KM at Charity: a case of a UK voluntary sector organisation

Coakes (2006:589) observed that “Charity is a British voluntary sector organisation” established more than 60 years ago to focus on relief of poverty and suffering in six major world regions. As noted by Coakes, KM was introduced in the organisation about five (5) years before his investigation. Coakes realised that at Charity KM meant making use of the knowledge and experience of staff. As highlighted by Coakes, when KM was introduced at Charity it was written into the organisation’s strategic plan and allocated funding to the tune of 200 000 British pounds sterling for a planned three year development project. As part of the launching of KM at Charity, Coakes (2006:589-591) observed two major initiatives as follows:

i. Lunch-time discussion groups on key focus areas of the organisation

These lunch-time discussion sessions involved key areas of focus for the entity’s overseas work programmes. The initiative was built around the premise that knowledge is socially constructed.

ii. Development of an intranet site to encourage international dialogue.

The aim of developing the intranet site was to encourage international dialogue. The site contained information and articles drawn from white and grey literature and provided links with other issues affecting the programmes of the organisation. Coakes (2006:591) realised that academic institutions were also accessing the site for academic purposes. But he observed that the main shortcoming of the site was lack of connectivity in developing countries. It is, however interesting to note that “connectivity seems to be sector dependent to some extent” in developing countries (Coakes, 2006:590-591). The issue of IT connectivity in developing countries has a marked bearing on the present study.

Notwithstanding the limiting conditions to the application of IT to enable KM in a transnational organisation such as Charity, IT ensured that the organisation's work was increasingly informed and based on its grassroots work with overseas projects. KM has transformed the organisation's communication model so that the UK headquarters no longer "functions as a hub" of communication channels. Communications "is now" directed with more opportunity for collaboration and interaction.

While noting the benefits of technology in transnational organisations (namely addressing the issue of space and time through providing virtuality), Coakes was however adamant that IT on its own would be insufficient for KM. In this regard, Coakes (2006:591) insisted that:

Successful Knowledge Management however continues to need a socio-technical approach where the social aspects of knowledge creation, storage and sharing need to be considered alongside the technical.

As pointed out by Coakes, people, tasks, processes and the environment are crucial when "considering how best to implement technology in our organisations". This implies that technology should match the people, tasks, processes and environment for it to be effective for KM.

2.3.1.3.4. Eight critical success factors of KM: a case of UK-based construction organisations

Eight factors were observed to be critical in the success of KM implementation in UK-based organisations (Bishop *et al.*, 2008:25). These arose out of a research study conducted in the form of a qualitative investigation involving interviews with five academics and five professionals within the field of construction-oriented KM in the UK. Based on the interview data, Bishop *et al.* identified eight critical success factors of KM as highlighted hereunder:

i. Understanding and defining KM

The success of a KM initiative depends on a clear understanding and definition of the concept “KM” (Bishop *et al.*, 2008:22). Their interview findings were very interesting in that interviewees had misunderstandings of the differences between knowledge, information and data. As a result, Bishop *et al.* observed that interviewees presented several differing definitions of KM. However, they noted that the definitions given were bound within two perspectives of KM as provided in literature. These related to the outcomes perspective (defining KM in terms of its benefits) and the process perspective (defining KM in terms of processes of creation, dissemination and utilisation of knowledge).

ii. Integrating KM with needs of staff and the business

Bishop *et al.* (2008:22-23) realised that several interviewees agreed that it was essential for a KM initiative to address the organisation’s objectives, type of work, culture, dynamics, policies and practices for KM to succeed. This would ensure that there is alignment between KM and the organisation’s objectives and strategies (Bishop *et al.*, 2008:26). As observed by Bishop *et al.*, most respondents cautioned against making the KM initiative “too much a part of the people’s lives” as this might distract them from their actual jobs.

In this regard, Bishop *et al.* believed it was important for the interviewees to have suggested that KM initiatives should be integrated with everyday activities rather than processes and procedures since integrating KM with processes and procedures was tantamount to “forcing someone to do something” which has been found to be an ineffective way of managing people, and counterproductive for KM.

iii. Nurturing a KM culture

Though the interviewees “indicated that the culture within UK construction organisations often inhibits effective knowledge sharing,” most respondents believed that creating and sustaining the best suited culture for knowledge sharing was “a key factor in ensuring KM successfulness” (Bishop *et al.*, 2008:23). Bishop *et al.* noted this was consistent with KM theory.

iv. Establishing KM champions and top-level support

As observed by Bishop *et al.* (2008:23-24), the interviewees also agreed that the success of a KM initiative required someone within the organisation to take responsibility for the initiative. The interviewees realised that this person should be part of top-management or someone with support from senior management so that he/she could effectively ensure that:

- The right culture of collaboration and trust is maintained within organisation
- The right systems and processes are in place to support the KM initiative
- He/she understands what is needed for the KM initiative
- He/she understand what KM means for the organisation.

v. Encouraging staff buy-in

The interviewees believed the success of the KM initiative depended on employee buy-in (Bishop *et al.*, 2008:24). As such, most interviewees agreed that there should be rewards and incentives to motivate employees to contribute knowledge to their organisation. Bishop *et al.* (2008:26) found this was consistent with the findings from the literature. Therefore, Bishop *et al.* argued that to ensure employee buy-in to the KM initiative, its benefits must be communicated to them.

vi. Demonstrating and communicating benefits and successes of a KM initiative

Bishop *et al.* (2008:26-27) further noted that consistent with what has already been established in KM literature, most interviewees agreed that regular communication of benefits of KM within the organisation was important in galvanising employees to support the KM initiative.

vii. Balancing people and IT

Though people-oriented aspects have already been proven to be key to the success of a KM initiative (as supported by empirical cases already reviewed in this chapter), Bishop *et al.* (2008:25) found that some interviewees “suggested that the focus should be 90 per cent about people and 10 per cent about IT”.

viii. Determining suitability of financial and non-financial rewards

Coupled with the establishment of KM champions and top level support, most interviews agreed that rewards and incentives were critical in ensuring the success of a KM initiative (Bishop *et al.*, 2008:24). The academic interviewees recommended financial rewards whereas the industrial representatives (interviewees) suggested these were problematic. Bishop *et al.* found during the interviews that, regardless of the type of rewards offered to employees, “if people feel they are gaining something in return for sharing knowledge they are much more likely to do so”.

Though the empirical cases of KM in British organisations confirm that the US socio-technical approach to KM is domineering, the Japanese approach is also evident. Even though technology is viewed as an enabler to KM in all the reviewed cases, the emerging view is that more emphasis should be on people-centred factors. This has been appropriately captured by Coakes (2006:579) who argued for “lower(ing) the value of technology for knowledge sharing and to emphasise the human aspects of knowledge sharing”.

2.3.1.4. KM in Spain

Having presented the empirical cases of KM in organisations in the USA, Japan and the UK, the researcher realises that it is imperative to reflect on KM as it is practiced in Spanish firms:

2.3.1.4.1. People-focused KM at IDOM

Aramburu and Sàenz (2007:72) reflected on the importance of people-focused approaches to KM at IDOM; a Spanish firm. Data collection for the study was through documents and interviews. IDOM was set up in Bilbao (Spain) in 1957 as a company providing professional engineering services (Aramburu & Sàenz, 2007:73). Aramburu and Sàenz noted that by the time they undertook their study, the company had 22 offices spread in three continents: 17 in Europe (including Spain, Portugal, Belgium, the UK and Romania), three in South America (Brazil, Mexico and Venezuela) and one in Africa (Morocco). The company “is now” a fully diversified conglomerate operating in almost 18 areas of activity from architecture to consulting to IT and transport. Amongst the people-focused approaches to KM, Aramburu and Sàenz realised the manifestation of the following aspects in IDOM:

- i. The organisational culture

Aramburu and Sàenz (2007:74) observed that the “most valuable asset of IDOM is without doubt its organisational culture”. In this regard, Aramburu and Sàenz realised that the notion of commitment was the most distinct feature of the company. The authors also noted that IDOM enhanced “associate commitment” by ensuring that all individuals who have been working in the company for more than ten (10) years have “the status of partners which is quite different from the employer-employee relation” observed in other firms. Another key attribute which is highly valued within IDOM is trust. Aramburu and Sàenz highlighted that:

In this sense, the provision of a quality service, professional development, and the proposal of solutions and initiatives are strongly promoted, facilitated, and appreciated, all within a framework of trust in individuals’ capacity and respect for personal freedom.

ii. Organisational design

Aramburu and Sàenz (2007:75) realised that organisational structures within IDOM fit into the Japanese model of a hypertext organisation as observed by Nonaka. As highlighted by Aramburu and Sàenz, this model depicts hybrid organisational structures combining an adhocratic layer (favouring the creation of new knowledge) and a hierarchical layer (for the exploitation and use of knowledge). Aramburu and Sàenz (2007:76) noted that over the adhocratic organisational layer corresponding to the projects there was a matrix-type hierarchical stratum at IDOM.

iii. Role of middle managers

Furthermore, Aramburu and Sàenz (2007:76) also noted that managers at IDOM corresponded to the role of middle managers highlighted by Nonaka in Japanese companies in that:

... those who work as bosses must demand that those individuals making up their team meet ambitious professional objectives and help them to do so by commissioning them to carry out difficult tasks which may put their powers to the test and which, once these tasks have been overcome, may have helped them learn what they are capable of doing, among other things.

Aramburu and Sàenz (2007:77) indicated that managers at IDOM were expected to be very good professionals who should devote time to teaching, be used to teamwork, be decisive and optimistic. Such managers were also expected to know how to provide autonomy and acknowledge others.

iv. Career development system

Aramburu and Sàenz (2007:77-78) also observed that at IDOM there were formal and detailed policies designed for the professional development of members of the company. These policies were designed to ensure that all professionals within the company display a positive attitude towards continuous learning and opening new challenges. The policies were structured to ensure that promotions were linked to a very demanding individual professional development process based on strong capacity for learning.

Though professional development was the responsibility of individuals, some form of assistance was required from the supervisors. All IDOM professionals should be in continuous contact with customers as part of their learning and professional maturity (Aramburu & Saénz, 2007:78).

v. Assessment and reward systems

Aramburu and Saénz (2007:79) further observed that career development was linked to assessment and rewards at IDOM. This was done by assessing the degree of adjustment to the professional profile of the organisation, leading to either a proposal for the professional to be promoted or leave the organisation. The results of the individual's contribution towards the company's development were also taken into consideration before making a decision on changing an assignment given to an individual.

Furthermore, Aramburu and Saénz (2007:73-74) pointed out that IDOM has a formal Knowledge Management strategy linked to its business strategy. A detailed analysis of the company's Knowledge Management strategy reveals the following features:

- There is a specific department dealing with Knowledge Management
- IDOM's competitive advantage lies in the professional level of its staff
- The company has built an organisational culture where commitment, trust and respect for personal freedom is valued
- A hypertext organisational model combining hybrid organisational structures
- There is a great role for middle managers
- There is a career development system with formal and detailed policies for individualised design of professional careers of the company's people
- The company makes use of experts within to conduct formal courses and training
- There is an assessment system linked to the career development system
- Different information systems have been implemented to facilitate knowledge sharing.

According to Arambaru and Saénz, having a knowledge sharing attitude was “a *sine quae non*” condition to be a member of IDOM staff.

2.3.1.4.2. Employee motivation and knowledge transfer in a Spanish non-profit organisation

The importance of people-centred approaches to KM also dominate in a research study conducted in a Spanish non-profit organisation called Asprona, which found a link between employee motivation (particularly intrinsic motivation) and knowledge transfer (Cruz, Pérez & Cantero, 2009:487). As highlighted by Cruz *et al.* (2009:481), Asprona is a non-profit organisation founded in 1962 caring for people with disabilities in the city of Valladolid and surrounding areas. Cruz *et al.* conducted the study motivated by the following hypotheses:

- H1: the higher the intrinsic motivation an employee has, the more the knowledge the employee is willing to transfer
- H2: the higher the extrinsic motivation an employee has, the more the knowledge the employee is willing to transfer.

The study's sample consisted of 76 employees including psychologists, social workers, social educators and physiotherapists. The research data were collected in two phases: firstly, an in-depth interview was used to collect information about Asprona and secondly, information on knowledge transfer and motivation variables was collected through a questionnaire (Cruz *et al.*, 2009:482). These were the interview findings:

- Most of the employees had been with the organisation for a long time (10 to 27 years)
- Knowledge transfer in the organisation was usually generated through meetings where ideas and proposals emerged
- The organisation provided continuous training to its employees
- The conversion of tacit knowledge into explicit knowledge was not systematic since employees did not normally write things down as they thought this would restrict their initiative and creativity
- The organisation's employees agreed that their salaries were lower compared to labour market average.

Cruz *et al.* observed that Asprona's employees justified their longer stay at the organisation to the following factors:

- The healthy working environment
- The possibility to do something for someone in need
- Job autonomy
- Freedom to make decisions
- Convenient work schedules
- Job flexibility.

Cruz *et al.* (2009:485-486) used the interview findings to develop their research questionnaires which included extrinsic motivation, intrinsic motivation and knowledge transfer as research variables. Since the study was influenced by the desire to observe the link between intrinsic motivation and knowledge transfer initiatives, and between extrinsic motivation and knowledge transfer initiatives, the results showed that the link between intrinsic motivation and knowledge transfer was supported. But the results did not support the link between extrinsic motivation and knowledge transfer. Intrinsic motivation was found to be the most important element for knowledge contribution. Furthermore, the results proved that there was no 'crowding-out' effect between intrinsic and extrinsic motivation. This implies that the two mutually reinforce each other.

In addition to the above, Cruz *et al.* (2009:486) concluded that effective knowledge transfer was possible when employees perceive that their organisation values them. They realised that an organisation that values its employee provide them with suitable work conditions that allow them to progress (personally and professionally). Cruz *et al.* (2009:487) also believed that managers should deeply involve employees and make them feel part of the organisation in order to enhance knowledge transfer. They also insisted that managers should design mechanism for conversion of tacit knowledge to explicit knowledge to achieve organisational memory.

Arising from these empirical findings, it is imperative to consider the importance of intrinsic motivation in KM. Cruz *et al.* (2009:487) argued that in non-profit organisations focusing on social action, “intrinsic motivation can influence employees to stay in the organisation for a long time which enables them to increase and share their knowledge with the rest of the employees”.

2.3.1.4.3. Organisational structures supporting development of knowledge processes: empirical evidence from six Spanish firms

Horizontal organisations, structured around multi-teams have been found to be effective in the dissemination of information throughout the organisation (Claver-Cortés *et al.*, 2007:54). Claver-Cortés *et al.* arrived at this conclusion after conducting their research in six Spanish firms belonging to different economic sectors. The study was guided by the following question:

What are the organisational structure features which support the development of Knowledge Management processes?

In answering the above question, Claver-Cortés *et al.* observed knowledge-oriented organisational structures in six Spanish firms as follows:

i. Artech

This company is a manufacturer of electric engines, transformers, generators, relays and measurement and protection systems. Though the company did not start with an explicit formulated Knowledge Management programme, it was a case of a process of strategic reflection in 1995 which led to the identification of key values to be developed. Some of the values directly addressed the Knowledge Management question. Of particular note were values such as functioning as a group, exploitation of everyone’s capabilities and the consolidation of an organisational design model based on empowerment rather than hierarchies.

As a result of the implementation of these values, the company has practically no hierarchies because work groups and project-based teams prevail. This is made possible by combining a stable structure (responsible for daily management indicators) and an ad-hoc structure (where work teams, project-teams encourage collaboration).

ii. Unión Ferrosa (UF)

UF is a company responsible for the production and distribution of electric energy, gas and provision of professional services. This company has an increasingly flat organisational structure encouraging work groups, but has not completely neglected the hierarchical system. According to Claver-Cortés *et al.* (2007:51), the hierarchical structure is meant for improved relationships and communication between managers and collaborators. As part of its efforts to encourage knowledge sharing by groups, its performance management system is rooted in team work, where members share full responsibility for the company's objectives.

iii. PricewaterhouseCoopers (PWC) Spanish subsidiary

PWC specialises in business administration, audits and management consultancy activities. The company has an explicit Knowledge Management policy wherein it is organised on a legal partnership structure. The partners are equally accountable for running the business, though Claver-Cortés *et al.* have noted "a certain degree of hierarchy along with supervision and control of their subordinates by managers and directors" meant for decision-making purposes. The key features of the knowledge-oriented organisational structure of PWC are inter-departmental and inter-division groups, internal innovation groups and technology subcommittees.

iv. Siemens Spanish subsidiary

Siemens is a company specialising in electrical installations, manufacturing of electric engines, generators and transformers. Recognising that knowledge is its valuable asset (Siemens became an e-company in 1992), it then became a service-led rather than a product-led firm.

As a way of sharing knowledge across its business units, communities of practice (CoPs) were adopted to exploit knowledge synergies through the following areas:

- Vertical Knowledge Management solutions (divisional CoPs)
- Horizontal Knowledge Management solutions (staff CoPs)
- Collaboration with customers in Knowledge Management (CoPs with customers).

Claver-Cortés *et al.* (2007:52) indicated that due to these CoPs, the company has developed an increasingly organic structure with fewer hierarchical levels.

v. Telefónica Group

This is Spain's national telephone company. The company underwent tremendous changes in 2000 to become an e-company. As part of the changes, the company reduced its hierarchies in two ways by removing hierarchical levels remaining with only six and setting up transversality through multidisciplinary work teams. Claver-Cortés *et al.* reflected that owing to its adopted flat structure, Telefónica Group combined top-down and down-top management methodologies. In such structures, middle managers are a key element in the communication process (Claver-Cortés *et al.*, 2007:52-53)

vi. Santander Group

This company provides banking activities in the form of management of investment and pension funds. Having realised that the traditional management systems were insufficient to offer an efficient response to changing and complex environmental challenges, Santander Group created its own intellectual capital mode as part of its strategic vision (Claver-Cortés *et al.*, 2007:53). As a result, the company adopted a more horizontal and flexible organisational design where communities of practice form part of the knowledge acquisition and distribution infrastructure.

The present researcher observes that there is an established body of literature suggesting that human factors are critical to KM in Spanish organisations. Apart from the empirical studies already reviewed, Cantū, Criado and Criado (2009:243) confirmed the importance of human factors in the generation and transfer of knowledge in IT related Small and Medium Enterprises (SMEs) in Spain. Cantū *et al.* conducted their investigation in the form of a survey questionnaire of 105 employees from 30 organisations in Barcelona (Spain).

In line with the findings already established by Aramburu and Saénz and Cruz *et al.*, Cantū *et al.* (2009:252-253) found that the generation and transfer of knowledge in the 30 SMEs depended on factors such as less hierarchical organisational structures, more enlightened and participatory management styles and personal motivation and eagerness to learn by employees.

The above empirical studies confirm that KM in Spain is approached through human related factors such as organisational culture, leadership, organisational structures and HR.

2.3.1.5. KM in Italy

Rizzi, Ponte and Bonifacio (2009:75) wanted to understand why organisations continue to invest in KM technologies and solutions despite the fact that there is no direct link between these and organisational productivity. The investigation was done at X-TEL, an Italian telecommunication firm. The authors conducted interviews with managers and employees over a six month period.

As highlighted by Rizzi *et al.* (2009:78), X-TEL is an Italian firm and a major world-wide player in the telecommunication sector. Rizzi *et al.* observed that as a result of the company being acquired by BETA Corp, a series of reorganisation aimed at improving efficiency and synergy among the various units of the acquired X-TEL were implemented. Rizzi *et al.* noted that the rationale (philosophy) behind the rationalisation was to create a more integrated organisation. This involved changing the network-like structure of the former X-TEL Group by implementing a corporate identity.

Rizzi *et al.* (2009:79) realised that as part of the changes there were a series of organisational and technological interventions at X-TEL, including those aimed at improving management of knowledge. As highlighted by Rizzi *et al.*, the KM related interventions before and after the acquisition involved the launch of a full range of KM technologies such as the following:

- The standardised SAP portal-based knowledge platform referred to as “US”: this is an enterprise resource planning solution (post-acquisition phase)
- The more anarchic intranet sites named KFED (pre-acquisition phase)
- The collaborative technologies for group sharing based on Microsoft Sharepoint (pre-acquisition phase)
- The standard personal sites such as the EAGLE which is a site of personal KM tools such as Microsoft Office (post-acquisition phase)
- Peer to peer KM solutions based on Semantic Web technologies called ‘KEEx’ (pre-acquisition phase).

Rizzi *et al.* observed that the new owners allowed the newer KM technologies to co-exist with the pre-acquisition ones. Rizzi *et al.* also noted that X-TEL considered itself “explicitly and de facto an exemplary knowledge-intensive company” based on these heterogeneous and extensive KM technologies. Having observed the nature of KM technologies at X-TEL, Rizzi *et al.* observed further the complexity faced by the company in relating the nature of its centralised KM solutions versus the distributed solutions.

In this regard, Rizzi *et al.* (2009:79-80) argued that the KM technologies at X-TEL were part of an expression of the “formal structure” of the company intertwining the company’s formal structure and related technologies into what the authors refer to as X-TEL KM techno-structure. As noted by Rizzi *et al.*, the techno-structure of X-TEL was not producing any particular productive benefits due to the coexistence of the two contrasting solutions (centralised and distributed solutions) to KM. Rizzi *et al.* also realised during interviews with employees that most of them were not satisfied with the structure of current KM solutions at the company as they were aware of its limitations. Rizzi *et al.* observed that the use of contrasting KM solutions were against the ethos of a rational, efficient and effective organisation. They argued that:

Such a contradiction between structures that develop opposite solutions to similar problems while the one structure is supposed to monitor the other occurs because of the avoidance of formal evaluations (Rizzi *et al.*, 2009:81-82).

Rizzi *et al.* came to the conclusion that “the choice of technological standardisation, which is interwoven with the formal structure based on a centralisation model, is the result of an external pressure aimed at instilling X-TEL with the corporate values of BETA”. Therefore, Rizzi *et al.* (2009:83) were adamant that companies such as X-TEL continue to invest in KM technologies not because these offer specific benefits, but “rather on the basis of their capacity to legitimate the organisation to work effectively in a wider social milieu” that expects respectable and reliable organisations to show their willingness to manage knowledge properly. The predominant view emanating from this empirical case is that KM solutions should always be evaluated on the basis of their tangible benefits.

2.3.1.6. KM in New Zealand

Realising that there was no significant difference in KM implementation between companies operating in New Zealand and those from other developed regions of the world, Goh and Hooper (2009:22-23) wanted to understand how knowledge and information sharing was handled in a closed information environment. Organisations operating in a closed information environment can provide valuable insights into Knowledge Management “and, in particular, knowledge and information sharing” (Goh & Hooper, 2009:32). In order to reflect on the KM experience in a closed information environment, Goh and Hooper conducted research in the New Zealand Defence Force. The study was triggered by the following objectives:

- To ascertain the current level of knowledge and information sharing in the New Zealand Defence Force (NZDF)
- To identify perceived barriers to knowledge and information sharing in the NZDF
- To elicit suggestions as how to improve the knowledge and information sharing in NZDF
- To ascertain whether the barriers and suggestions for improvement are different from those from organisations operating in ‘an open information’ business environment.

Arising from a quantitative study involving 97 participants from the NZDF, Goh and Hooper made the following findings in terms of the above objectives:

i. Current level of knowledge and information sharing within NZDF

Goh and Hooper (2009:24) found that the most frequent method of communication within NZDF was e-mail and that information systems were considered the most important sources of information. Furthermore, Goh and Hooper (2009:27) realised that there was a tendency towards information hoarding amongst NZDF employees and most respondents felt they were not fully rewarded for their contribution to corporate knowledge.

ii. Perceived barriers to knowledge and information sharing in NZDF

Goh and Cooper (2009:27-28) found that lack of training in security classification and dissemination, lack of interest in sharing and lack of trust and acceptance of others' knowledge and information were the main barriers to KM implementation within NZDF. Some respondents felt that by asking other their colleagues they might appear incompetent. Respondents also felt that by sharing knowledge they would lose control.

iii. Suggestions on improving knowledge and information sharing within NZDF

Based on their research findings, Goh and Hooper (2009:29-30) made the following suggestions for improving knowledge and information sharing within NZDF:

- Balancing the number of staff and workload to allow time to share
- Providing proper rewards and recognition for sharing
- Ensuring management is impartial and open to suggestions from everyone
- Creating an open and accepting culture
- Facilitating more inter-department, inter-level and inter-organisation interaction
- Creating suitable working environment
- Breaking down current structural barriers.

Goh and Hooper (2009:32) realised that the need to create the right environment for knowledge and information sharing was the same for most organisations, whether it was a closed information environment or an open information business environment.

2.3.1.7. KM in Germany

There are many empirical studies of KM conducted in German companies including those conducted by Heisig (2009), Mertins, Krause and Schallock (1999), and Mertins *et al.* (2000). Since these relate more to the holistic approach to KM, they are reviewed elsewhere in this chapter. The study which is considered ground-breaking for the present investigation involved about 4500 German innovative firms in manufacturing and services industries (Cantner, Joel & Schmidt, 2009:196). The study uncovered the factors which influence a firm's decision to implement KM. The researchers used data from annual surveys for the period 2000-2002 conducted by the Centre for European Economic Research in co-operation with the Fraunhofer Institute for Systems and Innovative Research on behalf of the German Federal Ministry of Education and Research.

Based on the analysed data, Cantner *et al.*, (2009:196-197) noted the following aspects as being crucial in a firm's decision to implement KM:

i. The innovation strategy of a firm

The variables included in the model to capture the nature of firms' innovation activities were found to be positive and highly significant. This meant that a firm's innovation strategy and orientation have a strong influence on the likelihood to use KM tools.

ii. Product life cycle

Cantner *et al.*(2009:196) found that the shorter the product life cycle, the more likely that a firm will implement KM.

iii. The size of the firm

Small firms appeared less likely to implement KM. The empirical results proved that “firms with more than 50 employees were more likely to implement KM than those with less than 50 employees”.

iv. Influence of industry

The research results revealed that high tech manufacturing and knowledge-intensive service industries were more likely to use KM techniques than firms from other industries.

Cantner *et al.* (2009:197) surprisingly observed that East and West Germany firms though operating in different environments did not seem to differ in the usage of KM techniques. This finding has very interesting implications for the present investigation since rural areas of South Africa pose a quite different environment for KM as compared to the developed world.

Having observed KM from various parts of the developed world, the researcher notes that even though the socio-technical approach to KM is the dominant view, IT is considered a key enabler of KM due to the multinational nature of organisations of the developed countries. An organisation having poor IT implementation will be disadvantaged in the global market place (Kalkan, 2008:394).

Nevertheless, Kalkan warned that “besides, processing data and information, IT implementation and advancement must have a knowledge focus”. This is because effective KM demands an “effective balance between focusing on tacit knowledge and utilisation of IT”. Finding and maintaining the balance between a focus on tacit knowledge, and utilisation of IT appears to be the overriding concern in KM practices from North America (USA), Europe to Japan. Those entities which have reaped the benefits of KM seemed to be those who tried and managed to harmonise this balance.

Among the benefits associated with KM in Western countries is improved organisational performance. While there are still some disagreement among Western Scholars in terms of the link between KM and financial performance, a study conducted by Zack, Mckeen and Singh (2009:392) found that KM practices were directly related to organisational performance, which in turn was directly related to financial performance.

Zack *et al.*, (2009:393) conducted their study in a form of survey among 88 executives of firms from Canada, USA and Australia with an aim of testing a research model rooted in the underlying assumption that by locating and sharing useful knowledge, organisational performance will improve. They observed that in reality KM influences many different aspects of organisational performance; financial performance being one of these. The research model adopted by Zack *et al.* (2009:396) was based on the assumption that by locating and sharing useful knowledge, organisational performance will improve and this will in turn lead to improved financial performance.

Emanating from the study, Zack *et al.* (2009:404) observed that KM practices have a direct relationship with intermediate measures of organisational performance. They also found that organisational performance exhibited a significant and direct relationship to financial performance. No significant relationship was found between KM practices and financial performance.

Based on the various benefits associated with KM as uncovered in various empirical cases cited throughout this section, the researcher notes that mature knowledge-based organisations of the Western world link their KM efforts with their business strategy in order to ensure improved organisational performance. The next section attempts at depicting how organisations in various parts of the developing economy have managed to catch the knowledge economy ‘bandwagon’ and use knowledge for competitive advantage.

2.3.2. KM in the developing economies

The effects of globalisation imply that organisations of the developing economy need to set themselves to compete on the global landscape. With Drucker (as captured in section 2.3.1) having pointed out that in organisations from the developed economy the key controlling resource is no longer land nor labour nor capital but knowledge, for organisations of the developing world to compete on an equal footing with their counterparts from the developed economy, they need to recognise the premium accrued to managing knowledge effectively. Ample cases abound in the developing countries of KM success stories. This section will present some of these KM success stories and highlights some of the factors that restrict effective KM in the developing world.

2.3.2.1. KM in Asia

The cultural and political contexts in most Asian nations have been found to be quite complex as far as KM is concerned. Huang, Davison, Liu and Gu (2008:69) argued that lessons gained from KM practices in Western countries might not directly apply in these contexts. In this regard, KM practices of organisations in three Asian countries (China, India and Malaysia) are reflected in order to understand the extent to which these are comparable to KM practices of organisations from the Western world.

2.3.2.1.1. Knowledge sharing in China

Having observed that lessons gained from KM practices in Western countries might not directly apply in most Asian nations, Huang *et al.* (2008:67) conducted a research investigation aimed at establishing the link between leadership style and knowledge sharing intentions in the Chinese context. The study was conducted in a form of a survey among a group of MBA students who were full-time employees in various Chinese organisations. In order to build an empirical justification for their findings, Huang *et al.* (2008:69) highlighted the distinguishing attributes of the Chinese culture as follows:

- Familial orientation: Chinese people place the whole family's advantage above their own (collectivism dominant)
- *Guanxi* orientation: Chinese people place great value on harmonious relationships with others
- Authority orientation: power distance between managers and subordinates
- Social orientation: strong sense of social conformity.

The authors applied Western models to KM in the Chinese context in order to understand whether these will produce similar results as in the West. Huang *et al.* also wanted to understand whether these Chinese cultural values have an influence on leadership style, trust relations and knowledge sharing. Based on the data collected, Huang *et al.* (2008:79-81) observed the following findings in terms of the link between leadership styles and knowledge sharing:

- Chinese managers were found to be relying on both consideration (building harmonious relationship with employees) and initiation (directive-authoritarian) leadership styles
- Citizenship behaviour (frequent interaction) of employees found to be positively influenced by managers who are considerate and reliable performance positively associated with managers who apply initiative characteristics
- Managers with a high degree of consideration “inclined to create a warm atmosphere in organisation” since these demonstrate caring for subordinates
- Managers with a high degree of initiation found to be very strict with work standards
- While most managers were “inclined both to initiating structure and to consideration, the inclination to consideration is still stronger than to initiating structure”
- Leadership styles were found to affect employees' intentions to share knowledge, both styles were found to be stimulating knowledge sharing
- The Western model that trust (both affect-based and cognitive-based trust) influence employees' intention to share knowledge was confirmed
- That initiation leadership style can stimulate knowledge sharing is not consistent with findings from Western context (the authors explained this might be the effect of high degree to obedience which is part of the Chinese culture).

Huang *et al.* (2008:80) realised that the inclination to consideration was consistent with the “Chinese way of doing things” which is rooted in the *guanxi*. Based on these findings, Huang *et al.* (2008:82) proposed the following suggestions for improving knowledge sharing in Chinese organisations:

- i. Managers should adopt a high-high style of leadership (high in both consideration and initiation): the authors found the suggestion consistent with Chinese management culture
- ii. Employees should be rewarded for their knowledge sharing efforts
- iii. Managers should “get down on the shop floor, where subordinates work, and encourage them directly” with a mix of emotional support and authoritarian direction.

2.3.2.1.2. KM in India

Having presented KM from the Chinese context, the researcher now presents the empirical cases from India in order to determine whether these are consistent with KM practices from the developed world. In line with Huang *et al.*, Singh (2008:12-13) also found some deviations from established approaches of Western knowledge-intensive firms, in terms of the role of leadership, in a software firm in India. The study was aimed at determining the link between leadership styles (including gender influence) and the art of Knowledge Management practices.

2.3.2.1.2.1. KM in a software firm in India

Singh (2008:8) reviewed KM practices in a software firm in India aimed at testing the following three hypotheses:

- H1. The gender will significantly differ in their leadership styles and also in the art of practising KM at work place
- H2. The leadership of the people will be significantly related with organisation’s Knowledge Management practices
- H3. The leadership styles of people will significantly predict the art of Knowledge Management practices in the organisation.

As noted by Singh (2008:11), the organisation under investigation is a subsidiary of one of India's best IT companies. The findings suggest that the gender do not differ significantly in terms of managing knowledge and practising the art of leadership at work place in the organisation. This implies that H1 is rejected. As part of this finding, the majority of the respondents believed that every aspect of KM (including knowledge identification, creation, collection, capturing, storage, organising, sharing, dissemination, application and use) was practised relatively well in their organisation.

Singh (2008:10) also noted that the mode of leadership practised in the organisation was to a greater extent a directive style of leadership followed by consultative, supportive and delegation mode of leadership styles. Singh highlighted that the main mode of leadership was task-oriented rather than people-orientation mode of leadership. As observed by Singh, the leadership mode in the case study was contrary to leadership behaviours in knowledge-intensive firms from the Western world. Singh attributed this to the cultural factors as people in the Indian sub-continent possess a laid back attitude.

Since the research results showed that both directive and supportive styles of leadership have a significant negative relationship with KM processes and practices, and that the consulting and delegating modes are positively associated with KM processes and practices, Singh (2008:11-12) failed to reject H2. Singh observed that "delegating rather than any other mode of leadership is more suited for creation, storage, organising, application and use of both tacit and explicit knowledge" in the software company. Arising from this finding, Singh also failed to reject H3.

Based on the research results, Singh (2008:13) noted that there were other factors, apart from leadership, which played a significant role in ensuring effective KM implementation in the research entity. It is upon this basis that the present literature review is aimed at investigating the various factors leading to effective KM in various organisations.

The present researcher also highlights KM practices of one of India's mature knowledge-based entity in the quest to investigate these factors. This case proves that India has managed to enter into the post-capitalist society described by Drucker. Sharma, Siddiqui, Sharma, Singh, Kumar, Kaushal and Banerjee (2007:31) observed that India has established itself as a top-notch offshore destination for IT and business process services and as a result it "contributes a significant 28 percent to the total pool of knowledge workers globally".

The above statement makes a synopsis of KM practices in Indian organisations imperative. Hereunder follows the case of Tata Consulting Services (TCS), one of India's mature knowledge-based organisations:

2.3.2.1.2.2. The case of Tata Consulting Services (TCS)

Arising from an extensive investigation of KM at TCS, Sharma *et al.* (2007:64-65) developed learning insights on KM practices which could be applied by leaders across industries. TCS was found to be India's largest IT company and Asia's largest independent software and service organisation (Sharma *et al.*, 2007:29). The company is part of one of Asia's largest respectable conglomerates: the Tata Group.

At TCS, KM was adopted in parallel with business practices (Sharma *et al.*, 2007: 34). The authors noted that TCS was an early adopter of KM through initiatives such as on-the-job discussions with peers, apprenticeship, and maintenance of corporate libraries, professional training, and mentoring programmes, knowledge-based technologies, expert systems and knowledge repositories. These practices are consistent with the Western approach to KM. Sharma *et al.* also observed that the KM practices at TCS were related to organisational learning initiatives (processes by which an organisation learns to share best practices and avoid repeating mistakes). The major considerations for Knowledge Management at TCS were observed by Sharma *et al.* (2007:35) and comprised of the following practices:

- Creating knowledge content and building on existing products and services
- Achieving shorter service development cycles
- Facilitating management of organisational innovation
- Leveraging the expertise of people across the organisation
- Benefiting from ‘network effects’ of increasing the quality of knowledge sharing
- Managing proliferation of data and information in complex environments
- Allowing IT consultants to access useful and relevant knowledge resources and best practice guidelines
- Facilitating organisational learning
- Managing intellectual capital and intellectual assets
- Bringing to bear TCS’s best thinking on any business problem.

Sharma *et al.* also noted that aspects of KM were inculcated within the organisational culture at TCS. These aspects included explicit documentation, creation of templates, coaching and mentoring, egoless project teams and process-driven practices. As observed by Sharma *et al.*, TCS’s consultants were expected to conform to a collaborative knowledge sharing culture. Sharma *et al.* (2007:36) also realised that TCS provided KM services to its clients. These services included an “entire arsenal of KM techniques, methodologies, tools, technologies and programmes” (Sharma *et al.*, 2007:38). Sharma *et al.* highlight some of these KM services as follows:

- i. SIGMARG™: a delivery model for KM initiatives for TCS clients
- ii. Document management systems
- iii. COP (communities of practice)
- iv. ILP (Initial Learning Programme for recent graduate)
- v. LPD (TCS’s leadership development programme)
- vi. eKMS: containing features like proposal tracking, client information and document management
- vii. iQMS (Integrated Quality Management System)
- viii. iCALMS (Integrated Competency and Learning Management System and Audits).

Sharma *et al.* (2007:44) observed that due to its extensive KM systems, TCS could be considered a mature knowledge-based company. Furthermore, Sharma *et al.* (2007:43) found that TCS did not follow the examples of other mature knowledge-based firms from the West by centralising the KM function under a Chief Knowledge Officer or Chief Information Officer because at TCS “the initiatives are currently decentralised with practice leaders and consultants individually responsible for developing competencies and careers”. Another important observation by Sharma *et al.* was that managers at TCS “knew quite well that getting the technology right was only 20% of the success of KM,” as there was “more to people and process factors” for a KM initiative to succeed. This observation has also been recognised by KM scholars in the developed world.

2.3.2.1.3. KM in Malaysia

Malaysia like most countries in the world has a vision of becoming a knowledge-based nation (Chong, 2006:230). This section presents a synopsis of KM in two sectors of the Malaysian economy: the telecommunications and government sectors.

2.3.2.1.3.1. KM in the Malaysian telecommunications sector

The telecommunications sector is undoubtedly within the cutting edge of information management and Knowledge Management. KM has long been associated with the information revolution as noted in KM approaches adopted by organisations in the Western world. Having noted that the Malaysian government was applying measures to move the country from the ‘old economy’, Chong identified 11 KM success factors from an extensive literature review of KM practices and investigated the perceived importance and level of implementation of these factors in 194 ICT companies in Malaysia. Chong chose the 194 companies from the MSC-status companies which are ICT companies residing within the Multimedia Super Corridor (MSC) in Malaysia.

As highlighted by Chong (2006:231), the MSC is an ambitious project initiated by the Malaysian Government to “leapfrog the country’s development through the creation of an ideal multimedia environment for world-class companies to use as regional hub”. The MSC-status companies “are supposed to propel the country in becoming a knowledge-based nation,” which means that “by default they are knowledge-intensive organisations”.

The respondents in Chong’s study were middle managers, a fact that recognised Nonaka and Takeuchi’s argument that middle managers are the true “knowledge engineers” of a knowledge-based company. Chong (2006:232) believed that the findings of his investigation would provide a fair guide to organisations in Malaysia on the pre-requisite necessary for successful KM implementation. The research was guided by the following research objectives:

- To examine the respondents’ perceptions on the importance of the 11 factors to successful KM implementation
- Identify the level of implementation of these factors
- Analyse whether is there any significant differences between the factors perceived as important and the implementation of these factors.

Arising from the empirical findings, Chong (2006:247) recognised that all the factors must be given equal emphasis by all the Malaysian organisations if they wanted to become knowledge-intensive organisations. Furthermore, Chong observed that the results of his research had far reaching implications on KM implementation in the Malaysian organisations. He argued that these organisations must realise the importance of the 11 factors as follows:

i. Top management support and leadership: Chong (2006:247) observed that top management has the greatest ability in enabling KM in their organisation.

ii. Employee training: Chong (2006:248) insisted that since KM involves the use of information system infrastructure to capture important information, employees need to be “trained in terms of writing, editing and formatting skills”. This will enable them to input items to a knowledge repository.

iii. Knowledge-friendly culture: Chong (ditto) argued that “KM is people-based, it is not technological”. Thus, top management should create a perception within the organisation that “knowledge is not power” but “knowledge sharing is power”. According to Chong, this perception could reduce the tendency by employees “to hoard knowledge”.

iv. Elimination of organisational constraints: Chong insisted that senior management must attempt to remove all organisational constraints that create barriers to successful KM implementation. He suggested that one of the best ways to achieve this was through the creation of a senior management post for a Chief Knowledge Officer.

v. Team-working: Chong (2006:249) observed that KM literature has ample empirical cases that show that “organisations with team-oriented employees who trust each other are more successful than those who are merely technological superior”. Hence, he believed that when employees in ICT companies work in teams and share their knowledge they would be able to solve work-related problems and “come up with creative and innovative solutions to their customers”.

vi. Employee involvement: Chong (ditto) suggested that when employees are meaningfully involved by top management, they “would use their knowledge” to the very best extent. Therefore, the ICT companies in Malaysia should continue to encourage their employees to be meaningfully involved in their tasks.

vii. Employee empowerment: “By involving and empowering the employees in their jobs, they can co-ordinate diverse sets of activities and solve organisational-wide complex problems” (Chong, 2006:249).

viii. Performance measurement: Chong (ditto) believed that a KM-based performance measure must be “embedded in the overall business performance model”. Thus, a comprehensive performance measurement system must be developed by Malaysian ICT companies to capture the impact of knowledge on the individual and organisational performance.

ix. Knowledge structure: Chong (2006:250) noted that the most useful knowledge could be captured and created by sharing with customers and suppliers. This then implied that Malaysian ICT companies should create mechanisms to receive customers and suppliers’ feedback.

x. Information system infrastructure: Chong (ditto) realised that a Knowledge Management System (KMS) does not necessarily require huge investment because an organisation can simply combine its current IT capabilities to support its KMS. He reasoned that the fact that these Malaysian ICT companies were directly involved in IT hardware and software did not mean they were knowledgeable about KMS. Chong believed that for an organisation to successfully implement KM, it should be able to identify the kind of knowledge that should be captured, leveraged and applied.

xi. Benchmarking: Chong (2006:250) was adamant that once an organisation has benchmarked best practices, it could easily apply its useful knowledge around the whole organisation.

Chong (2006:250-251) insisted that these Malaysian ICT companies should understand that KM was not about a one-time investment. He argued that KM required constant attention and investment over a “substantial period even after it begins to deliver results”. Chong recognised from the findings that all the 11 factors were perceived to be very important when the organisations attempted to implement a KM programme. Furthermore, he realised that more than half of the respondents had just started their KM activities and as such their performance management systems did not fit into the requirements of a knowledge-based company. There were no long established KM practices from other organisations upon which these Malaysian ICT companies could benchmark their KM practices.

Chong (2006:235) also found that most of the organisations were still unfamiliar with KM and as such they were not sure on how to create a knowledge-friendly culture. Knowledge sharing in most of the organisations depended on project or team basis rather than organisation-wide basis. Another shortcoming that hampered KM effectiveness in these Malaysian ICT companies was that many of their current training programmes focused on improving employees’ skills rather than on how knowledge could be managed. The majority of the organisations did not have extranets to link with customers and suppliers (a key wing in knowledge sharing). Most respondents indicated that they were given limited authority to make meaningful decisions on behalf of their organisations. In spite of these shortcomings, Chong (ditto) realised that the majority of the respondents perceived their leaders as supportive of their KM activities.

Information systems for Knowledge Management were found to be moderately implemented in most Malaysian ICT companies. Chong (2006:235) believed this was related to the fact that respondents knew quite well the distinction between ordinary ICTs and Knowledge Management systems (KMS). He also realised that most respondents wanted all possible barriers that would impede their KM goals removed. Respondents cited barriers such as lack of budget and incentives as having a very negative impact on KM implementation in their organisations. A very interesting observation made by Chong from the study was the negative relationship between company size and investment in KM.

In line with these findings, Chong (2006:247) suggested that all the 11 factors be given equal emphasis by the Malaysian organisations if they really wanted to be called knowledge-intensive organisations. These findings are also consistent with those emanating from a similar study that was conducted by Chong *et al.* (2009:78-79) in the same sector in Malaysia. Chong *et al.* (2009:74) identified five preliminary KM success factors, four KM strategies and three KM processes from a detailed literature study with most factors corresponding to the 11 factors identified by Chong. These are listed as follows:

i. KM Preliminary factors

Success factor 1: Business strategy

Success factor 2: Organisational culture

Success factor 3: KM team

Success factor 4: Knowledge-Audit

Success factor 5: Knowledge-Map.

ii. KM strategies

Strategy 1: technology

Strategy 2: culture

Strategy 3: leadership

Strategy 4: measurement.

iii. KM processes

Process 1: knowledge construction

Process 2: knowledge embodiment

Process 3: knowledge deployment.

Similarly, Chong *et al.* (2009:75) identified middle managers as their study respondents. Having almost the same objective as Chong, Chong *et al.* made the following findings in terms of the perceived importance and actual level of implementation of the identified factors:

- Most Malaysian telecommunication organisations were at the beginning stage of KM
- Most were aware of importance of KM, but not ready with implementation
- Most organisations lacked understanding of what was needed in a KM programme
- Low implementation of Knowledge-Audit
- Low implementation of Knowledge-Map
- Lack of capable and experienced leaders to manage KM effectively
- Lack of awareness about implications of performance measures
- Less effort in generating knowledge
- The link between business strategy and KM established
- Most managers perceived culture as important in their organisation, in particular importance of open and flexible culture to facilitate KM.

Though the results pointed to other variables contributing to effective KM which have not been covered in the study, Chong *et al.* (2009:33) observed that these findings provide “a foundation for building a cumulative tradition in the early stage of KM implementation”. This is quite notable considering that the present study is set in a context (rural areas of South Africa) where KM might not yet be considered a popular organisational practice.

2.3.2.1.3.2. KM in the Malaysian public sector

After considering that there was very little information on KM in the public sector particularly in the developing countries, Syed-Ikhsan and Rowland (2004:238) conducted an in-depth study on KM within the Ministry of Entrepreneur Development in Malaysia.

The study was conducted in the form of a survey questionnaire with 154 staff members from all levels (level 1 to 6) responding. The questionnaire concerned aspects of KM such as KM strategy, benefits for managing knowledge, responsibility to manage knowledge, problems in managing knowledge issues, knowledge generation and sharing, barriers to knowledge generation and sharing as well as technology used in KM in the ministry. Arising from the data collected, Syed-Ikhsan and Rowland (2004:243-253) made the following findings:

i. Knowledge Management strategy

Syed-Ikhsan and Rowland (2004:243) noted that 52.6 percent of the respondents agreed that the Ministry had a Knowledge Management strategy, while 27.6 percent did not know whether the Ministry had any Knowledge Management strategy. As observed by the authors, the fact that most employees (respondents) who had worked for more than 10 years were in the category of those who were not aware whether there was any KM strategy indicate that KM was not popular within the Ministry. While noting that the majority (96.8%) agreed KM strategy was important, Syed Ikhsan and Rowland (ditto) realised this was consistent with KM theory that a KM strategy was beneficial to the organisation as a whole because it allows for individuals to be conscious of their roles in knowledge generation and sharing.

ii. Benefits for managing knowledge

Syed-Ikhsan and Rowland observed that most respondents agreed that the Ministry could benefit from managing knowledge, particularly in terms of the following benefits:

- Improved work quality
- Have up-to-date information
- Improved efficiency
- Be more effective
- Improved decision-making
- Able to respond to customers' needs.

iii. Responsibility to manage knowledge

While noting that there is no agreement among KM scholars as to whose responsibility KM should be within an organisation, Syed-Ikhsan and Rowland (2004:244) found that only 48.3% of the respondents believed the responsibility of managing knowledge within the Ministry should be everyone's job, with many of the respondents feeling it was the responsibility of the head of Ministry or heads of divisions. This has far reaching implications to managers since they would be expected to champion KM.

iv. Problems in managing knowledge issues

Having asked respondents to indicate the specific issues they thought make managing knowledge difficult, Syed-Ikhsan and Rowland (2004:245) noted the following:

- Changing employees' behaviour (69.5% respondents)
- Problems of maintaining data (48.7% respondents)
- Overcoming technological limitations (33.1% respondents)
- Dealing with confidential documents (29.2% respondents)
- Sharing knowledge and information among officers from different divisions/units (27.2% respondents).

v. Knowledge generation and sharing

Syed-Ikhsan and Rowland (2004:250) also requested the respondents to rate the issues which they believed have potential in encouraging knowledge generation and sharing within the Ministry. The respondents were expected to indicate whether the stated issues had no potential or some potential or potential or lots of potential or most potential. The findings are presented in the table below:

Table 2.2: Issues that encourage knowledge generation and sharing within the Ministry of Entrepreneur Development in Malaysia

Issues	<i>Percentage respondents</i>		
	Potential	Lots of potential	Most Potential
Current procedures and policies	38.3	20.8	11.7
Unwritten policies	33.8	16.2	05.8
Job manual procedure	40.9	33.8	13.0
ISO 9002	41.6	29.9	13.6
Desk file	37.0	37.0	12.3
Filing system	42.2	32.5	12.3
Workflow	39.6	38.3	16.2

Source: Syed-Ikhsan and Rowland (2004:250).

It is apparent from the above table that the most consistent issues that the respondents felt had greater potential in encouraging knowledge generation and sharing in the Ministry were workflow, desk file, job manual procedure and filing system. These issues have a direct relevance in the present study because most of these are rooted in the social factors.

vi. Barriers to generation and sharing of knowledge

In terms of the issues which respondents regarded as creating a barrier to knowledge generation and sharing, Syed-Ikhsan and Rowland (2004:250) found that the current command and control management style was the main barrier (as indicated by 57.25% of the respondents). Other barriers to the generation and sharing of knowledge identified by the respondents were the communication channel between officers (53.6% respondents), political interference (44.8% respondents) and the organisational structure of the Ministry (44.1% respondents).

vii. Technology used in KM

Based on the question asking whether technology was the most important element in developing and gaining knowledge, Syed-Ikhsan and Rowland (2004:251) found that 83.6% of the respondents were of the view that technology was the most important element in developing and gaining knowledge. The authors believed that this finding was a result of people thinking technology was the answer to KM.

Among the current technologies used in the Ministry to develop and gain knowledge, Syed-Ikhsan and Rowland (2004:252-253) found that the most important technologies were e-mail (73.4% respondents), online information sources (72.1% respondents) and the Internet (72.1% respondents). On the other hand, the authors found that technologies such as video-conferencing and CD-ROMS were viewed as least important in developing and gaining knowledge by most respondents.

These findings demonstrate that KM is not the sole domain of private sector entities and organisations from the developed countries. As much as it offers benefits to private corporations, KM is also implementable and beneficial to the public sector even within the developing countries.

2.3.2.2. KM in the Middle East

Considered lagging behind the Western world in terms of the knowledge gap, the Arab region just like Malaysia, has undertaken government sponsored initiatives to narrow this gap (Mohamed, O'Sullivan & Ribi re, 2008:107-108). Mohamed *et al.* noted that there were conspicuous “ontological/epistemological and metaphysical” dissimilarities between the West and the Arab World.

Among these dissimilarities, are deficiencies in knowledge assimilation and sharing in the Arab region due to a set of economic and political ‘intricacies’. Mohamed *et al.* (2008:107) recognised two obstacles to KM in the region, which are:

- Mediocre research and development (R&D) strategy
- Inadequate information and communication infrastructures.

Most educated and experienced professionals had left the region for the Western World, this proving that “the styles of governance in the region have significantly contributed to the continual inertia of knowledge and internment of innovation” (Mohamed *et al.*, 2008:107-108). They also observed that the region also faced “constraints of internal KM technology”. Mohamed *et al.* (2008:113) suggested that the region should increase its investment in ICT infrastructure so as to improve KM implementation. Emanating from these findings, they recognised two ground-breaking Knowledge Management models pursued by Qatar and Dubai:

2.3.2.2.1. The Qatar model

Mohamed *et al.* (2008:108) described the initiative of the government in Qatar whereby leading world university representatives gathered into a centre for knowledge-creation called the ‘Education City’ as ground-breaking in terms of developing a KM strategy for the region. They noted that the ‘Education City’ strategy could be viewed as a vehicle used by the ‘Qatar Foundation’ towards the formation of a powerful educational and research hub in the Middle East.

2.3.2.2.2. The ‘Mohammed Bin Rashid Al Maktoum Foundation’ in Dubai

Mohamed *et al.* observed that the ‘Mohammed Bin Rashid Al Maktoum Foundation’ was launched at the ‘latest’ Middle East Economic Forum held in Jordan in May 2007 by Sheik Mohammed Bin Rashid Maktoum, Vice- President and Prime Minister of the United Arab Emirates (UAE) and ruler of Dubai. The main objective of the foundation was to promote knowledge in the region. The statement of objectives of the foundation includes building knowledge infrastructure, research centres, scholarships, authorship and collaboration with top institutions.

The four pillars of the foundation as highlighted by Mohamed *et al.* (2008:109) are as follows:

i. Building a knowledge society: statistics on indicators of development revealed decreased illiteracy and unemployment in the region. The aim of the foundation was to increase intellectual production and number of scholars in the Arab World.

ii. Leadership: Mohamed *et al.* (2008:108) noted that the Arab World dominated international trade between 15th and 18th centuries. The foundation also recognised that the Arab World should apply the necessary reforms to institutionalise organisations, leadership, education, research and innovation in order to regain its leadership status.

iii. R&D (Research and Development): the foundation led to the development of research centres across the region. These research centres were expected to embrace creativity, innovation and introspective action research.

iv. Sustainable development: while noting that sustainable development was currently lacking in the region, the foundation decided to focus its efforts on this in order to ensure any achievement towards the knowledge economy was not temporary.

Mohamed *et al.* (2008:110) also observed that the foundation was based on the same philosophy as the *Ma'mum Ibn Harun al-Rashid* established *Beit Elhikma* (House of Wisdom) in Baghdad as an intellectual city in the first half of the 19th century. The KM framework developed by the foundation was a crossbreed of the traditional nomadic knowledge style of the *Beit Elhikma* and contemporary Western knowledge capacities recognising three key factors in KM. These are: people, KM processes and information communication technologies. The Mohammed Bin Rashid Al Maktoum Foundation encourages “serendipitous discoveries” through the funding of collaborative research programmes that foster “knowledge equitableness, knowledge consciousness, and knowledge discoveries” (Mohamed *et al.*, 2008:115).

The interventions by the Qatar and Dubai governments in trying to close the knowledge gap with the West bear testimony to the strategic role governments can play in promoting Knowledge Management initiatives. Both these governments appear to be realising the continued advantages firms from the developed world have over their developing world counterparts arising from the adoption of what Drucker appropriately called the “new controlling resource”.

2.3.2.3. KM in Latin America

In order to prove that KM is not the sole domain of organisations from countries in North America (USA and Canada), the researcher presents hereunder empirical evidence of KM in two countries from South America:

2.3.2.3.1. KM in three Social Development Programmes (SDOs) in Peru

Matzkin (2008:147) conducted a research investigation in three Social Development Programmes in Peru in order to show that organisational contexts specific to third world countries could profitably apply 'some' Knowledge Management practices to accomplish their organisational objectives. The case of the three Peruvian SDOs was chosen because it was undertaken in a context not quite different from that of the present study. In some cases the problems and successes encountered in KM implementation in Peru might manifest in the context of the present study. According to Matzkin, Knowledge Management should encompass human capital (employees' know how) and organisational capital (organisation's internal processes and management).

Does lack of human and financial resources faced by organisations prevent implementation of KM? This appears to be the prevailing question faced by organisations of the developing economy. While observing this condition in the developing world, Matzkin presented empirical findings arising from a survey of 106 Peruvian organisations exploring how KM awareness and practices could create more efficient organisations despite lack of human and financial resources faced by these organisations.

As highlighted by Matzkin (2008:151), the respondents in the survey were managers from 106 Peruvian Social Development Programmes (SDOs). These SDOs included not-for-profit organisations, government agencies and profit organisations participating in social development programmes. Arising from the research data, Matzkin noted the following findings as characteristics of KM in the Peruvian SDOs:

- Government organisations were found to offer fewer opportunities in terms of internal procedures for knowledge sharing than not-for-profit organisations (NPOs)
- Government organisations did not consider much employees suggestions and proposals to improve processes as much as not-for-profit organisations
- Government organisations have implemented strategic management systems such as the Balance Scorecard to a less extent
- Government organisations seemed to pay less importance to input of people inside organisation (this was found to be linked to the political nature of decisions and affairs in Latin America)
- Government organisations displaced a higher proportion of internet connection than NPOs and profit organisations (Matzkin observed that this was linked to the centralised administration system in Peru which relied much on the World-Wide-Web for effectiveness)
- NPOs were found to lack IT connectivity due the fact that most operated in remote regions of the country which were out of reach of the Internet
- The ‘annual training’ budget did not differ across the three organisations
- Though there were low levels of KM practices observed, there were some implicit KM practices.

In order to measure the extent of implicit KM practices in the three SDOs, Matzkin (154-155) developed an Implicit Knowledge Management Index (IKMI). The IKMI consisted of the following practices:

- The use of methodologies similar to Balanced Scorecard
- The existence of internal procedures used to improve management and processes
- The existence of systemised practices such as a written track of work processes
- Considering the personnel suggestions to improve processes
- The use of professional email to share information
- The organisation’s e-learning practices.

The higher the IKMI score, the higher the level of implicit knowledge management practices (Matzkin, 2008:155). All the three SDOs scored higher than 0.50 in the IKMI. The government organisations recorded the lowest IKMI score of 0.54 while the NPOs and profit organisations had IKMI scores of 0.70 and 0.64 respectively. Matzkin (2008:157) observed that contrary to North America's SDOs which were characterised by a high awareness about KM, these Peruvian SDO managers have quite a low awareness about KM.

These findings demonstrate that government organisations were much worse off in KM related activities though they possessed better IT resources (widespread internet connectivity being an example) than NPOs and profit organisations. What Matzkin wanted to demonstrate through the investigation was that the key obstacle to KM implementation in the Peruvian SDOs was awareness of KM rather than lack of resources.

2.3.2.3.2. The “soft” issues in KM: the case of an electronics manufacturing plant in Brazil

Guzman and Wilson (2005:59) advanced a theoretical framework that integrates knowledge management, change management and “soft” issues by conducting an empirical investigation in the form of a case study in a Brazilian electronic manufacturing plant. The purpose of their study was to understand the key aspects that shape the transfer of organisational knowledge.

Based on their extensive review of literature on Organisational Knowledge Transfer (OKT), Guzman and Wilson (2005:61-62) realised that the main problems associated with OKT were “related to the complexity of social processes that occur during the transfer process to structural organisational factors and to the degree of abstraction in which organisational knowledge is packaged”. They observed that organisational knowledge “is complex because knowledge transfer is based on individual interpretation, cognition and behaviour”. Therefore, for knowledge to be transmitted effectively, it must “be congruent with existing social context”.

Guzman and Wilson (2005:62) also observed additional features preventing “fluid OKT” such as the existence of conflicting goals inside organisations and the low level of trust between sending and receiving organisational unit.

The empirical data from the case study suggest that ‘soft’ issues which are rooted in the macro contextual factors determine the “full set of factors that influence the transfer of organisational knowledge”. Guzman and Wilson (2005:64-65) realised that in a developing country like Brazil, macro contextual factors appeared more important than micro level factors in understanding organisational knowledge transfer. They observed that:

... the basic prerequisites for knowledge transfer – such as motivation, collaboration, willingness, trust and reliability – are structurally restricted by adversarial macro conditions (Guzman & Wilson, 2005:65).

Guzman and Wilson (2005:66) believed that addressing both “soft” and change management factors could minimise obstacles for knowledge transfer. They defined the “soft” issues in organisational knowledge transfer as incorporating the mutual understanding between sender and receiver unit, role of macro institutional factors affecting firm level actions and the interpretative aspects permeating the process of organisational knowledge transfer.

Furthermore, Guzman and Wilson (2005:67) argued that due to the open-ended nature of soft factors, it is not possible to explain all ‘soft’ factors affecting organisational knowledge transfer. While providing a base for the incorporation of the macro-micro link in organisational knowledge transfer, Guzman and Wilson have assisted in developing a model for understanding KM in terms of organisational knowledge transfer from a developing country context.

The next section proceeds to expose KM implementation in the developing countries in Africa. The presentation culminates in empirical cases of KM implementation in South Africa.

2.3.2.4. KM in Africa

Having reviewed various empirical cases of KM practices in various organisations of the developed economy in the USA, Europe and Japan and also organisations of the developing economy from Asia, the Middle East and Latin America, the researcher is by now aware of the various factors which might enhance or impede effective KM implementation. The African experience is much relevant in the present study because the study is set in the context of an African country: the rural areas of South Africa.

In chapter 1 of the present study, the level of development of South Africa (in terms of the HDI) compared to some countries in Africa and from other continents is depicted. This is followed by a discussion about the level of development of Limpopo Province within the nine provinces of South Africa. This section captures the impediments to effective KM in Africa as well as some success stories of its implementation on the continent. The section is concluded with an overview of relevant KM empirical cases in South Africa.

2.3.2.4.1. Impediments to KM in Africa

A description of Africa categorises the continent in two blocks: North Africa and sub-Saharan Africa. This classification is in terms of whether an African country is found north or south of the Sahara desert. North Africa consists of countries such as West Sahara, Morocco, Algeria, Libya and Egypt. The list of sub-Saharan African countries is provided as Appendix D in this research report. Sub-Saharan Africa continues to lag behind other developing nations in terms of development indicators (Arbache & Page, 2007:6). Though South Africa could be classified as the richest nation in Africa, Arab North Africa is the richest region (UN World Development Indicators, 2009). A link between KM maturity and development has already been established through empirical cases from the developed nations. Does this mean that due to its low levels of development Africa cannot implement KM?

Ondari-Okemwa (2004:362) recognised that “knowledge does not just exist; some conditions must exist for knowledge to be created, effectively managed and shared”. Having undertaken a research investigation amongst 46 nations of sub-Saharan Africa, Ondari-Okemwa realised that “such conditions are scanty” in the region. Based on the data collected, Ondari-Okemwa made a number of findings in terms of the factors that impede access to global knowledge in sub-Saharan Africa. Recent indicators also support his findings (International Telecommunication Union, 2007, and UN World Development Indicators, 2009). As highlighted by Ondari-Okemwa, the factors are discussed as follows:

i. Inadequate Information and communication technologies

Research data shows that ICTs in sub-Saharan Africa are still undeveloped (Ondari-Okemwa, 2004:365). However, mobile communications have made significant inroads in these countries (International Telecommunication Union, 2007:2). Mobile cellular subscriptions in sub-Saharan Africa rose from 8 per 100 people in 2005 to 23 per 100 in 2007 (UN World Development Indicators, 2009). Ondari-Okemwa (2004:369) analysed various literature sources and found sub-Saharan African countries to have the lowest average Internet usage compared to other regions of the world. The average Internet usage figures in the other regions as observed by Ondari-Okemwa are highlighted as follows:

- North America and Western Europe: 1 user in every 4 people
- Latin America: 1 user in every 125 people
- South East Asia and the Pacific: 1 user in every 200 people
- The Far East Asia: 1 user in 250 people
- The Middle East: 1 user in every 500 people.

The number of people with access to the internet remains very low in sub-Saharan Africa as compared to other developing regions of the world (International Telecommunication Union, 2007:3). These are reflected in Table 2.3 below:

Table 2.3: Number of internet users in selected African countries and other developing regions

Country/Region	Population in millions (2007)	Internet users per 100 people (2007)
Sub-Saharan Africa	800	4.4
East Asia & Pacific	1912	14.6
Europe & Central Asia	446	21.4
Latin America & Caribbean	561	26.9
Middle East & North Africa	313	17.1
South Asia	1522	6.6
Botswana	2	5.3
Burkina Faso	15	0.6
Cameroon	19	2.0
Cape Verde	1	7.0
Congo Democratic Republic	62	0.4
Ghana	23	3.8
Kenya	38	8.0
Mauritius	1	27.0
Niger	14	0.3
Nigeria	148	6.8
South Africa	48	8.3
Sudan	39	9.1
Tanzania	40	1.0
Zambia	12	2.5
Zimbabwe	13	10.1

Source: World Development Indicators 2009, World Bank April 20, 2009

Sub-Saharan Africa also has a very low teledensity of 0.5 (Ondari-Okemwa, 2004:367). Ondari-Okemwa defined teledensity as the number of telephones per 100 persons with access to a fixed telephone line. An interesting figure is the teledensity of 107 lines per 1000 people in South Africa. As highlighted by Ondari-Okemwa, computer literacy was also found to be at its lowest in sub-Saharan African countries.

Ondari-Okemwa (2004:362) realised that the rural areas were more disadvantaged than the urban areas in most of these challenges. He also observed that even in South Africa where the country could be mistaken for a developed economy, “some areas, particularly the rural areas, are equally undeveloped”. He conceded, however, that the amount of knowledge “created and consumed” in South Africa was much higher than in other sub-Saharan African countries.

ii. Lack of government/political goodwill

Ondari-Okemwa (2004:364) notes that:

Political leaders in sub-Saharan Africa might appear that they are doing something about promoting access to global knowledge in their countries, but the truth is that they are least interested in anything that does not promise to prolong their stay in political leadership.

Ondari-Okemwa (ditto) observed that many respondents felt that the political leadership in their countries “were scared of knowledgeable citizens” and this led to the migration of highly trained personnel to the developed world. He realised that many of the sub-Saharan African countries would not qualify for “membership” of a “knowledge society” if there was an association of members of this society.

2.3.2.4.2. KM in rural areas of Africa

Since rural people continue to be the majority in most countries in Africa, specific efforts should be devoted to the promotion of rural development (Avila, Gasperini & Atchoarena, 2005:2). KM has already proven to be a key strategy in the development of the most successful nations of the world. The rural nature of Africa can be reflected as in Table 2.4 below:

Table 2.4: Percentage of rural population in selected African countries compared to other developing regions

Country/Region	Total population in millions		Rural population percent	
	2002	2009	2002	2009
Burkina Faso	12.6	15.8	82.6	75.2
Ethiopia	69.0	82.8	84.6	83.5
Guinea	8.4	10.1	65.8	65.1
Madagascar	16.9	19.6	73.7	70.2
Mozambique	18.5	22.9	65.5	62.4
Niger	11.5	15.3	78.4	83.0
Senegal	9.9	12.5	52.1	57.9
South Africa	44.8	50.1	53.5	38.8
Latin America & Caribbean Islands	558.3	582.4	23.8	20.7
India	1096.9	71.9	41.4	70.3
Sub-Saharan Africa	689.2	842.8	87.8	63.2

Source: Avila *et al.* (2005:2) and UN World Urbanisation Prospects: The 2009 Revision.

The rural/urban inequalities observed in most parts of Africa are considered a major obstacle to sustainable development in this region (Avila *et al.*, 2005:7). They believed that education and learning have a significant role to play “in livelihoods, since they represent an important ‘asset’ (knowledge, skills and capabilities) and learning can help people to improve their lives, manage vulnerability and change”. This then confirms the need for a KM approach in rural areas of Africa.

As observed by Ikoja-Odongo (2006:196) research trends showed that “KM is limited to modern corporate institutions mostly located in urban areas and extensively in developed countries”. Ikoja-Odongo undertook a conceptual paper aimed at identifying KM practices, expertise, tools and resources rural communities in sub-Saharan Africa could use to better manage their knowledge resources in order to become competitive. The paper was guided by the question: “Is there no Knowledge Management in rural communities of Africa?”

Arising from a thorough investigation of KM in rural areas of Africa, Ikoja-Odongo (2006:207-208) noted the following KM practices in rural areas of Africa:

- Knowledge widely available in the form of indigenous knowledge (IK) which is context related as a social product and shared through social networks
- Formal knowledge is available though limited and centred mainly in universities, research centres and industries
- Africa uses its IK for social advantage (for survival) not for competitive advantage
- Much of Africa's knowledge lies with the illiterate and semi-illiterate old people
- African knowledge is mostly tacit, little is written down
- The most common ways of sharing knowledge being oral methods such as stories, storytelling, customs, totems, norms and mores
- Group activities like ceremonies such as marriages and burials also used for knowledge sharing
- Other common ways of sharing knowledge include gathering under a huge tree in a village, compound hearth (fire place) and communal watering spots.

That indigenous, endogenous and exogenous knowledge systems have a significant place in a KM approach for organisations operating in Africa is not debatable. These concepts are fully defined in the operational definitions of concepts. Ngulube (2003:23-24) believed that Africa needs to take advantage of its rich indigenous knowledge in order to successfully implement KM approaches.

Ngulube (2003:24) insisted that contrary to attitudes that African indigenous knowledge is unscientific, inferior, primitive, heathen, barbaric, savage and not worthy of preserving and managing, there are developments recognising the value of IK in Africa. As part of these developments, Lwonga (2009:20) reflected on how ICTs together with KM principles can be applied to manage IK. She conducted her research in the agricultural sector in selected rural districts in Tanzania. Based on the empirical evidence from the study, Lwonga observed the following findings:

- KM approaches can be used to manage IK and can appropriately introduce exogenous knowledge in local communities
- It is feasible to integrate both indigenous and exogenous knowledge
- That the farmers in the surveyed communities possessed an extensive base of agricultural IK but there were weak systems for its sharing
- Knowledge loss was prevalent in the surveyed communities
- Most of the knowledge was tacit and was created and shared through human interaction, thus lack of ICTs did not constitute a barrier for KM
- A radio was the major ICT used to access exogenous and indigenous knowledge
- Predominance of exogenous knowledge system over IK in local communities
- Various factors determined access to knowledge in communities (these included ICTs, the knowledge culture, trust, status and favourable context and space)
- Low use of ICTs to share and preserve agricultural IK
- Lack of IK policy and existence of Intellectual Property Rights (IPR) inadequately recognising and protecting IK
- Limited acquisition, sharing and preservation of IK in surveyed communities
- Communities more likely to understand, acquire and use knowledge that is shared through indigenous communication channels which are oral in nature than approaches such as ICTs.

Based on these findings, Lwonga (2009:346) argued that unless KM approaches were applied in the surveyed communities, IK will gradually disappear. Stevens (2008:25) argued that indigenous knowledge differs greatly with Western knowledge and therefore, it must be managed in unique and sensitive ways. While Ngulube (2003:21) recognised the above, he is nonetheless adamant that though IK is primarily tacit, it can be “articulated both tacitly and explicitly” through artifacts (traditional technologies and tools) produced by indigenous people, music, storytelling and the KM approaches such as the SECI KM model popularised by Nonaka and Takeuchi (as highlighted in KM in Japanese companies). Even though there is proof that Western KM approaches can be applied in African countries to manage both IK and exogenous knowledge, the ICT constraints faced by African countries pose a challenge.

The International Telecommunication Union (2007:1) has observed various efforts in African countries aimed at connecting villages in Africa with ICTs and “establishing access points”. These endeavors have led to the situation where almost 45% of the villages in sub-Saharan Africa were covered by a mobile signal in 2006. The International Telecommunication Union (2007:2) has also noted how some countries in Africa have successfully implemented a retail distribution model so that users of mobile communications do not need their own handsets or mobile subscriptions but can use a public facility.

One of the first countries to follow this route is South Africa, which managed to install close to 100 000 community service telephones operated by mobile operators by 2006. The International Telecommunication Union (ITU) also observed that as a result of competition by mobile operators in African countries, some of these countries have managed to approach full universal access of all inhabited rural areas with a mobile signal. The ITU (2007:3) listed Comoros, Kenya, Malawi, Seychelles, South Africa and Uganda as having reached 90% mobile rural population coverage. Botswana, Burkina Faso, Burundi, Cape Verde, Guinea, Namibia, Rwanda, Senegal, Swaziland, and Togo have rural mobile population coverage rates of over 50 percent. According to the ITU, some of these countries have reached these levels in spite of numerous barriers such as lack of electricity, difficult terrain and lack of transport. While noting the growth in mobile communications, the ITU observed that availability of fixed telephone lines in villages of Africa is low and internet access even lower. This supports the discussion in section 2.3.2.4.1.

The ITU (2007:4) believed that by upgrading rural networks to provide higher speed 2.5 and 3G mobile services, African countries can increase access to the internet in rural areas. Lwonga (2009:16) has also proposed (based on empirical evidence cited earlier) that ICTs should be enhanced in rural African communities since they could be used as an enabler for the sharing and storage of indigenous knowledge. Lwonga insisted that the “digital divide” which is caused by lack of economic, social and political developments prevented communities in rural areas of Africa from fully exploring ICTs. Her suggestion was that this ‘divide’ should be broken through investments in information technology infrastructure by both the government and private sector.

Despite efforts to introduce KM approaches in Africa, Ikoja-Odongo (2006:206) observed that “Africa is still at the stage of pre-capitalist” in terms of KM maturity as compared to the developed world. Indeed, this is miles apart to the KM practices in the USA which Drucker aptly refers to as a “post-capitalist society”. Ikoja-Odongo observed that though Africa is the second largest continent in the world and rich in natural resources, the majority of its countries with the exception of South Africa and the Arab North faced serious low levels of development in “all sectors ranging from infrastructure, business, and social services to governance”.

In light of the above, Ikoja-Odongo also noted that due to its weakness in technology density, Africa has few information and knowledge support facilities. In this regard, Ikoja-Odongo (2006:202) argued that the poorly developed KM practices in most African countries implied that these countries were losing the benefits of KM. He cited benefits such as better customer services, improved new products coming to the market quickly, business processes continually improving and innovative new ideas brought to commercialisation.

Owing to the above, it is not surprising why most African countries are facing severe underdevelopment and poverty. Ikoja-Odongo (2006:203) also noted that Africa required certain “enablers” in order to manage knowledge effectively. Below is a brief presentation of some of these “enablers”:

- African leaders learning how to lead people properly through improving the culture of transparency and instituting positive policies to produce motivated knowledge workers
- Investing much on education
- Building the African knowledge base through investment in research
- Supporting the development of technological capacities
- Learning from countries like India by exploiting and documenting knowledge from experienced old people
- Investing in writing, publishing and getting information and knowledge on the Internet using the various (more than 800) languages spoken in Africa
- Adapting knowledge already available in other parts of the world.

That knowledge is the “single most important foundation factor of development” has also been reflected by Chakwizira (2008:3). With most countries in Africa still classified as pre-capitalist, the present researcher realises that these countries need to follow the examples of other developing countries such as China, India and Malaysia by adopting measures that would catapult their economies into the knowledge economy. This cannot be achieved unless a concerted effort is followed on the management of knowledge.

While most African KM scholars view South Africa positively in terms of KM efforts, it is imperative to reflect some empirical cases from this country with a view of broadening the theoretical knowledge on KM in Africa.

2.3.2.4.3. KM in South Africa

That South Africa pose a unique environment for KM has been recognised by various researchers, including Kruger and Johnson (2010:58), and Tobin and Snyman (2008:133). As observed by Kruger and Johnson, the South African environment offers challenges to effective KM implementation because of some barriers, some of which are listed below:

- The diversity of its people portrays a challenge to the amalgamation of the various cultures particularly the Western cultures (of the Whites) and the African cultures (the African traditional values)
- Government policies such as Affirmative Action have a potential of empowering one group over another, this then has an influence on job security and unwillingness of people to share knowledge
- Language problems in South Africa with 11 official languages affect communication since people are reluctant to share knowledge if they cannot understand each other
- The diverse ways South African organisations are managed with European, African and Asian cultures to leadership styles coexisting make leadership a complex phenomenon.

In spite of these limitations, various scholars have conducted studies which prove that South African organisations were implementing some form of KM (either explicitly or implicitly). The next section presents a review of those cases that impact on the present study's research domain.

2.3.2.4.3.1. ICT and Information management as KM enablers: a case of 86 South African organisations

While there are a number of studies on the subject of KM recorded in South Africa, Kruger and Johnson (2010:59) have attempted to narrow the gap between information communications technology (ICT), information management (IM) and Knowledge Management (KM). Kruger and Johnson were motivated to bridge the gap between ICT, IM and KM by conducting an empirical investigation across nine sectors in South African organisations using 178 senior practitioners who were students (in MBA, MIT and MCom degrees) at a large urban South African university. They conducted the study guided by the following three research questions:

- Is ICT and information management perceived by industry to act as enablers to KM?
- What is industry's ability to manage ICT and information successfully?
- Do organisations consider ICT and information management to be KM?

The study sample comprised 434 employees from 86 South African organisations in the nine sectors such as automobiles/transport, banks and insurance, chemicals, pharmaceuticals, construction, building to mining, consulting to services, consumer goods to utilities, education, government and IT to telecommunications. In line with their reasoning that knowledge is the most strategically significant resource of the firm, and that KM is supported by ICT and IM, Kruger and Johnson (2010:58) adopted the Knowledge Management Maturity Assessment Questionnaire (KMMAQ) used in an earlier study by Kruger and Snyman to assess the maturity levels of each sector in order to build on the hypothesis that ICT and IM are prerequisites to KM.

Based on the data collected from the 86 organisations in nine economic sectors in South Africa, Kruger and Johnson made the following findings in relation to ICT management, IM and overall KM maturity scores:

i. ICT management

Since the average score obtained (by all the sectors) for ICT management was 74.02%, Kruger and Johnson (2010:60) observe the following implication for ICT in KM:

- Findings suggested a definite trend towards ICT being an enabler of KM
- The findings indicated that South African industry was reaching the preliminary level of aptitude needed to successfully institutionalise KM
- Though most respondents agreed that ICT was an enabler of KM (78,69%), an alarming number of respondents (21,31%) still had the impression that ICT is KM.

ii. Information management

Kruger and Johnson (2010:61) realised that there was a correlation between a clearly defined IM policy and IM strategy, and understanding of IM being a prerequisite for KM. The majority of respondents answered positively to questions regarding the identification of information needs, acquisition, storage, distribution, retrieval, protection, Inventory Management Systems and Database Management. There was a trend towards higher KM maturity scores where IM was supported by ICTs. This was also the case where ICTs supported IM.

iii. Overall KM maturity scores

Kruger and Johnson (2010:60) highlight the ranking of the nine sectors in terms of their level of KM maturity on the KMMAQ as follows:

- The highest overall KM maturity score was the resources sector: with a total score of 199.33 out of a possible 358 (55.67%). The resources sector was also found to be fairly mature in IM and ICT
- The second overall KM maturity score was the financial sector: a total score of 190.79 out of 358 (53.29%). achieved the highest score in the management of ICTs (82.95%)
- Third highest was the services sector: a total score of 183.64 out of 358 (51.22%)
- Fourth highest was the goods sector: with a total score of 178.55 out of 358 (49.87%)
- Fifth highest was the transport sector: with a total score of 177.52 out of 358 (49.58%)
- Sixth highest was the ICT sector: achieved second highest score in the section on ICT management (78.85%)
- Seventh highest was the chemical and pharmaceutical organisations: achieved lower than the average scores in both the ICTs and KM maturity indicators
- 8th highest was government sector: achieved scores considerably lower than the average score obtained by all participating organisations
- 9th highest was education: achieved the lowest maturity scores over all maturity levels.

Kruger and Johnson (2010:64) also observed that leading KM maturity organisations have sound intellectual capital (IC) management practices in place. The findings confirmed a tendency to favour endeavors in IM, directly supported by ICTs above endeavours requiring the human component.

Furthermore, Kruger and Johnson (ditto) found that insufficient or immature ICTs and information management lead to problems with regard to supporting KM endeavours beyond organisational borders. These findings are interesting considering that the present study is aimed at investigating KM practices in the rural areas of South Africa and some of the sectors covered in this study are included such as the financial services, government and education.

2.3.2.4.3.2. KM practices in a South African commercial bank

Pretorius and Steyn (2005:44) noted from literature that the dissemination of tacit knowledge was challenging. Therefore, they undertook an investigation of KM practices in a South African commercial bank in order to propose a model for the management of knowledge (especially tacit knowledge) in project environments. The data were collected by interviewing 13 project participants working in four projects within the bank. The participants were selected to represent programme managers, project managers, project team members and staff from the project office. Based on the research data, Pretorius and Steyn (2005:47-48) observed the following findings:

- IT systems were used in all studied environments to capture and store explicit knowledge such as budgets, schedules and minutes of meetings
- No single person was found to be responsible for Knowledge Management resulting in uncoordinated and unsystematic KM efforts
- Lack of physical informal interaction ascribed to limitations in the physical environment
- Information dissemination taking place through paper documents and/or IT systems
- Information about all projects available in the Intranet
- No formal meetings across projects evident
- The culture for knowledge sharing between projects perceived to be very negative
- The informal mentorship programme seemed totally ineffective
- Though all interviewees were aware of the benefits of KM, KM was not perceived on a conscious level
- Codification of tacit knowledge attempted by conducting regular review meetings
- Team-building, induction and mentorship (methods of sharing and transfer of tacit knowledge) were not realised in practice.

Arising from these findings, Pretorius and Steyn (2008:47) observed that a lot needed to be done within the bank to improve KM. They then suggested the following measures:

- Assigning responsibility for KM to a single person
- Top management involvement in KM
- More attention to be paid to human interaction both on formal and informal levels
- Performance appraisal to include KM activities.

As noted in the above cases, the Western approach to KM appears to be the most recognisable in KM in these South African organisations. While recognising the African cultural way of doing things, Kruger and Johnson's study was not meant to reflect on the traditional African ways of knowledge sharing. Pretorius and Steyn's study could be described as a mixture of European and Japanese approaches to KM, considering the recognition of the value of both IT and tacit knowledge in KM. The next sub-section presents one of the neglected topics in KM practices of organisations operating in South Africa.

2.3.2.4.3.3. The use of oral methods in knowledge sharing in a South African mining company

Tobin and Snyman (2008:132) observed that though there were extensive discussions in literature regarding the use of stories and story-telling as part of a KM strategy, there was no formal academic research conducted on the topic within South African organisations. Tobin and Snyman explored the use of stories and story-telling for knowledge sharing through a case study research investigation conducted at Kumba Resources (a South African mining company).

Based on the data collected through interviews, observations and gathering of artefacts within a specific cross-section group (Continuous Improvement Community of Practice) within Kumba Resources, Tobin and Snyman noted the following findings:

- A consistently low level of maturity in terms of the use of stories and story-telling
- The use of stories and story-telling though widespread, was largely informal
- Story-tellers were either members of the management team or specialist story-tellers
- The official business language of the company as well as a number of African languages were used to enhance the story-telling experience
- A specific tool (story-board) was used to support knowledge sharing through story-telling
- The transfer of best practices was largely informal
- Though the concept quality management was well-established within the company, very few specific actions were taken to apply the concept to the use of stories and story-telling
- Stories and story-telling were recognised as practices capable of supporting the KM strategy of the organisation.

Owing to the limitations of applying stories and story-telling for knowledge sharing as observed in the case study, Tobin and Snyman (2008:139) made the following recommendations for the improvement of stories and story-telling for KM:

- Plans should be in place to measure the effectiveness of the use of stories and story-telling for KM
- Various tools such as multimedia, industrial theatre should be used to support stories and story-telling for KM
- The technology to support stories and story-telling should be evaluated
- There should be an appropriate reward and recognition system for the use of stories and story-telling for KM
- The training and education required to enhance stories and story-telling should be evaluated
- There should be a clear ownership by all important stakeholders of use of stories and story-telling for KM within company.

The empirical studies reviewed clearly show that KM in South Africa is being impacted upon by various influences including Western, Asian and African approaches. These cases prove that despite various limitations, South African organisations are considering the premium that KM could afford them. An extensive overview of KM in South African organisations appears heavily inclined towards those entities within the urban areas of the country. All the cases reviewed were conducted in the context of the urban areas of South Africa. It should be noted though that despite all the great strides made by South African organisations towards the knowledge-economy, very little is known about KM practices in organisations of the rural areas in South Africa.

2.3.3. Salient features of KM throughout the globe

Arising from the empirical cases reviewed in the above section, the researcher realises that KM as practiced by organisations from the developed and developing countries really requires a holistic approach. Organisations with a more comprehensive and systematic approach to knowledge have been found to achieve better outcomes (namely growth) than those with a less balanced approach (Salojärvi, Furu & Sveiby, 2005:116). As highlighted by scholars from the developed economies, such an approach should be socio-technical in nature.

It has been observed in the various empirical studies reflecting KM from the developed regions that the underlying feature in their socio-technical approach was to find the best fit between a focus on IT and social factors. On the other hand, most scholars from the developing countries suggested a social-focused approach to KM. Empirical evidence presented elsewhere in this chapter demonstrates that KM implementation should embrace a number of factors ranging from ICTs to knowledge-oriented organisational structures, culture, HR practices and leadership. Though KM in the developing nations is still in its infancy, there is enough empirical evidence to show that governments and corporations are beginning to value its contribution towards creating efficient and effective organisations.

Based on the detailed review of empirical cases on KM in various parts of the world, the salient features of KM from these regions are summarised below:

Table 2.5: Salient features of KM in various regions of the world

Feature	KM in the USA	Japan	Europe	Asia	Latin America	Middle East	Africa	
							Rest of Africa	South Africa
Main KM approach	Socio-technical (80-20 principle: personalisation and or codification)	Tacit-explicit knowledge conversion (SECI model)	Socio-technical (KM 90% about people and 10% about IT)	Socio-technical with strong focus on people and culture	Implicit KM: KM related practices	Government sponsored KM initiatives	Indigenous Knowledge main source of knowledge	Socio-technical approach to KM
Key drivers for KM	IT, people and processes	IT, role of middle managers and figurative language	IT, organisational culture, structures leadership, and HR	Cultural values	Motivation, collaboration, willingness and trust	Research and development, people, KM processes and ICTs	Social gatherings, artifacts, music and story telling	ICTs, IM and sound intellectual capital management practices
Challenges to KM	Over-reliance on IT and perceptions that KM is all about IT	Difficulty of sharing tacit knowledge	Finding balance between focus on social factors and utilisation of IT	Command and control leadership style	Low awareness about KM and poor Internet connectivity in remote regions	Styles of governance and experienced and educated people leaving for the Western World	Inadequate ICTs, illiteracy and lack of political goodwill	Neglecting IK, over-reliance on IT and rural-urban divide in terms of resources

KM scholars from both the developed and developing economies do not as yet agree on the exact KM success factors. The holistic approach to KM reflected in the next section is aimed at clarifying the key factors necessary for KM implementation.

2.4. A HOLISTIC APPROACH TO KM

It has already been proven in the preceding section of this chapter that the IT dominated approach to KM cannot be wholly applied in the rural areas of South Africa due to the resource constraints faced by most organisations operating in these contexts. The researcher aligns this study with recent thinking in KM that suggests that KM implementation should follow a holistic approach.

Since it has been proven in the empirical presentation of KM in various regions of the world that KM demands a holistic approach, this section is meant to reflect on the key factors constituting such an approach. The presentation that follows is broadened with further empirical examples to demonstrate how these factors manifest in various organisations throughout the globe.

The basis of a holistic approach to KM could be traced back to the Fraunhofer IPK knowledge model designed for the benchmarking study of Knowledge Management practices of German TOP 1000 and European TOP 200 companies (Mertins *et al.*, 2001:4). The model identified six design fields for Knowledge Management such as process organisation, controlling, human resource management, corporate culture, leadership and information technology. It should be noted that the Fraunhofer IPK model is a purely socio-technical approach to KM which advocates for an information technology driven knowledge approach. Mertins *et al.* (2001:39-40) warned that:

A focus on technical solutions overemphasises data and information management. A focus on human aspects with the initiation of training that motivates employees to share knowledge is an approach for personnel development, not for knowledge managers. A holistic system for Knowledge Management means that all components of the system must be equally considered.

But, it has already been demonstrated earlier in this study (in chapter 1) that organisations of the rural areas of South Africa cannot wholly apply the pure socio-technical approach as they are facing serious resource constraints, namely poorly developed ICT systems. Recent developments in KM theory prove that “Knowledge Management is not only an IT challenge” (Barachini, 2009:99). In this regard, Heisig (2009:14) having made an investigation of 160 KM frameworks from various organisations worldwide realised that there are four critical success factors of KM as follows:

- Human-oriented factors: culture-people-leadership
- Organisational: processes and structures
- Technology: infrastructure and applications
- Management-process: strategy, goals and measurement.

This framework is further supported by the empirical work on KM implementation in the Malaysian telecommunication industry (cited earlier in this chapter) conducted by Chong (2006: 233) and Chong *et al.* (2009:76), which confirmed that a holistic approach to KM based on the KM critical success factors is crucial to the success of an entity's KM initiatives. The researcher realised that these factors could be classified under two main categories as follows:

- i. Information technology
- ii. Knowledge-oriented social variables.

2.4.1. Information technology

A detailed exposition of the valuable role IT plays in the success of an entity's KM initiative has already been highlighted through various empirical cases cited in this chapter. Thus, the general agreement among KM scholars to the role of IT to KM is that KM related technologies can be of instrumental and/or symbolic value (Rizzi *et al.*, 2009:75).

As highlighted by KM scholars such as Drucker and Nonaka, IT plays a crucial role in ensuring increased information and knowledge flow within an entity. But "IT alone is insufficient for increasing an organisation's collective intellect" (Junnarkar & Brown, 1997:142). As such, Junnarkar and Brown advised knowledge managers interested in IT as an enabler to KM not to simply focus on using IT to connect people to people with information, but on how to develop the organisational context conducive to tacit knowledge creation. Junnarkar and Brown (1997:147) insisted that:

... practitioners interested in the role of IT as an enabler need to focus on IT investments that will help organisational members create tacit knowledge, but also take a leadership role in developing an organisational context conducive to improving the organisation's sense-making capabilities.

In line with these arguments, Rizzi *et al.* (2009:76) warned that KM applications were supposed to be evaluated based on their instrumental value. But this was not the case since organisations make investments in KM technologies and solutions just to prove that they are part of the knowledge-based economy (IT for symbolic value).

According to Rizzi *et al.*, there was a tendency by various organisations to bask in their sophisticated technological applications without evaluating the extent to which these enabled a better management of knowledge. Therefore, an analysis of the technological infrastructure of an entity should entail an observation into whether the tools are really used to manage knowledge or just as the most celebrated technological fashions. In this regard, Junnarkar and Brown (1997:147-148) suggested four IT management guidelines for effective KM as follows:

- Developing an enterprise-wide IT standards (for hardware, software and communication systems) for IT infrastructure in order to link people to people to information
- Linking IT investments to firm's overall KM strategy
- Investments in IT tools should be supplemented with investment in people's roles to provide required expertise (avoiding a field dream by ensuring context justifies content)
- Establishing KM partnerships that bring information systems (IS) and HR together.

2.4.2. Knowledge-oriented social variables

Just as argued by Junnarkar and Brown, though ICTs constitute a valuable part in a KM framework, they are however adamant that particular attention should be on the social variables in order to effectively implement KM. Kalkan (2008:394) recognised that the focus on human variables in Knowledge Management is conducive to the management of tacit knowledge which is often said to be difficult to manage. Liebowitz (1999:4) observed from organisations implementing KM that KM is 80% about people and cultural change than technical development.

Various factors have been cited by various KM scholars as important in creating an organisational context conducive to effective KM.

The key social variables that appear in most of the empirical cases could thus be reflected as follows:

- Knowledge-oriented organisational culture
- Knowledge-oriented organisational structures
- Knowledge-oriented HR practices
- Knowledge oriented leadership.

These variables have been found in most frameworks in KM empirical investigations. The discussion that follows is aimed at an exposition of how each of these variables is linked to KM. This is done by also reflecting case studies of entities where these social variables have been utilised as a way of enhancing effective KM implementation.

2.4.2.1. Knowledge-oriented organisational culture

Knowledge Management authors have reflected extensively on the valuable role played by organisational culture in instilling and enhancing a climate conducive to knowledge acquisition and dissemination in knowledge-intensive organisations. The organisational culture of a company is reflected in its “philosophy and vision, management style, and its physical organisational structures, such as architecture of buildings and layout and design of rooms” (Mertins *et al.*, 2001:110). Martín-de-Castro, Navas-Lopez, López-Sáez and Alama-Salazar (2006:329) defined organisational culture as “a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm drives its business”.

Thus, organisational culture becomes an element of cohesion which constitutes the manner of an organisation’s existence. According to Nonaka and Takeuchi (1995:167), “organisational culture orients the mindset and action of every employee”. This clearly demonstrates that organisational culture is a valuable tool in Knowledge Management. An inappropriate corporate culture is generally regarded as the key inhibitor of effective knowledge sharing (Kalkan, 2008:394). Kalkan proposes that organisations have to move towards a knowledge-oriented culture in order for their Knowledge Management initiatives to succeed.

Kalkan (ditto) argued that a knowledge-oriented culture challenges people to share information throughout the organisation. Furthermore, he pointed out that it was the duty of top management to develop an organisational culture rooted in confidence and trust where employees would feel they were a valuable part of the organisation. Another key suggestion by Kalkan towards the creation of a knowledge oriented organisational culture is through informal structures such as knowledge communities which can be used as a platform where the organisation values and encourages knowledge creation and sharing.

Similarly, Mertins *et al.* (2001:5) were of the view that if the current corporate culture of an organisation does not sustain Knowledge Management, measures should be implemented to create a company culture characterised by openness, mutual trust and tolerance for making learning mistakes. It is, therefore, imperative to cite case studies of organisational cultures of various knowledge intensive organisations. Based on Mertins *et al.*'s benchmarking study of Knowledge Management practices of German TOP 1000 companies and Europe TOP 200 companies, three case studies demonstrate how the various organisations in the study implemented a knowledge-oriented organisational culture:

i. Celemi International AB

This company is a medium-sized consulting company for change management with offices in Malmö, Sweden, Belgium, the UK, the USA, Australia, New Zealand and Finland. The company has an open corporate culture characterised by the following features:

- Lack of hierarchies
- There are no titles or positions only responsibilities and assignments
- Openness in exchange of knowledge
- Weekly meetings opened to every staff member
- Highly simplified office layout (Mertins *et al.*, 2001:158).

ii. Hewlett-Packard Austria

The company was founded in 1970 in Austria (Vienna) and is responsible for telecommunications, banking, gas and oil industries serving markets in Austria, Switzerland, Central and Eastern Europe, the Near East and Africa (Mertins *et al.*, 2001:165). Mertins *et al.* also realised that the company has an open corporate culture complemented by the following features:

- The manager is located in an open-plan office and joins the other employees for lunch at the cafeteria
- The reusability of ideas is promoted
- Innovation is a convincing incentive in the company
- Corporate activities based on people within the company's 'humane change management'
- There is a spirit of cooperation characterised by a participative management style
- New hires are given detailed information of the company's ideas, purpose and goals to integrate them to the new environment
- Lean hierarchies; no barriers to communicate across department or hierarchical levels
- The company's evaluation system recognises the internal as well as the external transfer of knowledge into account. This is guided by the question: what has a staff member done to make his or her knowledge accessible?
- There are cross-functional teams.

iii. Phonak

As pointed out by Mertins *et al.* (2001:186), Phonak is the world's fifth largest developer and manufacturer of hearing technology. The company's headquarters are in Sträfa (Switzerland). It is also demonstrated by the authors in the case study that Phonak, like Hewlett-Packard and Celemi International AB has an open corporate culture. They further detailed the key features of Phonak's knowledge-oriented organisational culture as follows:

- The architecture of Phonak embodies its corporate culture reflected in a philosophy of transparency, openness and motion
- Bright and open offices, isolated stairs and few doors create an inviting and communicative atmosphere
- Communication barriers are avoided whenever possible
- A “more friendly, more human” internal and external exchange image characterised by cooperation between staff members
- Lean hierarchies; even managers are accessible
- Highly innovative spirit; the company deliberately creates spaces and stimulation for thought
- “A lot is talked about, and very little is written down” purposeful distribution of information
- Staff members have to learn how to deal with freedom, cooperate with others, work in teams and resolve disputes
- A “culture of errors” is encouraged where errors are evaluated as “lessons learned”. The key slogan is “Errors can always be made, but please, not twice”
- “Off-shore meetings” held once or twice a year where a group of three to six staff members are selected to spend several days at another location discussing topics and developing ideas
- Debriefing workshops are conducted regularly as a continuous process of learning to prevent identified employee errors
- Expert meetings are held regularly dealing with new know-how and new solutions.

These cases reflect an assumption made by Harman and Brelade (2000:6-7) that “effective Knowledge Management is much about culture as it is about behaviour and information systems”. It is apparent that a knowledge-oriented culture promotes openness, trust and increased communication which are key ingredients in knowledge creation and sharing. The common features of a knowledge-oriented organisational culture as displayed in the case studies cited in this chapter would be the basis upon which the indicators for the questionnaires and interview schedule would be drawn.

2.4.2.2. Knowledge-oriented organisational structures

Claver-Cortés *et al.* (2007:47) defined an organisational structure as all the ways in which work can be divided and coordinated into different tasks. They argued that in order to facilitate knowledge creation, sharing and application, firms should adopt organisational structures which would allow knowledge to flow. In their view, such organisational structures tend to be increasingly organic and flexible. Nonaka and Takeuchi (1995:160) observed that the traditional organisational structures (bureaucracy and task force) were inadequate in supporting the creation of knowledge.

In line with this view, Halachmi and Bouckaert (1995:89) indicated that lethargic and unresponsive bureaucracies of the past needed to be replaced by decentralised, flexible, adaptive, competitive, learning, customer-oriented, lean, creative and streamlined organisations in order to lay the roots for quality and productive improvements. Kalkan (2008:395) agreed with this view when arguing that hierarchical bureaucratic structures “though they generate useful outcomes in some organisational settings and under specific circumstances, are considered to prevent knowledge sharing and utilisation”.

Kalkan (ditto) indicated that hierarchical bureaucratic organisational structures imposed limits to learning, generation of new knowledge, knowledge dissemination and innovation. Kalkan also believed that for organisations to create organisational settings facilitating Knowledge Management activities, more innovative organisational structures should be adopted. Nonaka and Takeuchi (1995:166) believed a synthesis of the bureaucratic and task force structures could create a ‘hypertext’ structure which is conducive to knowledge creation. They therefore, described the virtues of the hypertext organisation as follows:

- A non-hierarchical self-organising structure working in tandem with its hierarchical structure is important for organisational knowledge creation
- The hypertext structure maximises both corporate-level efficiency and local flexibility
- Bureaucracy and the task force structures are viewed as complementary in making knowledge creation a continuous cyclical process.

Teams and interdependence have become a key element of organisational design in line with the knowledge-based view (Grant, 1996:114). These have been appropriately reflected in the presentation of organisational structures supporting KM arising from an empirical investigation in six Spanish companies conducted by Claver-Cortés *et al.* The advantages of horizontal structures could be explained as follows:

On the whole, they (these companies) adopt flexible organisational designs; i.e increasingly flat structures with fewer hierarchical levels in order to allow dialogue and team work among staff members and encourage interaction between firm members, so that collective learning can be generated from the knowledge owned by individuals (Claver-Cortés *et al.*, 2007:54).

Grant (1996:118) elaborated on the advantages of horizontal structures in promoting Knowledge Management practices by arguing that hierarchies were generally suited for processing information. Therefore, immediately a firm is viewed as an institution for integrating knowledge “hierarchies fail”.

Analysing various empirical and theoretical research data on KM aligned organisational structures, Kock (2007:480-481) summarised the following outcomes resulting from an introduction of flatter and more independent forms of work organisations:

- High commitment
- High performance
- Learning organisation
- Innovative organisation
- Concertive control and normative control
- Intensified work systems.

The knowledge-based firm calls for a radical transformation of hierarchical organisational structures. It is imperative that the knowledge-based organisation demands less hierarchical, process-oriented and team-based organisations in order to create a favourable condition for learning (Kock, 2007:480).

2.4.2.3. Knowledge-oriented human resource (HR) practices

Human resource management primarily deals with employees and their working environment (Jaw & Liu, 2004:230). Mertins *et al.* (2001:107) argued that “holistic Knowledge Management integrates human resource management”. According to Mertins *et al.* (2001:5-6), this implied that personnel management measures have to lead towards the development of specific Knowledge Management skills involving at least the following measures:

- Incentive schemes developed for employees to document and share knowledge
- Career plans incorporating aspects of knowledge acquisition by employees
- Performance evaluation schemes expanded to embrace employees’ contribution to knowledge generation, sharing and transfer.

Nonaka (1991:79) has observed that knowledge creation should be at the centre of a company’s human resource strategy. Kalkan (2008:395) insisted that the success of Knowledge Management initiatives critically depended on having competent and suitably motivated people taking an active role in the process. This would mean that effective human resource policies must be implemented to ensure the success of Knowledge Management initiatives. According to Kalkan, knowledge-oriented human resource management policies should be characterised by the following features:

- Attracting and keeping people with abilities, behaviours and competencies that add value to the firm’s knowledge stock
- Effective recruitment, selection, training, development and compensation policies
- HR policies enabling an effective flow of dialogue by building trust and meaningful relationships among the organisation’s people.

Kalkan believed human resource professionals have a strategic role to play in Knowledge Management because they should contribute to the process of determining and filling the organisation’s knowledge gap.

The present study leans heavily towards the Learning-Oriented Knowledge Management theory. Due to the scarcity of empirical evidence in this field, the theory of organisational learning is used to build the foundations of the Learning-Oriented KM theory. In line with this theory, Jaw and Liu (2004:236) observed that learning-oriented human resource management plays an important role in promoting positive learning attitudes amongst an organisation's employees and further nurturing a self-renewal organisational climate. The study was conducted from a sample of 300 large and medium-sized companies selected from a population of the top 1000 manufacturers and top 500 service companies in Taiwan ranked by the Common Wealth Magazine, 1998 edition. The model used by Jaw and Liu is based on three constructs:

- Self-renewal organisational climate
- Learning-oriented HRM
- Positive learning attitudes.

The three constructs converge around the learning-oriented HRM. This is reflected in the results of Jaw and Liu's empirical study which show that learning-oriented HRM plays an important role in promoting "positive learning attitudes and further nurturing a self-renewal organisational climate". The basis of this discussion is in line with Kalkan's argument that successful Knowledge Management depends on the organisation having competent and motivated employees.

Though Jaw and Liu (2004:229) did not mention Knowledge Management directly in their study, it is apparent that the objectives of their learning-oriented HRM construct are closely linked to those of KM. The indicators under the positive learning attitudes construct; "commitment to learn" and "transfer of knowledge", are knowledge-based outcomes. Jaw and Liu (2004:229-230) stressed that a learning-oriented HRM could be able to enhance employees' positive learning attitudes. This then means that the learning-oriented HRM facilitates knowledge transfer where the individual learning leads to organisational learning when the knowledge learned is shared with other staff members.

According to Jaw and Liu (2004:230), this knowledge sharing process should involve the process of creating new knowledge by “tapping the tacit and highly subjective insights and making those available for testing and use by the company as a whole”. They found a ‘causal path’ between learning-oriented HRM and corporate self-renewal in their study. Due to its associated Knowledge Management benefits, the learning-oriented HRM construct as used by Jaw and Liu would be adopted for the purposes of this study as the basis for drafting the research questionnaire and the interview schedule.

The learning-oriented HRM construct as adopted from Jaw and Liu is based on the underlying statement that “The learning ability of an organisation depends on its ability to accumulate invisible assets such as knowledge” (Jaw & Liu, 2004:227). Jaw and Liu further indicated that since knowledge is embodied in people, there should be human resource policies geared towards promoting organisational learning. In this regard the objective of the human resource management activities should be to guide learning. The construct has five dimensions:

- Empowerment
- Supporting benefits programme
- Encouraging commitment
- Comprehensive training
- Performance emphasis.

i. Empowerment

Empowerment is defined as “the orientation in which an individual wishes and feels able to shape his or her work role and content” (Jaw & Liu, 2004:227). Jaw and Liu reflected from literature that a fully empowered organisation was able to provide its employees with resources and support in order to promote continuous learning. Quoting the HR director of Acer Computer Ltd, they noted that an empowering climate “allows employees to see themselves” as valuable assets to the organisation. Jaw and Liu believed that empowerment would entail allowing employees to share information and knowledge that would enable them to contribute to organisational performance.

ii. Supporting benefits programme

Another interesting observation made by Jaw and Liu (2004:227) is that organisations aspiring to be learning organisations should teach their employees how to learn and share information and then reward them for successfully doing so. Jaw and Liu argued that benefits were meant to improve employees' satisfaction, attract and support employees and maintain a favourable competitive position. Learning allows employees to be innovative, and if employees are offered satisfying benefits, they tend to be more innovative (Jaw and Liu, 2004:227-228).

iii. Encouraging commitment

Jaw and Liu (2004:228) defined commitment as a way of generating human energy and activating the human mind, implying that without committed employees, organisations could not implement new initiatives or ideas successfully. Jaw and Liu further indicated that 'real commitment' fosters high levels of individual learning whereby individuals "put the organisation's needs in front of their own". According to Jaw and Liu, "real commitment can be utilised as a potent force to enhance cooperative teamwork and to facilitate transfer of tacit individual learning". They demonstrated this by citing the HR vice director of Texas Instruments in Asia who indicated that employee commitment could be enhanced by making employees feel good about themselves and their work. Jaw and Liu (ditto) realised that such practices included commending employees who do good work through "tokens of appreciation".

iv. Comprehensive training

Jaw and Liu (2004:229) indicated that the best form of training in creating a learning organisation is cross-training. Though cross-training appears to be a type of formal training, they observed from a research on training conducted by Motorola that work-based formal training tend to yield some form of informal learning. Cross training would be defined as a mixture of formal and informal training when "workers attempt to apply to their jobs something they have learned in a formal training session" (Jaw & Liu, 2004:228-229).

v. Performance emphasis

Once employees clearly understand the urge to meet performance objectives, they experience positive pressure which encourages them to learn new and creative ways in order to work towards the performance objectives (Jaw & Liu, 2004:229). Jaw and Liu argued that learning occurs between “a fear and a need”. According to Jaw and Liu, people fear the unknown or unfamiliar (failing to reach performance objectives) and as such they have an overwhelming need to change the constraint in order to accomplish goals. This implies that in organisations where people “feel stressed to achieve objectives”, there is a “positive pressure from a performance emphasis” which creates “challenges and feelings of achievement and serves as a critical motivator for many employees” (Jaw & Liu, 2004:229).

Jaw & Liu (2004:237) have aptly shown that HR is best poised to make a “strategic contribution to business success” by promoting employees’ learning attitudes. Owing to its potential to promote learning attitudes amongst employees, HR can be utilised as a variable in KM.

2.4.2.4. Knowledge-oriented leadership

This section captures the competencies, roles and responsibilities of management in knowledge-intensive organisations:

2.4.2.4.1. Management competencies in knowledge-intensive organisations

Holsapple (2003:539) pointed out that leading and being led in knowledge-based organisations should be more of navigating and networking than the traditional command-and-control systems. It is demonstrated throughout Knowledge Management literature that knowledge-based outcomes are easily achieved in team-based-less-hierarchical organisations. Hence, those managing knowledge-intensive organisations should clearly be team-based players.

In line with the new leadership philosophy as characterised by knowledge-based organisations, Huczynski (1992:19) also demonstrated the importance of teamwork. According to Huczynski, in knowledge-based organisations there was a need for a spirit of co-operation rooted in a corporate culture which through values, rituals, heroes and mythology creates the ‘organisational cement’ which keeps members of the organisation in the same ‘direction’. This is also supported by Kock (2007:480). A leadership that has the necessary skills and competencies to marshal people towards knowledge-based outcomes is imperative in knowledge-based organisations.

Just as argued by Pan and Scarbrough in their Buckman Laboratories case as discussed earlier in this chapter, that management in a knowledge-intensive organisation fosters knowledge-based outcomes through visioning, knowledge managers should clearly be in the mould of Bob Buckman of Buckman Laboratories. Bob Buckman is credited for being a champion for knowledge creation and sharing within Buckman Laboratories due to his ability for strong strategic visioning.

The concept strategic visioning has enjoyed much attention in Westley and Mintzberg’s (1989:19) idea of a strategic visionary. According to Westley and Mintzberg, strategic visionaries “are leaders who use their familiarity with the issues as a springboard to innovation, who are able to add value by building new perceptions on old practices”.

As strategic visionaries, knowledge managers orient knowledge-intensive organisations towards knowledge-based outcomes by articulating a clear vision of the organisation’s future through ‘metaphors, symbols and concepts’. Management is expected to set standards for “justifying the value of the knowledge that is constantly being developed by the organisation’s members” (Nonaka, 1991:103). It is apparent that innovativeness and entrepreneurship are essential competencies these strategic visionaries could not do without.

Deschamps (2005:33) further indicated that the knowledge managers were not only supposed to demand commitment from their staff and possess the operational knowledge of their organisations, but they were also expected to be available, accessible and emotionally committed to the organisation. It is along this line of argument that Drucker (1993:193) insisted that “no country, industry or company” has a “natural” advantage or disadvantage when it comes to making knowledge productive.

Just as pointed by Nonaka and Deschamps, the only advantage lies in the ability of management to exploit available knowledge. It is, therefore, apparent that due to their nature, knowledge-based organisations demand a specific and distinctive form of leaders to spur innovation and hence promote knowledge-based outcomes. Holsapple (2003:550) provided a blue-print for effective leadership in knowledge-based organisations requiring leaders who:

- Understand the nature of complex context and who can make sense of this context and convey it to others within the organisation with magnetic vision
- Know that competencies are based in experience
- Know the relationship between motivation of individuals and the culture of the organisation
- Know that at least more than 2% of the manager’s time should be dedicated to visioning
- Understand the value of the collective (teams and communities)
- Know there is more power in the dialogue than can be provided through documented planning processes
- Value the communication process (both technical and human)
- Coach and can be coached.

These are further complemented by the research work carried out by Mckeen and Staples in US and Canadian organisations on the characteristics of knowledge managers reported by Holsapple (2003:21). Deschamps’ (2005:31) described knowledge managers as innovation champions. A comparative analysis of the important characteristics of both knowledge managers and innovation champions is provided in the table that follows:

Table 2.6: Comparison between innovation champions and knowledge managers

Deschamps' innovation champions	Mckeen and Staples' knowledge managers
1. Unusual combination of creativity and process discipline	1. Willingness to be at forefront of something new and exciting
2. An acceptance of risk and failures Tolerating learning mistakes	2. A risk taker, sometimes a maverick
3. A discernment on when to persist versus when to pull the plug	3. Seasoned organisational performer
4. A talent for building and steering winning teams	4. Receives intrinsic motivation from helping others
5. Openness to external technologies/ideas	5. A researcher who seeks new knowledge and likes to listen
6. A high degree of passion and ability to share passion with staff	6. Motivated more by challenge than formal power

Source: Holsapple (2003:21) and Deschamps (2005:31)

The above synthesis aptly builds a model of leadership in knowledge-based organisations. In line with this model of knowledge-based managers, Deschamps alluded to the fact that apart from being great motivators and coaches, knowledge managers create an exciting environment of adventure and challenge which is crucial at attracting, retaining and motivating innovators and knowledge entrepreneurs. As pointed out by Nonaka (1991:103) that “new knowledge is born in chaos”, the main job of knowledge managers is to “orient all chaotic knowledge creating initiatives” towards purposeful knowledge creation. Indeed this requires strategic visionaries and innovative leaders.

In line with Drucker's (1987:14) description of managing as a social function and management as the “constitutive, the determining, and the differential organ of society”, it is apparent that the promotion of knowledge-based outcomes in knowledge-intensive organisations depends much on the contribution and effort of the management team. Then what are the exact responsibilities and roles managers play in knowledge-based organisations?

2.4.2.4.2. KM leadership roles and responsibilities

Johnson (2007:135) suggested that management of a knowledge-intensive organisation influence the process of knowledge development and creation by providing resources and motivation towards knowledge-based outcomes. Furthermore, Johnson was of the view that knowledge workers could not be 'directed' in a manner consistent with the 'factory management' principles of the past. This clearly demonstrates that Holsapple (2003:540) has been spot on when indicating that 21st century leadership is all about vision and visibility. Command and control type leadership are out of sync with the notion of a knowledge-based organisation.

Mintzberg (1990:176) argued that in cases where "command-and-control" leadership style was practised all major decisions were expected to be made by the top management who would in turn impose these on the organisation. It should be noted that leadership generates increasing returns, implying that effective leadership has a multiplier effect (Thomas & Cheese, 2005:24).

This is particularly crucial in knowledge-intensive organisations due to the fact that people are key strategic assets. Reporting on a research study involving knowledge managers of US government, industry and academic institutions, Holsapple (2003:537-538) found that successful Chief Knowledge Officers (CKOs) perform the following responsibilities:

- Creating a knowledge sharing culture
- Championing communities of practice
- Providing leadership and strategy by helping CEOs drive the organisation in the desired direction by creating and selling KM vision
- Using incentives and rewards to recognise and promote knowledge contributors
- Using tools and technologies to leverage the intellectual base of organisation
- Educating their leadership and staff about KM and its benefits.

An analysis of these roles and responsibilities reveals that knowledge managers create and maintain an environment within which all employees deliver value to the organisation using both explicit and tacit knowledge sources. Further elaboration into these has been made by Harman and Brelade (2000:81) who argued that the traditional aspects of the managerial role were destined to “obsolescence in the knowledge environment”. They indicated that within the knowledge environment, the managerial role should assume the following dimensions:

- Supporting the acquisition and sharing of information and expertise
- Encouraging individuals to use their knowledge and expertise for the benefit of the organisation
- Facilitating innovation and creativity and encouraging new ideas
- Championing the interest of the employees.

Though KM literature is not yet conclusive on the exact role of general management in KM implementation, the roles and responsibilities performed by CKOs provide a framework upon which general management in knowledge-intensive organisations could approach their responsibilities. There is evidence that the leadership/management practice has been closely scrutinised in Knowledge Management studies.

For example, in their benchmarking study of Knowledge Management practices of German TOP 1000 and Europe TOP 200 companies, Mertins *et al.* (1999:195) found leadership (25% responding companies) to be the third behind corporate culture (44%) and staff motivation and qualification (29%) as a factor for successful Knowledge Management. What is more surprising is that leadership even surpassed information technology (only 23% responding companies) in this typical Western knowledge model survey. This confirms a previous study reported by Chase (1997:46) which found top management commitment (46% respondents) to be fourth in a list of six ‘soft’ issues which enhance the successful introduction of Knowledge Management in an organisation. As argued by Sheeham and Stabell (2007:22) that knowledge-intensive organisations create and appropriate value in unique ways, managers who can best align these organisations towards more value creation through knowledge-based outcomes are required.

Johnson (2007:135) set the groundwork on the theory of the management role in knowledge-based organisations when indicating that the best management technique was “management from without”. This implies that knowledge workers as experts direct their own management. The manager’s role is to “tell knowledge workers where to direct their skills”. As illustrated in most empirical studies, some of which are highlighted in this section, this role is specifically performed by a senior executive appointed as the Chief Knowledge Officer. The question that could be asked is: what role does the CKO assume in a knowledge-based organisation?

Earl and Scott (1999:30) warned that the CKO’s role should be viewed quite differently from that of the Chief Information Officer (CIO). According to Earl and Scott (ditto), the two positions could exist in tandem for effective Knowledge Management. They pointed out that the CIO’s responsibilities should include IT strategy, IT operations and managing the IT function. As an endeavor towards an understanding of the responsibilities of a CKO, Earl and Scott (1999:33) developed a Model CKO based on their research into the role of a CKO conducted with twenty CKOs in North America and Europe. The Model CKO is represented as follows:

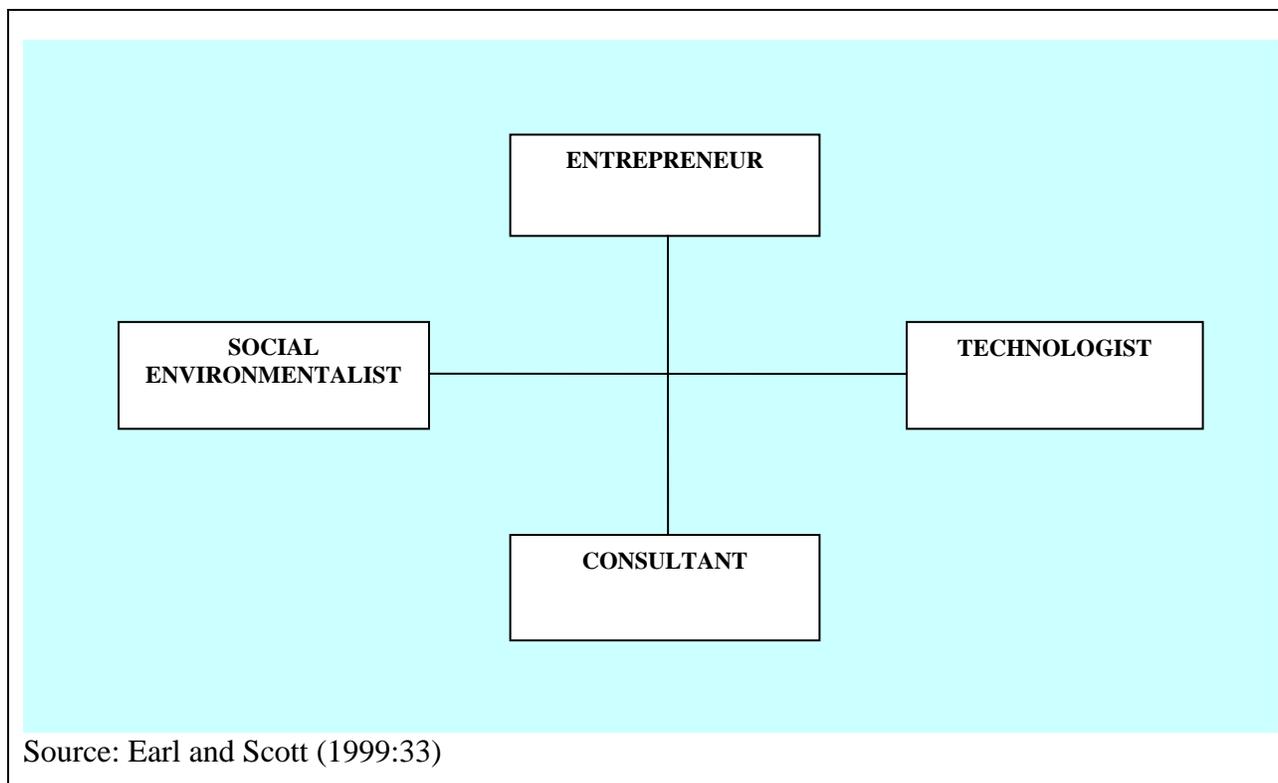


Figure 2.1: Model Chief Knowledge Officer

In line with the Model CKO the role of managers of knowledge-intensive organisations could be discussed in terms of the following four functions:

i. Motivating employees towards knowledge-based outcomes

KM scholars appear to agree that management in knowledge-based organisations motivates their subordinates by “switch(ing) people on” through setting difficult but achievable targets for everyone to strive for within the organisation. Arambaru and Sáenz (2007:77) believed that management in a knowledge-intensive organisation ‘switch people on’ by creating more opportunities for learning. They agreed with Goold and Quinn (1990:48) that allowing people more responsibility and setting performance targets for them would motivate them to demonstrate their ‘inner’ capabilities.

Hence, Firer (2005:5), and Prahalad and Hamel (1994:10) maintained that it was the role of managers to ensure conditions exist within their organisations so that they benefit from the creativity of their employees. This is in line with Earl and Scott’s social environmentalist view. Management within a knowledge-intensive firm has to create the social environment of trust so as to motivate employees towards knowledge-based outcomes.

ii. Managing relationships by creating atmosphere of safety in the organisation

As part of the ‘switch people on’ skill through setting performance targets, management ensure that a non-adversarial organisational climate exists within the organisation. Goold and Quinn (1990:54) maintained that such a non-adversarial climate should be accompanied by trust which in turn becomes an important feature in creating an atmosphere of safety in an organisation.

This is in line with Firer (2005:8) who noted that managers of knowledge-intensive organisations were required to develop management practices which could support the “harnessing of knowledge”. Gurteen (1998:6) pointed out that an atmosphere of creativity and innovation would be crucial for the nurturing of (tacit) knowledge.

Furthermore, Jaw and Liu (2004:235) have demonstrated that positive learning attitudes by employees are promoted in an environment characterised by innovation, openness, interactive cooperation, discipline and constructive confrontation. Kalkan (2008:394) and Mertins *et al.* (2001:5) have aptly indicated that it is the responsibility of management to ensure that a climate exists within the organisation which would enable employees to freely acquire and share knowledge. According to Mertins *et al.*, management has to communicate tasks and create a motivating environment based on trust and credibility within the organisation. Mintzberg (2004:22) and Nuberg (2002:8) insisted that managers have to display a lot of empathy towards their subordinates in order to make them free to release their innate knowledge. Mintzberg advised that this could be easily achieved if managers were able to relate well with their subordinates, such managers should not be “perched on top of the organisation, they should be (seen) to be working throughout the organisational network”.

Porter, Lorsch and Nohria (2004:67) indicated that managers also create atmosphere of safety in an organisation when they are prepared to expand the power of other people who operate around them. As argued by Earl and Scott (1999:34), the manager of knowledge workers could best operate only through influence, persuasion and demonstration by making others take centre stage and receive credit. This is only possible in an atmosphere of trust. Senior executives in knowledge-intensive organisations should be willing to share power and trust others to make important decisions as well. Basically, what can be deduced from these authors is that without an atmosphere of safety in a knowledge-based organisation, knowledge workers become constrained in their endeavor to acquire and share knowledge.

iii. Balancing social networks with technological capabilities of the organisation

The socio-technical view that dominates Knowledge Management theory promotes a balancing of the focus on tacit knowledge with IT implementation. Keating, Fernandez, Jacobs and Kauffmann (2001:35) used the concept ‘joint optimisation’ to appropriately explain the need for managers in knowledge-based organisations to balance technology with the social aspects.

This is in line with the argument by Wiig (1997:6) that leaders of 'progressive' organisations and nations always pursue ways of creating and generating value from knowledge assets. It has been established that these knowledge assets are embodied in human capital and technology (Shariq, 1997:75). A way of striking a balance between the technology and the people using that technology is imperative for the effective management of knowledge. As argued in Earl and Scott's model CKO this requires the manager to assume the roles of a social environmentalist and technologist at the same time. Being a social environmentalist, the manager has to design the creation of the social environment that stimulates and facilitates both the arranged and chance conversations and encourage more deliberate knowledge creation and exchange. As a technologist the manager has to understand the technologies needed in the capturing, storing, exploring and sharing of knowledge.

Rumelt *et al.* (1991:13) observed that managers should be consciously aware of the internal configuration in an organisation and must ensure that the internal organisational forces mutually reinforce each other. The argument in this study is that it is the role of managers to ensure that both the organisation's technical and social subsystems are mutually reinforcing each other. Knowledge managers need to ensure that there is 'best fit' between the people skills and the technology utilised in the organisation. They themselves should be able to work with the information technologies forming part of the organisation's database system so as to teach others how to work with technology for effective Knowledge Management.

iv. Acting as a creative and innovative knowledge entrepreneur

This dimension combines both Earl and Scott's entrepreneur and consultant roles in the Model CKO. Earl and Scott (1999:34) indicated that the CKO should operate in a spirit of newness, adventure and risk. There is an entrepreneur-consultant role that managers of knowledge-intensive organisations should grapple with. Since knowledge-intensive organisations promote innovation and creativity, their management should not stifle the creative flair of their people. The reason for this can be traced from Levitt (2004:139) who believed that inventiveness and skill would lead to great organisations. Levitt indicated that managerial imagination and audacity promotes inventiveness in an organisation.

Leavy (2005:40-41) was adamant that managerial imagination implied that the manager would be able to analytically respond to problems facing the organisation. In this regard, Leavy separated between creativity from intelligence. According to Leavy, creative people have a capacity for divergent thinking characterised by originality, fluency of ideas, flexibility and ability to elaborate and refine ideas. Since creativity is encouraged in knowledge-intensive organisations, Levitt (2004:149) argued that creativity cannot be achieved without a vigorous leader. Levitt believed that such a leader should be “driven by a pulsating will to succeed” and this leader should “have a vision of grandeur”. As a manager of experts, the manager of a knowledge-based organisation should, by “word(s), decisions and unspoken signals”, do more to influence knowledge workers towards knowledge-based outcomes (Wilson, 2004:25).

An analysis of the four roles depicts that the manager of a knowledge-intensive organisation assumes a similar role to that of the human expert in an “expert system”. Clancy (1990:50) described an “expert system” as some kind of a computer or robot that analyses data, diagnoses problems and make decisions faster than human managers.

According to Clancy (ditto), the key ingredient to an effective and efficient expert system is the human expert who programmes the system. Clancy further observed that the higher the intelligence of the programme supplied by the human expert in an expert system, the more successful the system. It is thus argued that the manager of a knowledge-based organisation should, at least, be a specialist in his/her area of operation. This links closely with the consultant role highlighted by Earl and Scott in their Model CKO. Managers in knowledge-intensive organisation assume a similar role to a human expert in an expert system. They do so by adopting the mentality of Mckenna (1991:73), that in order to succeed “don’t fight forces, use them”. This implies that knowledge workers come to the organisation with raw skills and capabilities which, if not well coordinated, become destructive forces. Management has to coordinate these raw skills and capabilities into knowledge-based outcomes.

As argued by Levitt (2004:138) that “failure is at the top’, the management of a knowledge-based organisation decides between success and failure. After all, Drucker has observed that management is a “differential organ of society”. Indeed failure is at the ‘top’, success is at the ‘top’. The manager of a knowledge-based organisation is the human expert who programmes the organisation.

Call (2005:25) observed that it was crucial to recognise both the role of senior management and mid-level managers in knowledge-based organisations. He noted that in knowledge intensive organisations the role of senior management was to set the tone and show support for knowledge-based outcomes, while mid-level managers were expected to reinforce day to day Knowledge Management initiatives. The role of middle managers in ensuring the effectiveness of KM initiatives has also been fully reflected in Japanese companies. It is apparent that due to its holistic nature, KM is associated with other business practices within an organisation. The next section provides the foundation of these links as observed from literature.

2.5. KM AND RELATED PRACTICES

Owing to the links between KM and other business practices, scholars such as Matzkin (2008:151) have observed that KM can be practiced implicitly. This implies that even though an entity might not be implementing a KM strategy, other related practices might be in place within the organisation which could contribute to the achievement of knowledge-based outcomes. This section provides the links between KM and its related practices. The presentation is enriched with empirical cases from other parts of the world including examples of organisations in South Africa which became successful due to the implementation of these related practices.

2.5.1. The links between KM and related practices

Already the empirical cases cited thus far have shown the link between KM and productivity improvement initiatives, KM and innovation, KM and entrepreneurship, KM and skills acquisition programmes, KM and information management as well as KM and people management.

2.5.1.1. Knowledge Management and productivity improvement initiatives

Knowledge Management as defined by its founding fathers such as Peter Drucker and Ikujiro Nonaka has always been viewed as a strategy towards improved productivity. In defining Knowledge Management, the link between Knowledge Management and productivity improvement initiatives is clearly recognised. It is, therefore, crucial before a detailed analysis is made on this link to define productivity.

Productivity is defined as the effective and efficient use of resources to achieve outcomes (Berman, 1998:5). This implies that productivity could be measured in terms of efficiency in the use of resources. Aligned to this, Prokopenko (1987:35) defined productivity as a “comprehensive measure of how efficiently and effectively organisations satisfy the following aims: objectives, efficiency, effectiveness, comparability and progressive trends”. Though Prokopenko (1987:28) observed that there was a significant difference in the ‘appraisal’ of public sector productivity and that of private sector entities, he insisted that his definition of the concept would apply in both sectors.

Along this argument, Berman (1998:9) indicated that the productivity challenge for public sector organisations was aimed at economic welfare in ensuring effectiveness in providing services to the general population, whereas for-profit private sector organisations were assumed to be productive once they were efficient in using resources to reach certain targeted profit levels. On the other hand, Berman demonstrated that nonprofit organisations were judged to be productive if they were able to achieve both economic welfare and economic efficiency. Productivity improvement entails doing the ‘right things’ better (Prokopenko, 1987:9).

Even before Knowledge Management became popular within organisations, scholars such as Prokopenko recognised that productivity improvement initiatives such as use of advanced technology, the upgrading of skills and educational levels of the workforce were accounting for a major part for the differences in productivity levels among nations.

The concepts efficiency and effectiveness dominate in the definitions of both productivity and Knowledge Management. These concepts are fully defined in the operational definitions of concepts. In line with the knowledge-based view, the productive use of knowledge assets within a firm accounts greatly towards the firm's overall productivity.

The link between KM and productivity is much apparent when considering that there are two categories of factors which impact on the organisation's overall productivity (Prokopenko, 1987:9). These are external and internal factors. A closer scrutiny at the internal productivity factors reveals the crux of the link between KM and productivity. These could best be represented through a model of internal productivity factors adopted from Prokopenko (1987:15). The model is reflected as follows:

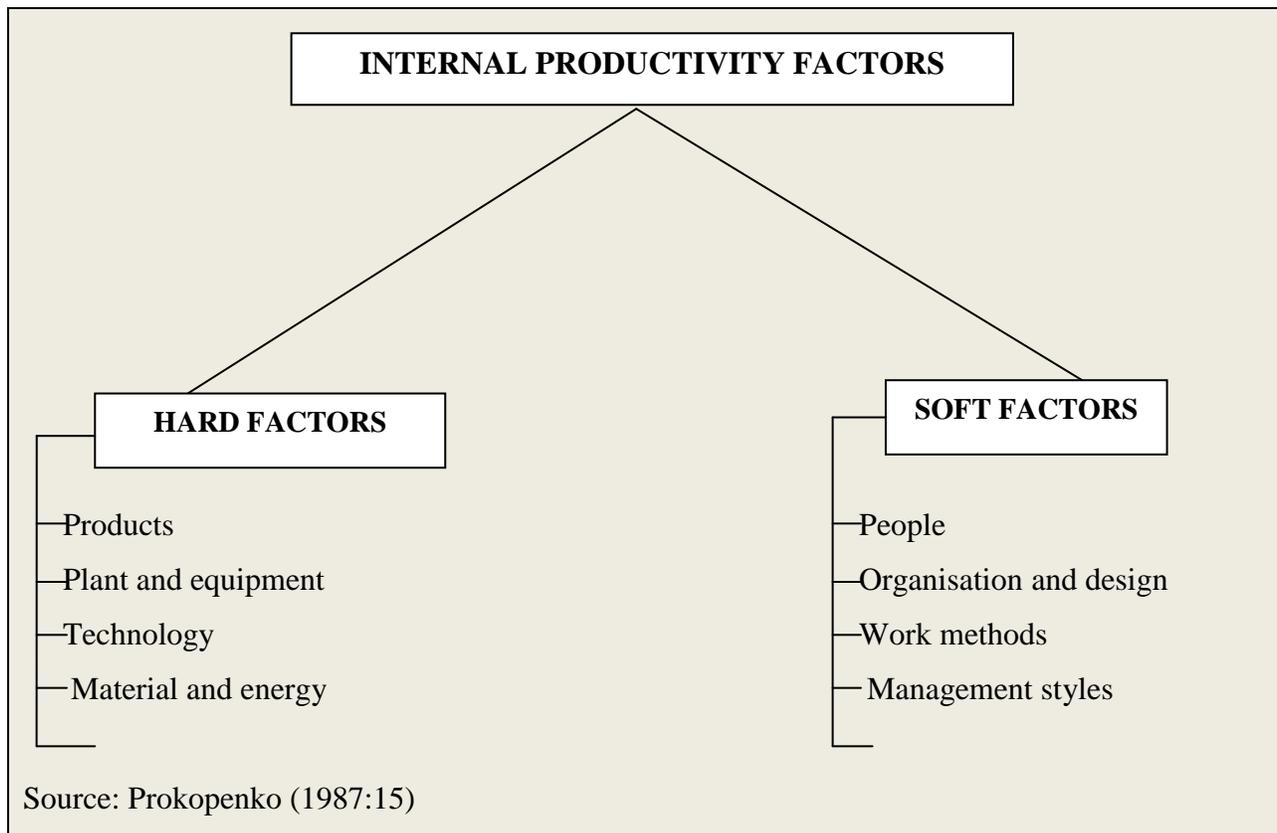


Figure 2.2: Model of internal productivity factors

Amongst the hard factors in the internal productivity model, technology also play a vital role in KM (this is reflected in various empirical cases in this chapter). Similarly, the soft factors in the internal productivity model are also key variables in KM implementation.

A number of studies have proved that knowledge remains a strategic resource for sustainable competitive advantage (and productivity) in modern entities. These have been discussed in the earlier parts of this chapter. Wiig (1997:9), Grant (1996:121), Metaxiotis *et al.* (2005:7), and Aramburu and Saénz (2007:77) have ascribed that adopting a knowledge-oriented strategy can lead to the development of a more productive workforce. The view that organisations should marshal the skills and expertise of their members in order to remain competitive and more productive is widespread in Knowledge Management literature.

Drucker was therefore right when he predicted that the country that will lead in increasing the productivity of its knowledge will “dominate the twenty-first century economically”. It is not surprising that more successful companies are originally USA or Japanese-based, considering the great contribution of both Drucker (father of the Western model to Knowledge Management) and Nonaka (father of the Japanese model to Knowledge Management). Drucker is considered prophetic when he indicates that:

The chief economic priority for developed countries, therefore, must be to raise the productivity of knowledge and service work (1991:70).

This appears to be the fulcrum that led to continuous development and productivity of Western and Japanese firms at the expense of ‘firms’ from the developing countries. But what has proven essential in this regard is that knowledge is a prerequisite to productivity improvement in an organisation. Grant (1996:112) observed that the critical input in production and primary source of value is knowledge. On this note, Grant argued that all human productivity is knowledge dependent. Hence, Drucker (1993:193) insisted that “the productivity of knowledge” is the “determining factor in the competitiveness of a company, an industry, an entire country”.

Claver-Cortés *et al.* (2007:45) realised that knowledge as a strategic resource that cannot easily be duplicated by competitors because it leads to sustainable long-term competitive advantage. This clearly demonstrates the valuable role of Knowledge Management efforts towards a firm's increased productivity. It is on this basis that it is suggested in this study that applying a Knowledge Management strategy leads to increased productivity. There are a number of empirical examples to demonstrate this fact. Of particular note are the results of a survey reported by Chase (1997:41), which recorded the following productivity improvements as a result of applying a Knowledge Management strategy:

- Improved decision making: the views of 89% of the respondents
- Increased responsiveness to customers: 84% of the respondents
- Improved efficiency of people and operations: 82% of the respondents
- Improved innovation: 73% of respondents
- Improved products/services: 73% of respondents.

It is thus not surprising that more and more organisations have successfully implemented Knowledge Management practices over the years. The case of Buckman Laboratories by Pan and Scarbrough (1998:62), the IDOM case by Arambaru and Sáenz (2007:74-79) and the Claver-Cortés *et al.* (2007:49-54) empirical findings from the six Spanish firms (Arteche, Unión Fenosa, Siemens-Spanish subsidiary, Telefónica group and Santander Group) are popular success stories in Knowledge Management literature.

All these organisations are testimony to the view that the effectiveness of organisations to a large extent depends on the effectiveness of the “intelligent behaviour” (knowledge) by its people (Wiig, 2002:230). It is also evident from Knowledge Management empirical studies that a well entrenched Knowledge Management approach that is geared towards widespread information technological connectivity and improved employee skills and competence is at the root of an organisation's productivity improvement. There are ample cases cited in this study which appropriately confirm this view.

2.5.1.2. Knowledge Management and innovation

Du Plessis (2007:26) has captured the importance of an integrated approach towards Knowledge Management in a study highlighting the relationship between KM and innovation conducted in South Africa. According to Du Plessis, such an approach should involve creating a corporate culture maximising innovation. Du Plessis (2007:20) has appropriately reflected the link between innovation and competitive advantage when arguing that “Organisations have to ensure that their business strategies are innovative to build and sustain competitive advantage”.

As argued by Du Plessis, successful innovation depends on the depth of knowledge available to an organisation. Du Plessis (2007:21) defined innovation as the creation of new knowledge and ideas facilitating new business outcomes leading to improving business processes and structures, thereby creating better products and services. Aligned to this definition, are two forms of innovation:

- Radical (disruptive) innovation
- Incremental (sustaining) innovation.

Du Plessis (2007:21) described radical innovation as competence-destroying and necessitating different management practices, while making existing skills and knowledge redundant. On the other hand, Denning (2005a:4) explained sustaining innovation as “doing more of the same, but better or quicker or cheaper”. It is apparent that Du Plessis (ditto) supported Denning’s description when indicating that sustaining innovation “leads to incremental changes” likely to enhance internal competencies. Du Plessis noted that sustaining innovation would not involve a significant departure from existing business practices. The question that arises is: which of the two forms of innovation enhances KM implementation?

Putz and Raynor (2005:46) argued that due to its nature, disruptive innovation could lead to more creativity than sustaining innovation. As argued by Denning (2005b:7), “innovation is less about understanding the problem than getting people to act differently often contrary to well-established assumptions and practices”.

But it is emphasised in this study that both forms of innovation are viewed as equally valuable in initiating and enhancing Knowledge Management efforts. There are two concepts adopted in this study associated with the two forms of innovation respectively. These are knowledge invention and knowledge innovation. These are explained in the section on operational definitions of concepts in chapter 3 of this report. Since Knowledge Management is defined to refer to all endeavors aimed at achieving the organisation's goals by making the knowledge factor productive, innovation has already been proved to be part of those endeavors. This is reflected in Du Plessis' (2007:22) definition of Knowledge Management as "... about supporting innovation, the generation of new ideas and exploitation of the organisation's thinking power".

Du Plessis (2007:21) aptly captured the confluence between Knowledge Management and innovation when she defined Knowledge Management as "...the formation of and access to experience, knowledge and expertise that create new capabilities, enable superior performance, encourage innovation, and enhance customer value". Du Plessis (2007:27-28) highlighted that Knowledge Management and innovation could be described as having a symbiotic relationship due to the following reasons:

- Organisations that create knowledge rapidly are found to be effective innovators and more successful than those who do not do so
- Innovation combines an organisation's existing knowledge in new ways
- Knowledge Management plays a role in innovation through enabling a collaborative culture inside and among organisations
- Knowledge creation, sharing and leveraging build employee skills that are relevant to the innovation process
- Knowledge Management creates a culture conducive to innovation and creativity
- Knowledge Management ensures the flow of knowledge used in the innovation process.

The link between Knowledge Management and innovation is clearly running deeper into the core of Knowledge Management as demonstrated in this section. As highlighted by Du Plessis (ditto), it is apparent that a knowledge-oriented corporate culture has a positive impact on innovation within an organisation.

Whether the innovation process has to be incremental or radical does not appear to be problematic to scholars. This is reinforced by Lachmann (1970:68) who noted that “innovation and imitation are the complementary elements of what is virtually the same social process”.

2.5.1.3. Knowledge Management and entrepreneurship

As indicated by Martín-de-Castro *et al.* (2007:162) effective Knowledge Management entails the capacity to apply knowledge effectively throughout an organisation. It is argued in this study that a strategic focus by an organisation towards knowledge should be rooted in a KM focus that involves more knowledge entrepreneurship.

The argument in this discussing is that entrepreneurial characteristics are introduced to KM by an application of a social driven KM approach which does not neglect the strategic role of IT. Halachmi and Bouckaert (1995:89) argued that quality, productivity, efficiency and entrepreneurship are becoming more important in modern organisations. It is argued in the present study that both entrepreneurship and the holistic approach to KM are social driven initiatives. Knowledge Management theory can benefit much from an infusing of entrepreneurship, hence the concept knowledge entrepreneurship.

Wilken (1979:2) argued that entrepreneurship has always been regarded as one of the most if not the most significant causal factor in the process of economic growth and development. On the other hand, Niewenhuizen and Groenewald (2006:70) indicated that entrepreneurial characteristics such as creativity and risk propensity have been identified by researchers as critical for entrepreneurial success. Aligned to this argument is Drucker’s view that the key challenge facing modern organisations is to make knowledge workers productive. Social variables are critical to the success of both KM and entrepreneurship. Niewenhuizen and Groenewald (2006:70-71) demonstrated using the South African experience of low survival rates of start-ups and new enterprises (based on 2004 statistics), that developing and assisting individuals with entrepreneurial potential can lead to higher levels of successful enterprises.

Similarly, Wilken (1979:3) argued that societies that “possess individuals willing and eager to perform the entrepreneurial function or role can accelerate the growth and development process, those societies lacking this necessary component lag behind”. Entrepreneurs are valuable to organisations and society because of their ability to scan the world for opportunities and looking beyond the conventional ways of doing things (Abraham, 2005:6). Abraham pointed out that entrepreneurs have the ability to recognise that ‘something’ can be done better, quicker, cheaper, differently and more conveniently and reliably.

It is now imperative to arrive at a definition of the concept entrepreneurship that aligns to the purpose of this study. The definition made by Wilken (1979:59) and Burch (1986:5) is more related to Knowledge Management as it views entrepreneurship as involving “combining factors of production (amongst these there is labour where knowledge resides) to achieve a specific (positive) consequence”. Wilken also argued that there is a possibility of delineating types of entrepreneurship other than economic entrepreneurship. It is argued in this study that knowledge entrepreneurship rooted in social factors can be applied to promote knowledge-based outcomes.

According to Wilken, the theory of entrepreneurship recognises two main approaches:

- The first argues that economic conditions promote the emergence of entrepreneurship: according to this view entrepreneurship is a dependent variable wherein lack of entrepreneurship is not an obstacle to economic growth and development. This could be traced back to the work of Hirschman (1965) and Gerschenkron (1966)
- The second approach views entrepreneurship as an independent variable in economic growth and development. This view sees the entrepreneur as the key figure in economic development because he introduces innovations. Joseph Schumpeter’s book on *The Theory of Economic Development* (1934) lays the foundation of this view.

Wilken (1979:57) observed that since innovation constituted the entrepreneurial function, entrepreneurship tend to emerge in “response to non-economic motivations”. This means that entrepreneurship is a “crucial factor in economic change”.

According to Wilken (1979:57-58), entrepreneurship can be conceptualised at four different levels:

- Entrepreneurship as a psychological characteristics of individuals described in terms of creativity, daringness, aggressiveness and inventiveness
- Entrepreneurship as a social position entailing identification of that position and the analysis of behaviours of individuals occupying that position
- Entrepreneurship as a social role characterised by a set of similar behaviours enacted by individuals in different social positions
- Entrepreneurship as a social process comprising of a variety of behaviours combining to produce an observable sequence of activities within a system.

While Wilken (ditto) decided to approach entrepreneurship as a social role in his study of the significance of the entrepreneurial role for economic growth and development, and the factors that cause entrepreneurship to emerge, this study does not narrow its focus to a single conceptual approach as it tries to tap on the benefits of entrepreneurship for Knowledge Management. In this study entrepreneurial Knowledge Management strategies rooted in the social variables are the key focus. The four levels of approaches to entrepreneurship conceptualised by Wilken are adopted in laying the foundation for the link between KM and entrepreneurship as adopted in this study. This makes the analysis of KM in this study more simplified in terms of the following components:

- The psychological characteristics of knowledge workers such as creativity, inventiveness and aggressiveness would be analysed as they relate to social variables enhancing knowledge acquisition and distribution
- The social role of managers in displaying entrepreneurial characteristics that lead to promotion of knowledge-based outcomes would be imperative
- The entrepreneurial role knowledge workers should display in order to promote knowledge-based outcomes
- The observable sequence of job tasks arising from the social process enacted by the organisation's entrepreneurial people.

The measuring instruments used in data collection for this study reflect these components as part of the research items denoting knowledge-oriented social factors. These entrepreneurial components are inherent in the knowledge-oriented social variables such as organisational culture, structures, HR practices and leadership styles. The main argument the present researcher makes is that in organisations of the rural areas of South Africa, these variables together with IT should be holistically geared towards unleashing and enhancing knowledge-based outcomes.

Due to the close association between entrepreneurship and innovation as mooted by key entrepreneurship scholars such as Wilken and Schumpeter, this link goes deeper into the Knowledge Management field. While this study adopts Schumpeter's view that entrepreneurship would trigger innovativeness within an organisation, Israel M. Kirzner's theory of entrepreneurial alertness and discovery deserves admission into the parameters of the present study. The relevance of Kirzner's theory is captured by Yu (2001:9) when combining Kirzner's imitative/adaptive entrepreneurship with Schumpeter's innovative/pioneering entrepreneurship in order to instill the roots of economic development.

While agreeing with Yu (2001:94) that in "...a developing nation with a poor resource-base, (where) there is an acute shortage of skilled labour capable of communicating in a technical sense", the form of intervention proposed in this study differs with the one suggested by Yu. Yu suggested an innovative policy to instil the roots of economic development that would require the recruitment of professionals from overseas to initiate the collection of information and training of skilled workers. In this study, the intervention calls for more innovative and entrepreneurial ways of managing knowledge through a holistic approach.

This is aligned to Lachmann (1970:78) that "to bring a new institution into existence requires not merely the existence of certain needs but also the specific 'entrepreneurial' skill of the innovator". One of the key skills of an innovator is to communicate to the organisation the risks inherent in clinging to the 'failed' status quo and rewards of embracing a radically different approach (Denning, 2005a:12). Indeed a radically different approach could go a long way in enhancing KM implementation in organisations of the rural areas of South Africa.

Yu (2001:121) also supported this approach by arguing that entrepreneurs could create ‘imagined results’ by forming new perceptions, unlearning the learned and unlocking organisational inertia. According to Yu, both the Kirznerian principle of extraordinary discovery and the Schumpeterian innovative principle are applicable in exploring new ways of doing things in organisations. The form of KM intervention envisaged for the organisations of the rural areas of South Africa would combine the advantages of innovation-pioneering and imitation-adaptive approaches as highlighted with the Schumpeterian/Kirznerian divide.

This study would not attempt to cover the wider theoretical base of entrepreneurship as this is outside its scope. Only the theoretical aspects linking entrepreneurship with Knowledge Management are covered. Of key relevance to this study are entrepreneurial approaches linked to innovation. It would be knowledge entrepreneurship if an organisation applies innovative strategies rooted in social variables as long as these promote knowledge-based outcomes.

As argued by Wilken (1979:58-59), economic entrepreneurship involves the combination of economic factors of production (land, labour, capital and technology), while knowledge entrepreneurship is concerned with the combination of knowledge-based factors (ICTs and social issues) with the positive consequence of improved organisational effectiveness leading to increased productivity. This has already been demonstrated through empirical cases of KM in various knowledge-based entities as cited throughout this chapter.

Knowledge entrepreneurship would refer to the recognition that knowledge invention and innovation become a way of behaving, a way of being, where everyone is a knowledge entrepreneur in the organisation (Nonaka, 1991:79). What this implies is that there is a knowledge enterprising culture in the organisation. In line with the knowledge entrepreneurship concept, knowledge workers become knowledge entrepreneurs (Nonaka, 1991:71). This has aptly been reflected in empirical cases highlighting KM in Japanese entities.

2.5.1.4. Knowledge Management and skills development initiatives

Global and South African trends prove that there is overwhelming shortage of key skills for economic growth throughout the world. The South African labour market, like most developing economies, is characterised by a high number of unemployed graduates while vacancies in areas such as engineering, medicine and commerce are difficult to fill (Harris, 2007:1). The key problem faced by most organisations and nations is the development of a skills base to sustain productivity. This implies that working and skills are inseparable. Drucker (1991:76) observed this when arguing that knowledge work was not “just work”, as it was special in the productivity of an organisation, it therefore, would require “a craft and a skill”. The imperative has to be: how should that craft and skill be developed?

Johnson (2007:134) indicated that craft and skill could best be developed through practice and dialogue. Based on this, Johnson argued that “training programmes need to emphasise co-practice despite the time consuming aspect”. Drucker (ditto) himself suggested two main forms of developing craft and skill which he classified under what he refers to as “the working smarter” concept adopted from Frederick Taylor. These are:

- Continuous learning which must accompany productivity gains
- This continuous learning must involve continuous teaching wherein a star performer “presents the secret of success to others”.

Furthermore, Leonard and Swap (2004:91) believed that as part of the continuous learning and teaching by employees, experience was the key. Leonard and Swap conducted an extensive research over two years throughout the USA and Asia to study how organisations develop and sustain knowledge among their employees. They found that experts encountered a variety of situations over many years which allowed them to accumulate a ‘storehouse’ of knowledge. This is in line with the learning-oriented Knowledge Management approach in this study. Senge’s learning organisation model forms the basis of such an approach. Senge noted that:

The organisations that will truly excel in future will be the organisations that discover how to tap people's commitment and capacity to learn at all levels in an organisation (1990:4).

This is further reinforced by Martín-de-Castro *et al.* (2007:44) that organisational learning “is the acquisition and utilisation of existent knowledge and/or the creation of new knowledge with the purpose of improving economic outcomes”. Martín-de-Castro *et al.* mentioned two groups of activities inherent in organisational learning processes:

- Activities linked to the creation and acquisition of new knowledge
- Activities linked at the use, incorporation and dissemination of knowledge already available.

This study focuses on knowledge acquisition and dissemination in organisations of the rural areas of South Africa. Kreitner and Kinicki (2004:638) insisted that, as part of the skills acquisition process, the modern organisation needs to proactively create, acquire, and transform knowledge so as to change its behaviour based on the new knowledge and insight. In line with learning- oriented Knowledge Management practices, Metaxiotis *et al.* (2007:7) argued that a knowledge-intensive organisation should marshal the skills and expertise of its members thereby engaging in continuous learning and innovation in order to maintain its competitive edge.

On the other hand, Wiig (2002:230) observed that the issue of building personal expertise by organisations is traditional. He cited training programmes, qualification examinations and certification as notable examples. Wiig further indicated that these traditional approaches to building personal expertise were no longer enough for the modern knowledge-based organisations. Serious improvements on these approaches are urgently required. Wiig (2002:233) insisted that the key objective of Knowledge Management was to develop and maintain the ability of employees to perform “skilled and knowledge-intensive tasks”. It is, therefore, not surprising to note that most organisations that apply Knowledge Management strategies are concurrently adopting ways of building their knowledge and skill base. Upon this basis, Aghazadeh (2007:744) believed that organisations should incorporate proper training in order to increase their productivity.

Aghazadeh (2007:745) further noted knowledge and developed workers as the key factor of production. Aghazadeh insisted that on-the-job-training (OJT) could be one of the proper training programmes that an organisation can adopt. McQuade *et al.* (2007:764) observed that on-the-job experience; an outcome of OJT, was crucial in ensuring that a knowledge-based organisation maintained a competent workforce. Since OJT is context-based, it happens while employees are doing their normal jobs. Aghazadeh (2007:750) argued that OJT could satisfy the demand for skills in organisations characterised by continuous technology changes and competition due to the following advantages:

- OJT combines the demand for skill in organisations characterised by continuous change in technology and competition
- OJT cost less compared to formal training as there is no need to hire specialists and purchase special training materials
- OJT reduces loss in productivity that may result when workers are away from work during formal classroom training
- OJT allows employees opportunities to go through continuous, context-situated learning initiatives rather than infrequent isolated formal classroom training
- Employees have the initial benefits of learning better ways to perform tasks they must accomplish while doing their job
- The benefits are immediate as there is no lagging effect as is in formal training.

Aghazadeh (2007:755) analysed data from two experiments, based on case studies conducted in two companies in the USA, and concluded that increased productivity was dependent on proper training (a key variable in KM). OJT was found to be the vehicle used in the training of employees in the two experiments. The experiments were conducted at Wegmans and ClientLogic.

i. The Wegmans case

This company comprises 71 grocery stores in the USA. Aghazadeh (2007:751-752) highlighted the training approach in Wegmans as consisting of the following practices:

- Immediately when hired, cashiers are taken on a four day OJT session
- Then when they are put on everyday business, a 24/7 monitoring system of cashiers “Items Per Minute” (IPM) is made. This IPM records how many items go through the cashier’s register per every minute
- There are different competitions based on each cashier’s IPM (this is meant to motivate employees to increase their IPM)
- Cashiers are initially trained to work towards a high IPM
- Cashiers scanning under certain IPM levels are identified for more training
- The training meant for cashiers having lower level IPM is called ‘wrap up’
- The ‘wrap ups’ are paid up classes conducted by a chosen front-end employee who occupies a higher position than the cashiers (by continuing to score higher on the IPM).

Aghazadeh (2007:752) noted that three ‘wrap ups’ were done in three of the company’s stores and all employees participating recorded higher IPM after the ‘wrap up’. This case illustrates the benefits of combining a formal training programme with on-the-job-training.

ii. ClientLogic’s learning oriented KM strategy

ClientLogic is a top five global Business Process Outsourcing provider. The company recognises the positive impact of training to productivity improvement. And as such it applies the following employee training programmes:

- Hiring the right people is a key factor. The company sets standards (a skill set) before hiring an employee or promoting one to a higher position
- New hires go through a period of two to three weeks formal classroom training
- From there they go into Operation Checklist Programme (OCP) which is OJT consisting of one-half of the time in training and the other on doing the work
- Final exams are taken at the end of the training session ensuring agents have the necessary knowledge, skills, and abilities to perform their work
- The company uses the Average Handling Time (AHT) to monitor the productivity of its agents. A high AHT signals need for training (Aghazadeh, 2007:753-754).

Aghazadeh notes that once employees enter the training environment, the AHT has been found to decrease as training weeks progress. There is a marked proof from the two cases that “high training industries also experience a higher rate of labour productivity and wage growth” (Aghazadeh, 2007:746).

According to Engeström and Kerosuo (2007:336), OJT can best be reflected in the confluence between workplace and organisational learning. As indicated by Engeström and Kerosuo, workplace learning deals with the improvement of conditions and practices of learning and instruction in work settings while organisational learning tries to find “explanatory mechanisms for success and failure in organisational renewal and organisational knowledge formation”.

It is apparent that OJT should lead to both individual renewal of employees and organisational renewal in terms of promoting the outcomes of learning in the form of knowledge, skills and changed patterns of behaviour (Engeström and Kerosuo, 2007:339). This implies that OJT is a learning-oriented approach which incorporates measures that are aimed at building and improving the skills and competence levels of an organisation’s employees. OJT practices are clearly congruent with Knowledge Management practices as both are knowledge and learning-oriented. Various cases abound in literature where organisations advocate learning centred Knowledge Management practices in the same mode as OJT.

Paloniemi (2006:442-443) found that skills development could be enhanced in the workplace through a combination of formal and informal training (OJT) programmes. This was based on the findings from a research she conducted in six Finnish small and medium enterprises (SMEs). The findings were as follows:

- Competence was developed mainly through learning at work
- Employees ascribed their job competence to three main sources: education and training, experience and personal characteristics
- Employees assessed work experience as the main source of competence construction followed by personal characteristics then formal training
- Work experience was viewed as a bridge between formal knowledge and practical skills.

Paloniemi (2006:446) warned that not all experience was good for competence development. She made a distinction between ‘any experience’ and learning experience by describing learning experience as that experience which lead to the employee performing his/her job better.

Though acknowledging the role of both formal training and OJT in enhancing the skills of employees, Wiig (2002:226-227) realised that know-how and expertise could best be enhanced through a more deliberate and systematic Knowledge Management approach. The key argument is that Knowledge Management can be used as an appropriate strategy for skill acquisition in modern organisations.

2.5.1.5. The information and Knowledge Management debate

It has already been indicated earlier in this chapter that scholars are advocating a clear separation between knowledge and information management in order to realistically reflect the Knowledge Management agenda. Nonaka (1994:15) has warned that unless a distinction is made between information and knowledge, what is basically information management can be referred to as Knowledge Management.

There is generally no confusion in terms of definitions of both concepts. Information has always been viewed as arranged data in context (Newman, 1997:126, and Becker, 2007:42) while knowledge is defined in terms of know-how and know-why (Gurteen, 1998:5). This distinction has gone further to entrench both the explicit and tacit knowledge dimensions in Knowledge Management theory.

As argued by Drucker (1993:210) information is synonymous with “a book, a databank, a software programme” while knowledge is “embodied in a person”. The confluence between information and knowledge has contributed to the socio-technical perspective on Knowledge Management where the human aspects and technical aspect (ICT) are regarded as equally valuable. In order to clearly mark the line of divide between information management and Knowledge Management, a detailed synopsis of IM as well as KM objectives is important. As highlighted by Berman (1998:210) the following IM objectives can be summarised:

- Increasing the speed of transactions and operations
- Reducing the cost of transactions and operations
- Improving the accuracy and reliability of operations
- Increasing interactions among stakeholders inside and outside organisations
- Increasing the use of external databases for improving operations
- Providing employees and managers with ongoing feedback regarding performance
- Providing expert systems for analysis of special or complex problems
- Facilitating interactions among teams of employees and managers at different locations
- Enabling stakeholders and employees to communicate with each other from remote locations.

Having noted most of these objectives, Metaxiotis *et al.* (2005:9) concluded that KM objectives were not the same as IM objectives. They recognised that the primary objective of KM is to identify and leverage the collective knowledge in an organisation in order to achieve the objectives of the organisation. As part of the primary objective of KM, Call (2005:22) highlighted the following advantages of KM:

- Effective Knowledge Management leads organisations and their people to act with “full knowledge of their situation”
- Knowledge Management allows users to utilise all of the organisation’s collected knowledge before making decisions
- Knowledge Management provides new insights into problems, thus allowing these to be solved in easier ways.

It is through the seven steps for successful Knowledge Management suggested by Call that the confluence between IM and KM becomes more apparent. Thus, the seven steps as highlighted by Call (2005:29) are as follows:

- i. Defining the business goals that the KM systems address in clear, simple, common objectives that orient organisation towards purposeful knowledge creation
- ii. Performing a knowledge audit of the organisation's knowledge base involving an inventory of the way people and technology mix
- iii. Presenting a knowledge map showing the visual representation of an organisation's knowledge resources and relationships and processes connecting them
- iv. Developing a KM strategy based on content management, integration, search mechanisms, information delivery and collaboration
- v. Purchasing or building appropriate tools for capturing, analysing, categorising and distributing knowledge
- vi. Periodically re-assessing the value of the KM system and make necessary adjustments
- vii. Building and developing an environment where individual's knowledge is valued and rewarded.

It is apparent that IM objectives are embraced in Knowledge Management objectives. Call (2005:21) reflected that IT systems should fit with the human aspects of the organisation for effective Knowledge Management. He argued that effective Knowledge Management should ensure there is a clear inventory of "the way people and technology mix to make sure the right information gets to the right people in the right form at the right time". The majority of KM scholars (as cited earlier in this chapter) opted for an integrative approach to KM wherein information and knowledge could be treated as part of a whole in the knowledge equation.

Shariq (1997:76) is one such scholars and made the call for a "new synthesis of knowledge, integrating hard (ICTs) and soft sciences (social aspects), to create the knowledge assets necessary for addressing the challenges of a rapid evolutionary era". Even those scholars who are inclined to treat information and knowledge as separate entities concur that information remains an enabler in the knowledge process. What is deduced from the Information-Knowledge Management debate is that knowledge becomes an inclusive concept which embraces information as well.

On this note, Soo *et al.* (2002:131) argued that codified and transmitted “knowledge” (that is information) ceases to be knowledge, it could become knowledge when combined into unique ways leading to an actionable outcome. This is the reason why Soo *et al.* insisted that true knowledge is non-codified. This line of reasoning clearly points that information and knowledge are not synonymous, but that information becomes an input in the knowledge process. If one were to use the production process metaphor, information as an input in knowledge production is a raw material which needs to be transformed through action into knowledge as a final product.

It is imperative to note that information dissemination is of paramount importance in the production of knowledge (Gurteen, 1998:6). Koenig and Srikantaiah (2004:63) also noted that though KM was not about IT, without an “IT Infrastructure an organisation cannot enable its employees to share knowledge in a large scale”. The main argument in this study is that information becomes a prerequisite in the knowledge transformation process and Knowledge Management should reflect lowering “the value of technology for knowledge sharing and emphasise the human aspects of knowledge sharing” (Coakes, 2006:579).

This implies that Knowledge Management should acknowledge information as a key input in the knowledge transformation process and should not get carried away by overemphasising codified knowledge (information) at the expense of real non-codified knowledge. Arambaru and Saénz (2007:72) alluded to this when indicating that the Knowledge Management discourse was dominated by technologies that were meant to facilitate the acquisition, codification and exploitation of knowledge with little attention on the social aspects.

There are countless reasons why information management is valuable in the whole Knowledge Management debate. Some of these are captured by Junnarkar and Brown (1997:147), Chase (1997:47), Hansen *et al.* (1999:108), Soo *et al.* (2002:143-145), and Pretorius and Steyn (2005: 47-48) as follows:

- Effective KM requires a symbiosis between people, information and IT
- IT is suitable for identifying and initiating dialogue among workers dispersed in various branches of an organisation
- Empirical findings in high tech companies prove that people and technology are valuable in creating a knowledge-based organisation
- Organisations' databases are strategic tools which ensure that knowledge is codified so that it can be used effectively towards organisational productivity
- Formal networks (ICT connectivity) should coexist with informal networks (people-to-people interaction) for effective knowledge sharing
- Depending on the business model, organisations have successfully applied the codification strategy to unleash the full potential of their knowledge workers (namely Hansen *et al*'s Andersen Consulting and Ernst & Young empirical cases)
- No organisation has been found to completely neglect the other strategy, firms applying codification would introduce some forms of personalisation and firms applying personalisation tend to introduce some forms of codification.

Owing to the above, it becomes imperative that information management should be accepted into the Knowledge Management debate. Sieloff (1999:52-53) insisted that the widespread connectivity infrastructure (e-mail, voice mail, internet and intranet) ensured that information was spread across an organisation, but warned that for people to use the information effectively they were expected to digest and make sense of the information. Junnarkar and Brown (1997:144) argued that though IT tend to play an enabling role in knowledge sharing, “simple connecting people to people, and connecting people with explicit information”, was not necessarily sufficient, people were required to “generate insights from information, understand it, connect disparate pieces of information, identifies trends, recognise patterns and thereby advance in understanding”.

There is a solid mutual relationship between information and Knowledge Management. It has also been noted that companies that share information effectively can create an effective Knowledge Management System and have a “greater likelihood of organisational survival and higher levels of productivity” (Beitler & Mitlacher, 2007:528-529).

It is a mistake to assume that KM is just about technology as it is also about people and processes (Call, 2005:20-21). This implies that too much and indiscriminate use of IT for KM could lead to the failure of KM efforts. Based on these views, Call observed empirical studies of both low tech and high tech solutions to KM. These are captured below:

2.5.1.5.1. Low tech solutions to KM

Call (2005:27) believed that though KM was often facilitated by IT, technology by itself was not KM. As argued by Call, there are ample cases reflecting that Knowledge Management systems could still be effective with little or no technological connectivity:

i. The Ritz-Carlton Hotel Co. in Atlanta

According to Call (2005:26), Knowledge Management at Ritz-Carlton Hotel Co has little to do with any kind of technology. The Ritz-Carlton's core culture is centred around a commitment to meet and exceed the guests' needs. This culture is rooted in every employee starting from top management. The most important component of the company's KM system is its employees. The people supply the initial information that is needed to the KM system as well as carrying out the services detailed in the system.

ii. The Call Consulting Corporation

This company is an example of an application of little technology solution to KM. Call Consulting Corporation uses a single searchable Domino database to facilitate Knowledge Management for its IT department of Valeo Clutches and Transmissions (Call, 2005:26-27). According to Call, this Domino database is the only IT systems the company uses to capture the information and skills possessed by the various members of the IT department.

The information that is captured in the database is only that which is reusable within the company such as install instructions, static IP addresses, customer numbers and even programming tips. Instead of tracking down the technician that installed a specific piece of software, the company's employees use the database as a repository to find step-by-step instructions along with any tips or notes created by the original technician. Though, KM can still be applied effectively with no or little IT, Call acknowledged that technology has done more to Knowledge Management than all organisational development consultants put together:

While Knowledge Management can succeed and thrive without technology, it is technology that expands its horizons beyond small office into large worldwide corporations (2005:27).

In this regard, Call called IT the mechanism through which people assemble, package, promote and distribute their thinking. Call also provided empirical evidence of successful high tech solutions to KM.

2.5.1.5.2. High tech solutions to KM

According to Call (2005:27-28), there were a number of cases reflecting the correct use of technology to spread Knowledge Management beyond the local area. These cases are discussed as follows:

i. PricewaterHouseCoopers (PWC)

PWC was formed as a merger of Price Waterhouse and Coopers & Lybrand. In order to get the two companies to work as one, the first priority of management was to create an intranet called KnowledgeCurve. KnowledgeCurve is a repository of best practices, consulting methodologies, new insights on taxes, audit methodologies, news services, training courses and lists of in-house experts. Call notes that due to its underutilisation, KnowledgeCurve was replaced by a Lotus Notes e-mail list called Kraken.

This company fosters a culture of personal responsibility for knowledge use and contribution in an environment of continuous learning and innovation. Call noted that “currently, bonuses, promotions and partner admissions are linked” to knowledge sharing at PWC. Employees at PWC are involved in Knowledge Management throughout their careers.

ii. Buckman Laboratories

The story of Memphis (US) based Buckman Laboratories and Bob Buckman is well presented in this research report as a good example of a technology driven socio-technical approach to Knowledge Management. The IT system at Buckman Laboratories is so extensive that it provides ease of information flow and knowledge sharing needed in the companys Knowledge Management network. Since this case is reflected elsewhere in this chapter, it would not be reflected in details in this section. Suffice to indicate that the Buckman Laboratories Learning Centre (BuLab) empowers associates to manage their career development, thereby leading to the creation of the company’s competitive advantage.

iii. Hewlett Packard

The empirical case of HP’s Knowledge Management approach has also been elaborated elsewhere in this study by Sieloff. According to Call, HP started using the ‘intranet’ even before the concept was coined. HP started the sharing of documents within the company on-line through an automated software and installation procedure. This was done in the form of groupware to support the formation of communities of interest and practice providing them with a convenient context for making their collective knowledge more visible and shareable.

iv. Ericsson Radio

According to Call, Ericsson Radio has been very ambitious in its KM initiatives. The company developed a system called Image as a way to describe and coordinate processes for the purposes of supporting change within the company. The company’s knowledge portal is called Zopps.

Zopps provides the company's employees and their families with a play ground for enhancing their computer skills as well as their knowledge in the company. Another complementary IT portal used in the company is called Knack. Call observed the Knack as a more comprehensive and ambitious version which was meant to enable employees to quickly and easily find learning and information resources.

The empirical cases reflected here clearly demonstrate that Knowledge Management and information management are not synonymous but that "knowledge transfer happens through communication, directly between people or aided by technology" (Pretorius & Steyn, 2005:42). Information management is thus a separate but a worthy enabler of Knowledge Management initiatives. It is not surprising that modern organisations are beginning to separate these by creating two separate departments; one headed by a Chief Information Officer (CIO) for Information management and the other led by a Chief Knowledge Officer (CKO) for Knowledge Management.

As indicated by Earl and Scott (1999:29-30), in their investigation of the CKO roles in North America and Europe, the CIO and CKO perform distinctive roles in an entity. Earl and Scott realised that the CKOs are responsible for initiating, driving, and coordinating KM programmes while the CIOs are responsible for the IT strategy, IT operations and managing the IT function. It is apparent in these roles that though KM embraces IM, IM is not KM.

2.5.1.6. Knowledge Management and people management

While accepting the view that effective Knowledge Management is a symbiosis between people, information and IT, it means that as much as the information management debate is accepted into the Knowledge Management fold, people management strategies also need to be incorporated. The question that needs to be answered in this section is: what are the key people management strategies necessary for the effective harnessing of the knowledge possessed by an organisation's people?

There is a very thin line of divide between Knowledge Management and people management. Most organisations that apply Knowledge Management successfully link it with their business strategy. A good case in point is Arambaru and Saénz's IDOM. Claver-Cortés *et al.* (2007:46) argued that linking an organisation's knowledge strategy to its business strategy would have the added advantage of ensuring the following business policies were addressed:

- A human resource management strategy aimed at attracting, developing and retaining talent
- A corporate culture open to new ideas and fostering learning
- A technological platform which can collect and disseminate knowledge
- A strategic approach to knowledge
- An organisational design which makes interpersonal communication and interaction easier.

Most of these business policies are based on the 'soft' issues of the organisation. People management strategies are obviously rooted in these soft issues. While the previous section delved in details into the link between Knowledge Management and IM, this section is aimed at indicating that people management strategies can be designed in a way to reinforce Knowledge Management practices in an organisation.

It has already been demonstrated that Knowledge Management should be linked to an organisation's business strategy. This implying that people management processes in an organisation should correlate to an organisation's Knowledge Management strategy. Those organisations that approach Knowledge Management as a series of separate unconnected initiatives experience costly mistakes in the form of lack of knowledge and expertise than those who approach KM from a holistic business strategy (Chase, 1997:43).

As observed by Chase, people are believed to be the most important in creating a knowledge-based organisation. This then suggests that an effective Knowledge Management strategy should reflect a great deal of 'soft' issues/good people management strategies.

Chase (1997:46) reflected the 'soft' issues viewed by respondents from 143 organisations from five continents (North America, Europe, South America, Australia and Africa) as obstacles in introducing Knowledge Management as follows:

- Organisational culture: 80% of respondents
- Lack of ownership of problem: 64% of respondents
- Lack of time: 60% of respondents
- Organisational structure: 54% of respondents
- Top management commitment: 46% of respondents
- Rewards and recognition: 46% of respondents
- Emphasis on the individual rather than the team: 45% of respondents.

Following on the significance of Chase's analysis, it can be deduced that an effective Knowledge Management strategy rooted in social variables would lead to organisational self renewal. Jaw and Liu (2004:223) argued that organisational renewal depended on the learning ability by the organisation's people. They further insisted that good people management initiatives could create a positive attitude towards learning by an organisation's people. Jaw and Liu (2004:223-224) developed a model of three constructs that reflect the dominance of 'soft' issues in fostering a self renewal organisational climate and promoting healthy learning attitudes:

- Learning oriented HRM: comprise empowerment, supporting benefits programme, encouraging commitment, comprehensive training and performance emphasis
- Positive learning attitudes: this entails encouraging commitment to learning and transfer of knowledge by everyone in the organisation
- Self renewal organisational climate: this constitutes encouraging all employees towards innovation, openness, interactive cooperation, discipline and constructive confrontation (encouraging paradox and contradictions).

This study takes the same line of argument as Jaw and Liu (2004:237) that the HR (Human Resource) unit of an organisation is responsible for people-centred practices that promote positive learning attitudes, but that the overall effectiveness of people in their jobs is a business strategy that can be best achieved through an effective Knowledge Management strategy that appropriately reflect ‘soft’ issues. A notable case of how good people management initiatives could transform to KM is the Hewlett Packard case (KM in the United States of America).

2.5.2. KM and related practices: examples from successful organisations in South Africa

The listing of the best South African employers for 2009/10, arising from a study conducted by the Corporate Research Foundation (CRF) among South African organisations provides proof that the implementation of KM related practices leads to almost similar outcomes as with the explicit implementation of KM. Though the CRF study was not a purely KM study, it listed the best employers in South Africa for 2009/10 based on similar constructs identified in the holistic approach to KM. In terms of the CRF survey, the best employers in South Africa for 2009/10 were identified based on the following categories:

- Organisational strategy
- Communication (including use of ICTs)
- Knowledge Management
- HR practices.

Among the 57 companies listed in the CRF survey as the best employers for 2009/10, the researcher notes both public and private sector entities. Since this section is aimed at providing evidence of the link between KM and related practices in a South African context, the researcher is only interested in those entities which made it to the best employers list by promoting best practices in KM related areas. Among these companies, the researcher reflects on a law firm, a consulting company and a government-owned entity. The KM related practices in the three entities are discussed below:

i. Edward Nathan Sonneberg (ENS)

ENS is one of the big law firms in South Africa. The company was ranked no 2 in the category, medium size employer and no 1 in the legal sector (Dicey, 2009:11). As captured in the CRF report, the company was classified as the law firm of the year due to the following KM related practices:

- The eschewal of hierarchy to concentrate on fostering a team work approach
- Continuous development of the firm's highly skilled individuals through the firm's own in-house training department
- IT considered a key support function, in this regard the firm's chief executive (Piet Faber) confirmed that the firm employed IT experts
- The firm's remuneration packages benchmarked at the upper end of the legal industry with an array of attractive benefits including medical aid and pension calculated on a total cost-to-company basis
- The firm's premises are said to be modified to minimise environmental impact as they are attractive and welcoming with creative spaces where team members can brain-storm problems
- The firm's management promotes a highly transformative culture.

Apart from the above, what distinguishes the company from its competitors is its exceptional talent management system. As noted by Dicey (2009:13), the company's highly skilled people work closely with established experts in the field and as such, "employees are exposed to top-class work and gain an excellent base for knowledge sharing" which plays a critical role in their own development. Edward Nathan Sonnenbergs' talent management system is closely linked to its performance culture which is embedded at all levels of the company (Dicey, 2009:13).

Practices such as talent management and performance culture have already been described as some of the features of knowledge-intensive firms as reflected in empirical cases of KM throughout the world.

ii. Ernst & Young South Africa

The company was ranked 15th in the overall category of best employer and 3rd in the category of best employer of professional talent in the CRF 2009 survey (Dicey, 2009:19). As highlighted in the CRF report, Jackie Tong (Africa people leader at Ernst & Young) and Philip Hourquebie (Chief Executive of the company), elaborated on the best practices which made the company a consistent top performer in the CRF studies over the years. As noted by Dicey (2009:20-22), these best practices are:

- The ability to recruit and retain the best talent
- Embracing the spirit of warmth and hospitality associated with the people of Africa
- The continuous energy, enthusiasm and commitment of the firm's people in building relationships
- Regular evaluation of key business processes and willingness to learn from others
- On-going commitment to continuous improvement
- Engagement with staff across all levels in the organisation
- Transparent sharing of information
- Management providing support to staff to encourage physical and emotional wellbeing
- Having and effectively executing policies and processes incorporating best practice
- Enhancing learning and developmental interventions among staff
- Providing opportunities for staff to engage leaders about their career options.

The company takes precaution against losing talent by fostering the retention of high performers (Dicey, 2009:20). It is apparent that Ernst & Young South Africa operates as a conscious knowledge-based firm through the practices as cited above. Such practices obviously promote a knowledge-oriented organisational culture through HR practices and management that are geared towards making employees feel an important part of the company. These practices are not different from those observed in the company's operations in other countries as reflected elsewhere in this chapter.

iii. National Development Agency (NDA)

The NDA could be classified as a South African government-owned entity considering that the government is its major shareholder. The NDA receives grant funding from government and thereby distributes this funding to civil society organisations which implement developmental projects for poor communities (Dicey, 2009:301). As captured in the CRF report, the company was ranked 34th in the overall best employer category and 10th in the category top ten small-sized companies (with employees of 1 to 600). As highlighted in the interview with Sam Lewatle (Human Executive Director at NDA), Dicey (2009:302-303) observed that the NDA was classified among the best employers as a result of the following practices:

- Ability to strengthen the capacity of provincial offices by employing competent staff, up-skilling current employees, and promoting a working environment conducive to exceptional performance
- Provision of systematic and structured skills development programmes to all employees
- The three-tier performance management system linked to achievement of entity's objectives, business objectives of each directorate and half-yearly employee performance management and reviews
- The entity priding itself as a team of performance-oriented individuals who care
- Recruiting the best employees available through advertisements in newspapers, the Internet, head-hunting, word of mouth and networking
- An understanding that the organisation's people are the drivers of change.

Of particular importance with NDA is the role of training. The training and development strategy at NDA is linked to the promotion of personal and career development of all employees so that they can reach their potential (Dicey, 2009:302). As noted from its best practices, NDA could be appropriately referred to as a performance driven, knowledge-based organisation deeply rooted in good people management principles. While reference is made to a knowledge-based organisation throughout this report, a question may arise as to: how does one identify or recognise a knowledge-based entity? The next section is aimed at making an exposition of the key features of a knowledge-based organisation.

2.6. KEY FEATURES OF KNOWLEDGE-BASED ORGANISATIONS

It has already been demonstrated in this chapter that there are specific features and practices which need to be developed and enhanced in an organisation if the organisation is to succeed in promoting knowledge-based outcomes. Most researchers have pointed to the adoption of less hierarchical team-based organisational structures, fostering commitment and learning attitudes, the promotion and adoption of communities of practice (CoPs), role of IT in enabling knowledge sharing, and promoting an organisational culture of trust as valuable features in promoting knowledge-based outcomes (Romme, 1996:69; Junnarkar & Brown, 1997:144; Ancona, Malone, Wanda, Orlikoski and Senge, 2007:94, and Aramburu & Saénz, 2007:74).

As practised throughout the globe, KM has already been associated with particular factors and features. Whether, the organisation is from North America, Europe, the Middle East, Latin America or Africa, its implementation of KM could generally be described in terms of particular variables which are of key importance in the effectiveness of the KM endeavor. The critical role of both hard (ICT tools) and soft issues (computer software and social variables) has been established in KM literature as reflected in the empirical cases captured in this chapter. But it is also crucial to reflect on the general framework of the features of KM so as to lay the foundation for a solid understanding of KM in various contexts.

Just as highlighted by Nonaka (1991), a knowledge-based entity is a knowledge-creating enterprise where everyone is a knowledge creator and sharer. Empirical evidence from most mature knowledge-based organisations such as IDOM, Buckman Laboratories, Honda, Hewlett Packard, Tata Consulting Services, Ernst & Young and PricewaterhouseCoopers demonstrates that promoting knowledge-based outcomes is a conscious effort in these entities. These cases are good examples of the universal nature of KM, that is; KM is not just a phenomenon that is practised by organisations of the West. Other important features prevalent in organisations which implement KM include:

- A well developed organisational information network consisting of ICT connectivity and communities of practice
- A knowledge enterprising culture where everyone is encouraged to be a knowledge creator and sharer
- A comprehensive Knowledge Management strategy linked to the business strategy
- Middle management assuming strategic significance in promoting knowledge outcomes
- Teams playing a valuable role in day to day operations
- Organisational design structures that make interpersonal communication and interaction easier; namely the less hierarchical adhocracy, team-based, hypertext circular organisational structures
- Setting a standard (skill set) before hiring or promoting an employee
- Initiation, mentoring, coaching systems, job rotation, training and education becoming an important part of the job
- Creating an environment of trust with social connections
- Locating people in close proximity, sometimes with open office space
- Having a person appointed to deal specifically with issues of Knowledge Management, in most organisations this post is part of senior executives in the form of Chief Knowledge Officer
- Placing employees in situations where they can use their capabilities, affording them permission to experiment and act intelligently.

These features have been fully exposed in empirical cases of KM in various organisations throughout the globe. While observing that KM literature is dominated with empirical cases of private sector knowledge-based organisations, the researcher observes that KM is not restricted to these organisations. Evidence of KM implementation in the public sector has been provided earlier in this chapter. In the next section, the researcher provides a justification of the relevance of KM in public sector organisations.

2.7. KNOWLEDGE MANAGEMENT IN THE PUBLIC SECTOR

While the majority of empirical studies reflected in KM literature are those of Knowledge Management initiatives as practised by private sector organisations, recent trends have seen a dramatic increase in studies focusing on Knowledge Management practices in government departments (Rowland-Ikhsan, 2004:243; Matzkin, 2008:155, and Goh & Hooper, 2009:21). Wiig (2002:225) maintained that Knowledge Management has to be imperative in the public sector so as to strengthen public service effectiveness and therefore improves the society.

2.7.1. The roots of KM in the public sector

As highlighted by Wiig, the roots of KM in the public sector stem from the main objective of Knowledge Management, that is, to improve the effectiveness and viability of an organisation. It has been established from literature that KM has become popular in modern organisations due to its benefits. Wiig (2002:224) argued that Knowledge Management can introduce new options, capabilities and practices to help public administration advance. This is indeed a good motivation for public sector organisations to invest efforts in Knowledge Management initiatives. Various empirical studies have been discussed earlier in this chapter, and they prove that Knowledge Management is not only for private sector corporations.

The present researcher has already discussed the extent of KM implementation in the Malaysian public sector (Syed-Ikhsan & Rowland, 2004). Furthermore, a comparison of the KM maturity levels between government entities and entities from eight other sectors in the urban areas of South Africa has also been highlighted (Kruger and Johnson, 2010). Respondents in these studies agreed that KM can benefit their organisations. Public sector organisations of the rural areas of South Africa can also benefit as much from Knowledge Management implementation.

Wiig (2002:225) noted that KM could benefit the public sector in the following ways:

- KM can ensure an effective public administration and implementation of the public agenda
- KM can lead to a stable, just, orderly, and secure society by preparing citizens, organisations, and public agencies to be effective policy partners
- KM can contribute to acceptable levels of quality of life through building, maintaining, and leveraging commercial and public intellectual capital
- KM can lead to the creation of a prosperous society by developing citizens to become competent knowledge workers, and public sector institutions to be competitive.

Wiig observed these benefits after analysing four public administration KM areas of the USA public administration from a number of public sector KM frameworks. The four public administration KM areas were: enhanced decision making, effective public decision making, building societal IC capabilities and developing a knowledge-competitive workforce. Based on the four public administration KM areas, Wiig suggested a framework for KM implementation in the public sector. As highlighted by Wiig (2002:226-227), the proposed comprehensive Knowledge Management approach for public administration should cover the following essential sub-practices:

- Knowledge Management vision and practice aligning with the enterprise's direction
- An effective governance system for the Knowledge Management function
- Shared understanding of enterprise mission, current direction and individual roles to support enterprise and individuals' own interest
- Practice accelerated learning through a range of knowledge transfer activities
- Educating employees
- Placing employees in situations where they can best use their capabilities
- Giving employees permission to improve
- Motivating employees to act intelligently
- Creating supportive infrastructural capabilities (including extensive IT applications).

This comprehensive Knowledge Management framework reflects that a Knowledge Management model for public administration should be characterised by civil servants who see themselves as experts and Knowledge Management moderators. In such a model there should be a separate office created to support Knowledge Management practice. Knowledge Management is as beneficial to public sector organisations as it is in private sector organisation. The strength of Knowledge Management relates to its ability to create knowledge-based outcomes in organisations. This is captured by Wiig (2002:230) when indicating that:

...the overall effectiveness of public agencies depends on the individual effectiveness based on intelligent behaviours by its people, their motivation and freedom to act appropriately.

Wiig observes that since the public sector affects most aspects of society, its approach and effectiveness determines the whole society's culture, quality of life, success and viability. This implies that a competent public administration can provide for a successful society while an incompetent and dysfunctional one can lead to societal decline. This is evident in most developing economies, mostly in Africa, where the public service is not able to deliver its mandate. As a result, most of these developing countries face abject poverty, underdevelopment and low levels of economic productivity. Wiig (2002:224) noted that one of the most important factors in the success of a society is the knowledge possessed by the society's citizens.

That there are areas of differences between public and private sector entities is obvious. Fox (2002:14-20) and Milne (2007:32) recognised the following differences between the two sectors:

- i. Size and structure:** public sector entities are often large and bureaucratic while private sector entities are known to be lean flexible organisations.
- ii. Ownership:** public ownership with the state acting on behalf of citizens is the norm in public sector entities while private sector organisations are owned by stockholders.
- iii. Pay structure:** public sector remuneration could be modest while private sector pay structures fluctuate between very meager and too high depending on companies.

iv. Forces of competition: public sector entities are associated with lack of or few competitive forces while private sector organisations are characterised by robust competition leading to reward for good performance and punishment for poor performance.

v. Performance monitoring: in public sector organisations underperforming civil servants stay put because of problems inherent in measuring and monitoring performance. Most private sector entities implement stringent performance monitoring measures whereby underperformers could be booted out.

vi. Motivation for employees: Fox and Milne agreed that employees in public sector entities tend to be motivated by intrinsic rewards while those in private sector entities find motivation in extrinsic rewards.

Furthermore, Fox (2002:12) argued that the profitability yardstick used by the private sector is replaced with notions of efficiency, effectiveness and productivity change in the public sector. Fox explained efficiency as the degree to which service provision could be maximised with resources at hand and effectiveness as the responsiveness to service demand. He defined productivity change as the improvement or deterioration over time in the ratio of service provision to resource consumption. Fox (ditto) argued that in spite of the differing characteristics, public and private sector organisations could both be evaluated on the basis of productive efficiency which emphasises economic performance and financial performance.

It is argued in this study that effective Knowledge Management as much as it is associated with the promotion of knowledge-based outcomes directly contributes to operational efficiency and effectiveness for both public and private sector organisations.

The next sub-section provides the empirical basis of a model for knowledge-seeking behaviour that public sector entities could apply.

2.7.2. A model for knowledge-seeking behaviour in public sector entities

Mercer *et al.* (2005:132) argued that in public sector organisations both explicit and tacit knowledge are important for effective Knowledge Management efforts. They indicated that collective explicit knowledge could be encoded in laws and regulations while collective tacit knowledge is always bound in social relationships. It has been demonstrated throughout this chapter that tacit knowledge, because it is rooted in the organisation's social networks is crucial for organisational creativity and innovativeness (these are very strategic knowledge-based outcomes).

Based on the various organisational structures a public sector organisation may assume, Mercer *et al.* developed a model highlighting how public sector organisations can encourage knowledge-seeking behaviour by its people. The model highlights the intensity of knowledge-seeking behaviour as characterised by various organisational (structures) forms public administration may assume. These are:

- Machine bureaucracy
- Professional bureaucracy
- Deliberate democracy
- Polyarchic democratic organisations.

2.7.2.1. Knowledge-seeking behaviour in Machine Bureaucracies

Mercer *et al.* (2005:132) defined machine bureaucracy as characterised by standardised, routines or operating tasks, proliferation of rules and hierarchical management. It is apparent that the machine bureaucracy public organisation is an example of administrative democracy with head office synchronically directing the affairs of the various decentralised agencies. The machine bureaucracy in the public service limits innovation through its exclusionary policies meant to protect agency culture and quell internal criticism.

Mercer *et al.* (ditto) demonstrated that since the machine bureaucracy “is inward-directed” with mechanically administered rules promulgated through legislature and the executive, it could be conducive to explicit knowledge acquisition. Tacit knowledge could not be easily promoted in machine bureaucracies as social networks are not given enough room to flourish.

2.7.2.2. Knowledge-seeking behaviour in Professional Bureaucracies

Mercer *et al.* (2005:131-132) noted that the adoption of professional bureaucracies in the public sector tend to allow individuals a relatively high degree of autonomy and discretion in the application and acquisition of knowledge within their specialist areas. The professional bureaucracy accords some “form of independence so that organisational members excel at problem solving”, but it has some “subtler means of excluding the public based on the presumed superiority of explicit knowledge of experts” (Mercer *et al.*, 2005:132). The professional bureaucracy is also not conducive to tacit knowledge acquisition.

The professional bureaucracy allows sufficient internal autonomy for the critical evaluation of the public agency’s strategies. And as such, professional bureaucracies are outward-looking because they perceive their relationship with citizens as clients for whom they provide service. Owing to their client-focused approach, product satisfaction and cost-efficiency are highly prized in professional bureaucracies.

2.7.2.3. Knowledge-seeking behaviour in Polyarchical public agencies

The polyarchical public agencies are an example of the J-form organisation (based on the Japanese corporate structure). Polyarchical public agencies are structured around durable, centrally coordinated but overlapping problem solving groups. The strategic objective in J-Form organisations is to diffuse both tacit and explicit knowledge by sustaining cooperation and interaction between groups.

As indicated by Mercer *et al.* (2005:132), polyarchical public agencies lead to the development of a network of governmental and non-governmental institutions whereby citizens align with political parties or non-governmental organisations based on shared values. This generally paints the picture of an organisation build around collaboration and negotiation between interest groups leading to promotion of tacit knowledge among groups.

2.7.2.4. Knowledge-seeking behaviour in Deliberate Democratic public agencies

Mercer *et al.* (2005:133) defined democratic public agencies as a form of professional adhocracy. Unlike the J-Form organisation, adhocracies are relatively ephemeral and allow for more autonomy among individuals. Adhocracies rely on liaisons, usually from middle management, to facilitate relationships between independent groups and ensure informal collaboration of experts as a way to solve shared problems. In public agencies adopting the adhocracy organisational model, dialogue between experts and community non-experts lead to more extensive social learning. Mercer *et al.* observed that tacit knowledge acquisition tend to be consistent with the most extensive form of social participation to exchange of ideas, values and life experience. These are key ingredients in deliberate democratic public agencies.

Based on this model, Mercer *et al.* (2005:134) distinguished between outward-directed and inward directed public institutions. According to Mercer *et al.*, outward-directed institutions treat citizens as individual clients who want service while inward-directed institutions are reclusive in that in fulfilling their mission, they may conceal errors from citizens and the policy systems.

The inward-directed institutions are more hierarchical and bureaucratic than outward-directed public institutions. The traditional Machine Bureaucratic organisation is more inward-directed than even the Professional Bureaucracy. On the other hand, the Deliberate Democracy and Polyarchic Democratic organisations are outward-directed. These organisational forms denote the various frameworks a public agency can assume in order to promote knowledge-based outcomes.

Mercer *et al.* (2005:136-137) used the model explained above to analyse the knowledge-seeking behaviour at the US Department of Energy's Office of Environmental Management (DOM/EM). They observed the following knowledge-seeking behaviour at DOE/EM linked to the organisational structure adopted:

- DOE/EM has changed its organisational structure drastically over the years to make it more polyarchical
- EM headquarters sets general policy to guide how the organisation conducts its business but sites make most operational decisions, negotiated among their polyarchy of state regulators and stakeholders
- EM is enmeshed in local web of relationships promoting tacit knowledge acquisition
- Since knowledge approaches at DOE/EM are reactive to its political environment, the agency consult consistently with other agencies, stakeholders and communities
- DOE/EM has also developed well elaborated internal communicative processes
- The agency has an appointed Chief Information Officer (CIO) tasked with managing telecommunications and data retrieval.

It is interesting to note that empirical evidence demonstrates that the power of Knowledge Management initiatives in unleashing knowledge-based outcomes is not just the sole domain of private sector organisations. Mercer *et al.* (2005:144) aptly indicated that the purpose of Knowledge Management in public administration was to support social goals and provide public benefits by making public sector employees and institutions work smarter and thereby increase the quality of life for citizens. The DOE/EM has proven to be a good case for Knowledge Management in public sector organisations. It is, therefore, interesting to note that Knowledge Management is not just a private sector affair.

The benefits of implementing Knowledge Management initiatives have been observed in both public and private sector entities as reflected by empirical cases cited in this chapter. The next section summarises these benefits so as to provide a clear conceptual map to the present study.

2.8. KNOWLEDGE MANAGEMENT BENEFITS

Knowledge Management has been proven to benefit both public agencies and private sector entities as highlighted in the preceding sections of this study. The basic goal of Knowledge Management is a “simultaneous improvement of productivity and competitiveness that can provide a sustainable competitive advantage difficult by competitors and place the firm in a position of leadership within its sector” (Claver-Cortés *et al.*, 2007:46).

Organisations which concentrate efforts towards KM efforts have been found to enjoy certain benefits which are not enjoyed by their counterparts who are not applying KM practices. Nonaka’s idea of a knowledge-creation company is a good case example. Nonaka argued that in a knowledge-creation company the benefits accrued from an implementation of KM are rooted in the ability by the company to:

... re-create the company and everyone in it in a non-stop process of personal and organisational self-renewal (1991:97).

This is also supported by Drucker (1991:79) who insisted that a knowledge strategy would ensure that continuous learning and teaching are built into the people’s jobs in order to make the job holder and the organisation productive. Shariq’s (1997:75) bold prediction that the “future” success of modern organisations will be determined by their people’s ability to wisely use knowledge appropriately demonstrates that knowledge work and its productive value is at the centre of KM.

Rademakers (2005:130) indicated that due to its reliance on an informed and knowledgeable workforce, the “knowledge driven economy is synonymous” with higher productivity. This has also been fully reflected in the discussion of the link between KM and productivity as has been seen earlier.

In line with KM benefits observed in various knowledge-based entities (as reflected through empirical studies reviewed earlier in this chapter), Metaxiotis *et al.* (2005:9) summarised the benefits resulting from Knowledge Management efforts as follows:

- Knowledge Management fuels innovation
- Increased organisation learning
- Up to date information
- Effective operational systems
- Increased operational efficiency
- Improved decision-making
- Improved quality
- Improved intellectual asset management
- Improved productivity of knowledge workers
- Personal and organisational self-renewal characterised by innovation and creativity.

These benefits have been reflected in the various empirical cases cited throughout this chapter. It is the assumption of this study that in those organisations where Knowledge Management initiatives are applied these knowledge-based outcomes (KM benefits) are realisable.

2.9. THE THEORETICAL AND EMPIRICAL GAPS

The available theoretical basis as well as empirical evidence gathered in this chapter is dominated by examples from the more affluent regions of the world. Many of the companies cited in this study have origins in the USA, Japan and most of the developed Western countries. Cases of KM in the developing countries reflect organisations from the urban areas. This has also been recognised by Ikoja-Odongo (KM in Africa) that KM is limited to modern institutions mostly in urban areas. The context that led to organisations from these areas adopting the Knowledge Management approaches they have so inclined to adopt are not the same with those in the rural areas of a developing country such as South Africa. KM scholars have warned of the uncritical use of Western management theories in developing countries.

Though there is still confusion by some in approaching information management tools as if they were Knowledge Management practices, clarifying the boundary between IT and KM has been the focus of many studies (Metaxiotis *et al.*, 2005:13; Coakes, 2006:581; Arambaru & Saénz, 2007:74; Lamproulis, 2007:39, and Kruger & Johnson, 2010:57). It is, therefore, apparent that further empirical studies need to be conducted in order to fill the following theoretical and empirical gaps:

- Most studies focus on empirical cases of KM practices of organisations from the developed regions of the world while neglecting the resource constrained organisations in developing regions
- There is a need to achieve an effective balance between a focus on tacit knowledge and IT implementation (Kalkan, 2008:397)
- This is further related to the confusion ranging between information and Knowledge Management. Not developing a working definition of knowledge is a critical error contributing to failures in the KM processes (Kalkan, 2008:396)
- Though a lot has been written about KM in South African organisations, there is a lack of empirical studies reflecting organisations operating in the rural areas
- While some studies have focused on KM in public administration, there is a lack of cases reflecting KM practices of public sector organisations in rural areas.

Since it has been established in KM literature that KM deserves a holistic approach involving both ICTs and social factors, this research is aimed at entering the KM debate from the context of public and private sector entities operating in the rural areas of South Africa. As argued earlier in the rationale for this study, the rural areas of South Africa (Limpopo Province) provide a viable context for testing a holistic approach to KM. It is assumed that as a result of limited ICT connectivity, organisations operating in rural areas of South Africa cannot apply a purely technologically-driven KM initiative. Therefore, other factors which drive KM should also be taken into consideration. The various factors which are critical to the success of KM have been investigated as part of the literature review in order to fully understand KM.

Arising from the detailed literature review presented in this chapter, five factors have been identified as imperative for KM success. These are: IT, knowledge-oriented organisational structures, organisational culture, HR and Leadership support. For the purposes of this research, these factors are grouped in terms of ICTs and social factors.

2.10. THE RESEARCH HYPOTHESES

The two research questions as stated in chapter 1 are influenced by a desire to determine whether the rural areas context in South Africa would yield the same empirical results in terms of the role of ICTs and social factors in KM as observed in other parts of the world. Matzkin (2008:147) has argued that KM is not only restricted to the innovative and highly technological entities but:

Some organisational contexts specific to third world countries characterised by lack of innovation, human capital, and financial resources could profitably apply some Knowledge Management practices to fulfill their objectives, or at least try to reach them.

In line with this statement, the present researcher decided to address the underlying research questions by undertaking an investigation of the KM activities in both public and private sector entities in three research industries (health, education and business loans) in Limpopo Province. Noting that there is overwhelming evidence in KM literature that effective KM demands a holistic approach, the researcher adopted a holistic approach to KM in order to understand KM implementation in both public and private sector organisations operating in the rural areas of South Africa. The holistic approach to KM is already established in KM literature considering the work of the following scholars:

- The sociotechnical approach to KM at Buckman Laboratories: Pan and Scarbrough (1998:55-66)
- The KM success factors at the Malaysian telecommunications sector: Chong (2006:233) and Chong *et al.* (2009:78)
- The four critical success factors of KM observed by Heisig (2009:11) in 160 KM frameworks.

In line with the research problem identified in chapter 1, the researcher decided to pursue an investigation of KM in public and private sector entities in Limpopo Province guided by four research hypotheses. These hypotheses are guided by the observations in terms of KM implementation as established in KM literature covered in this chapter. Hypotheses 1 and 4 relate to the first research question: to what extent are public and private sector entities operating in rural areas of South Africa using ICTs and social factors for information and knowledge sharing?

Hypotheses 2 and 3 are meant to tentatively answer the second research question: what is the extent of KM implementation between public and private sector entities in rural areas of South Africa?

Though extensive application of ICTs could facilitate information and knowledge sharing, it has been established from KM literature that the degree of achievement of knowledge-based outcomes as well as tacit knowledge acquisition are reliable indicators to measure the extent of KM implementation (Pretorius & Steyn, 2005:41-42, and Coakes, 2006:589). Social factors (namely; organisational culture, structures, HR and leadership) are credited for creating the right atmosphere for KM implementation (Lamproulis, 2007:4, and Chong *et al.*, 2009:72). Effective KM implementation is a function of ICTs and knowledge-oriented social factors (Bishop *et al.*, 2008:19-20). Based on the supporting literature, the four hypotheses are discussed below:

- i. ICTs enable sharing of knowledge and information on a large scale

As observed in various empirical cases, IT is viewed as a key enabler of knowledge and information sharing across time and distances. Insufficient ICTs have been found to lead to problems in supporting KM beyond the organisational border (Coakes, 2006:591). The researcher is thus interested in understanding the extent of ICT application for knowledge and information sharing between public and private sector entities in the research entities as guided by the following hypothesis:

H1. The extent of ICT application for information and knowledge sharing does not significantly differ between public and private sector entities in the three research industries.

- ii. The achievement of KM benefits depends on knowledge-seeking behaviour not ICTs

Whether high technological or low technological in terms of ICT application, organisations have continued to enjoy some form of benefits arising from KM implementation (Hansen *et al.*, 1999: 109-112, and Call, 2005:27). Wiig (as captured earlier in this chapter), insisted that KM was imperative in both public and private sector entities. As recognised in empirical studies of KM in the various regions of the world, scholars agree that the achievement of KM benefits depends on the intensity of knowledge seeking-behaviour within an entity. Hypothesis 2 is meant to test the degree of achievement of knowledge-based outcomes in public and private sector entities in the three research industries as follows:

H2. The degree of achievement of knowledge-based outcomes does not significantly differ between public and private sector entities in the three research industries.

- iii. Knowledge has been found to be primarily tacit

ICTs do not substitute face-to-face interaction of staff but expand it (Lamproulis, 2007:40, and Aramburu & Sàenz, 2007:770). Nonaka and Takeuchi (as reflected earlier in this chapter) aptly defined knowledge as primarily tacit and suggested that effective KM could be described in terms of tacit knowledge acquisition. They argued that the best way of acquiring tacit knowledge was through direct experience. Holste and Fields (2010:135) found in a recent study conducted in an international not-for profit organisation that “personal relationships most likely developed through face-to-face interactions and solid respect for another worker’s professional capability is required for the sharing of tacit knowledge”. They were adamant that ICTs were more suited to the storage and sharing of explicit knowledge. Having established from KM literature that knowledge is primarily tacit, the researcher decided to test the degree of tacit knowledge acquisition between public and private sector entities in the three research industries guided by hypothesis 3 as follows:

H3. The degree of tacit knowledge acquisition does not significantly differ between public and private sector entities in the three industries.

iv. KM is more about social aspects than ICTs

Though ICTs are an integral part of KM, there are “more” to social factors for KM to succeed (Pan & Scarbrough, 1998:64; Hansen *et al.*, 1999:112; Sharma *et al.*, 2007:43, and Kruger & Johnson, 2010:65). All these scholars are adamant that effective KM demands a holistic approach rooted in ICTs and social factors. KM scholars concur that IT on its own is insufficient for KM. Therefore, H1 and H4 are closely related. Apart from IT, four main social factors (organisational culture, structures, HR practices and leadership) dominate major frameworks on KM. While these social factors have been found to prevail in empirical cases in various regions of the world, there is no other study that captured the degree to which organisations in rural areas of South Africa apply these factors to enhance knowledge acquisition and sharing. Hypothesis 4 is meant to reflect on the above and is captured as follows:

H4. The degree of knowledge-oriented social variables (organisational culture, structures, HR practices and leadership) does not significantly differ between public and private sector entities in the three research industries.

The four hypotheses emanated from the realisation that there was no conclusive evidence on whether public and public sector entities apply KM similarly. It has been observed in empirical studies from the USA and Malaysia that there were no differences in KM implementation between public and private sector entities in these countries. But a study conducted by Kruger and Johnson (2010:64) in nine industries from one of the major urban areas of South Africa found that government entities lagged far behind private sector entities in terms of KM maturity.

That there are significant differences in KM implementation between public and private sector entities has also been observed by Matzkin (2008:155) in a study of three SDOs in Peru. Matzkin found that government entities had better IT connectivity than not-for profit (NPOs) and profit organisations, while NPOs and profit organisations were found to have a knowledge-friendly climate as compared to the restrictive political nature of decision making in government entities where employees’ suggestions were not encouraged. Matzkin’s study was conducted in an environment not quite different from that of the rural areas of South Africa.

2.11. SUMMARY

That the classical writers have laid the foundation to an understanding of the value of knowledge is without doubt. But it was Drucker and Nonaka who brought this understanding to the management of modern entities. Hence, organisations in various countries throughout the globe have continuously implemented measures catapulting their countries into Drucker's post-capitalist society. The knowledge-based organisations have become the real symbolism of a country's status as a post-capitalist society.

The empirical cases cited in this chapter demonstrate that the post-capitalist society has remained a 'super' league of organisations from the rich regions of the world. The organisations from the poorer regions of the world remain on the outskirts of this league. Drucker has appropriately reasoned that the country that will be able to increase the productivity of its knowledge workers will "dominate the twenty-first century economically". No wonder the USA and its conglomerate of multinational companies are dominating world markets.

The empirical cases highlighted throughout this chapter have assisted the researcher to pinpoint the major gaps in the field of KM. Arising from the research gaps, and supported by an extensive literature review, the four hypotheses which guide the present study have been identified. Owing to the realisation that the less developed regions of the world, particularly in rural areas, are facing serious resource constraints which could impede KM implementation, the present investigation was undertaken with a view to provide empirical evidence in order to demonstrate that organisations operating in these areas could still successfully implement KM by adopting the holistic approach to KM. The study focussed on the extent of application of ICTs and knowledge-oriented social factors for information and knowledge sharing by the research entities. The next chapter explains the research approach adopted for the study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

The previous chapter led to the identification of the factors contributing to successful KM implementation. Based on the four research hypotheses as highlighted in the previous chapter, this study is aimed at investigating the extent of KM implementation between public and private sector entities in the three research industries of Limpopo Province.

Having established the theoretical framework upon which this study is based, the researcher hereby provides the research design process encompassing the measurement instruments, the steps followed in data collection and the methods of data analysis. For the purposes of gathering a comprehensive data set, the study was approached as a comparative study of Knowledge Management practices between public and private sector organisations in Limpopo Province, Republic of South Africa. Based on empirical cases as highlighted in the previous chapter, this study assumes the view that adopting a holistic approach to KM could lead to a deeper understanding of KM in organisations of the rural areas of South Africa.

3.2. RESEARCH APPROACH

This research follows the positivist-interpretive paradigm. Positivists approach research analyses in laws or law-like generalisations (Cohen, Manion & Morison, 2000:8). This then necessitated the formulation of the research hypotheses to guide the investigation. But as observed by Cohen *et al.* (2000:9) that human nature is an immensely complex social phenomenon, laws (hypotheses) cannot fully explain the quality of social phenomenon. The two research questions as highlighted in chapter 1 clearly reflect the need for the infusion of the positivist and interpretive perspectives.

The first research question could be answered through a quantitative study, but the second research question really demanded both the quantitative and qualitative approaches. Since the second research question aimed at the need to understand KM implementation between public and private sector entities in the research entities, an in-depth investigation was imperative. This then called for the interpretive perspective in this research. According to interpretive researchers, theory is emergent and must arise from the “particular situations” (Cohen *et al.*, 2000:23). Interpretivism holds that the world is socially constructed and subjective (Gray, 2009:23). This implying that the interpretive researchers work directly with experience and data produced “will be glossed with the meanings and purposes” of those people who are the source. The research approach adopted in this study could be comprehensively reflected in terms of figure 3.1 below:

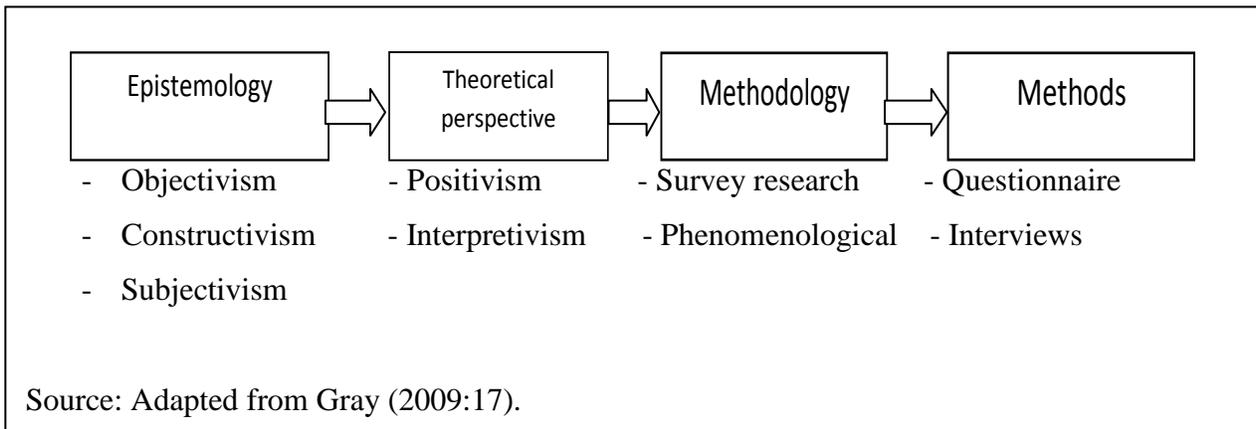


Figure 3.1: Relationship between epistemology, theoretical perspective, methodology and methods adopted for the study

The research approach adopted in this study was influenced by a need to use both the quantitative and qualitative data collection methods in order to tap on the advantages of both methods. Based on the key features of the positivist-interpretive paradigm, a summary of the main aspects of the research approach adopted in this study is presented in table 3.1 below:

Table 3.1: The main aspects of the research approach adopted in the study

Positivist perspective	Research approach	Interpretive perspective	Research approach
Medium/large scale research	Survey questionnaire completed by identified knowledge workers in the three research industries	Small-scale research	Interviews conducted with a member of senior management in each of the research entities
Statistical	Used descriptive and inferential statistics to test the four research hypotheses	Non-statistical	Used qualitative modes of data analysis
Objectivity	<i>Cronbach's alpha</i> coefficient used to test the reliability of the survey questionnaire as a research instrument	Subjectivity	Researcher relied on his own understanding of verbal and non-verbal cues as the interviews proceeded
Seeking causes	Multi-regression analysis applied to understand link between knowledge-based outcomes and use of ICTs and knowledge-oriented social factors	Understanding actions rather than causes	Probing during the interviews how certain aspects pertaining to KM were addressed by management
Technical interest	Presentation of research statistics in the form of tables, charts and graphs	Practical interest	Researcher probed during the interviews in order to understand how the research entities implemented KM

3.3. RESEARCH DESIGN

Since the study aimed at investigating Knowledge Management practices of public and private sector organisations in three research industries of Limpopo Province, this task required a clear research design framework. Babbie, Mouton, Vorster and Prozesky (2006:72) defined a research design as a detailed plan about what needs to be observed and analysed, why and how. The ‘what’ part of the research design has already been captured in the section on the ‘objectives of the study’. In this section the most important aspects of the research design to be discussed are the ‘why’ and ‘how’ elements.

Owing to the fact that there has not been any similar study observed in South Africa, the researcher realised that in order to arrive at a deeper understanding of KM in the research area, a combination of both quantitative and qualitative research techniques into a mixed research design approach was imperative. This was done considering the argument by Maree (2007:261) that combining qualitative and quantitative research methods allows for a more complete analysis of the research situation.

Since the study was guided by the holistic model to KM, the researcher observed that this could best be tested through a survey, but it was also noted that the survey might not reflect the underlying factors which prevailed in the research area. The researcher decided to include a qualitative research approach in the form of interviews in order to capture other KM issues which the survey questionnaire would fail to capture.

3.4. LIMITATIONS OF THE RESEARCH DESIGN

While the use of the quantitative-qualitative design paradigm presented many benefits for this study, there were also associated problems that the researcher was prepared to address before embarking on the challenging task of data collection. The benefits associated with the mixed research design system adopted for this study included gaining both the advantages of a controlled as well as a natural research setting. This allowed the researcher to move from the deductive to the inductive modes of data analysis.

The other key important benefit offered by the application of the quantitative-qualitative paradigm was the issue of triangulation. According to Babbie *et al.* (2006:275), triangulation is the use of multiple methods where the researcher combines different methods and investigations in the same study, this allowing the observers to partially overcome the deficiencies that flow from one research design method. In spite of these benefits, there were limitations posed by combining the two research designs in one study.

A researcher employing the quantitative-qualitative research design paradigm faces the mammoth task of collecting and analysing data by different instruments (namely, questionnaires and the interview guide). The mixed research approaches adopted for this study led to an extended period of data collection. Data were collected from January 2009 to the middle of September 2009. This also compounded the process of data analysis. The quantitative methods of data analysis were followed by qualitative data analysis methods during the data analysis phase of the study. In spite of all the challenges, the objectives of this study demanded that the quantitative-qualitative research design be implemented. In order to ensure that the results of the study were credible, the researcher decided on a fully comprehensive data collection method and analysis process of the mixed design approach.

3.5. PARTICIPANTS AND TARGET POPULATION

This research focussed on three research industries in Limpopo Province. The industries are health, education and the business loans. These industries were selected to participate in the study due to the fact that their key personnel are professionals (knowledge workers). The target population in the health industry were all public and private sector hospitals operating in Limpopo Province. Since there were 44 public hospitals in the province, sampling procedures were done to select a sample of eight hospitals. An internet search for the private sector hospitals revealed three hospitals operating in the province. All the three hospitals were initially included in the study but only two actually participated in the research. The professionals targeted for the quantitative investigation were the professional nurses. In order to arrive at an in-depth investigation of KM implementation in the research entities, the CEO/hospital managers were identified for the qualitative study.

In the education industry, the public sector entity selected for the study was the sole provider of public education in the province. Curriculum Advisors (the key knowledge workers in the entity) were targeted to participate in the quantitative study. There were 450 Curriculum Advisors distributed throughout the five education districts in the province. Due to the bureaucratic practices in government institutions, permission was granted by top management to interview one Middle Manager who supervised the Curriculum Advisors. After a rigorous search using the Internet, a number of private sector education entities were identified. Most of these were schools. But in order to enjoy the benefits of a comparative analysis of KM between public and private sector entities, the targeted private education entities were expected to employ a sizeable number of professionals performing similar duties to those of the Curriculum Advisors in the public sector. Only one such entity was found. The Managing Director of this entity was therefore, identified to participate in the interview process.

The business loans industry in Limpopo Province is dominated by banks. But none of these were prepared to participate in the study. Only two business loans entities operated in the government sector. Both were targeted to participate in the research. But one of these withdrew from the study after the questionnaires were sent to the identified respondents (Loan Officers). Therefore, only one government owned business loans entity actually participated in the study. The entity operates mainly in the rural areas of South Africa in all the nine provinces. The Area Manager for Limpopo Province participated in the interview process.

Apart from the major banks, there was only one major not-for-profit business loans entity that operated in the province. The entity also operated in other rural provinces (Eastern Cape and Mpumalanga) of South Africa. This entity qualified for inclusion in the study because it employed Developmental Financiers whose duties corresponded with those of Loan Officers in the public sector entity. The entity had 250 Developmental Officers spread in the various regions of Limpopo Province. All these were included in the quantitative investigation. After the process of requesting permission to conduct the study was concluded, the Corporate Services Manager was delegated by senior management of the entity to participate in the interview process.

3.6. SAMPLING TECHNIQUES

It has already been highlighted in chapter 1 that the study is aimed at presenting a comparative analysis of KM practices of public and private sector entities from three industries in Limpopo Province. Since there are many public as well as private sector entities in the three research industries, it was imperative to select particular entities upon which the respondents for the study would be drawn. Babbie *et al.* (2006:164) referred to the process of selecting respondents for a research study as sampling. The sampling approach in this study has been heavily purposive with some elements of random sampling. In this respect, non-probability sampling methods were complemented by probability sampling techniques where necessary.

Maree (2007:178) defined purposive sampling as a sampling method used in special situations where the sampling is done with a specific purpose in mind. The purposive sampling techniques adopted in this study were not necessarily convenient sampling methods which are generally criticised for sampling bias. According to Maree (2007:177), convenient sampling methods are applied “when the population elements are selected based on the fact that they are easily and conveniently available”. In this study sampling was not influenced by the convenience of accessing the study elements (respondents), but was influenced by the relevance of the study elements in terms of the research objectives.

Thus, purposive sampling was favoured in this study as it allowed for variation and enabled particular choices to be made relative to a particular research situation (White, 2000:65). Due to the nature of each individual sector, the sampling techniques were selected based on the size of each of the research industries:

3.6.1. Sampling for the public sector

A combination of probability and purposive sampling was used to draw the sampled entities for the public sector from the three research industries as indicated in table 3.2 below:

Table 3.2: Sampled public sector entities

Industry	Respondents	Sample
1. Health	Professional nurses	Eight government hospitals sampled to represent the government health sector
2. Education	Curriculum advisors	Respondents drawn from all the five government education districts
3. Business loans	Loan officers (developmental financiers)	A government owned business entity

The respondents identified in table 3.2 are the key knowledge workers in the research industries. In the three research industries, the supervisors or senior managers of these entities participated in the interview session with the researcher while the identified respondents (as knowledge workers) completed a survey questionnaire. The interviews were conducted with members of the management team so as to validate the research data provided by the knowledge workers and enhance the depth of the findings. In sampling these entities, the following sampling procedures were done:

i. Public sector health industry

The public sector health entities were sampled based on the following probability sampling procedures:

- Step 1: the researcher decided on a sample of eight hospitals.
- Step 2: an alphabetic list of all the public hospitals in the province was compiled bringing the total to 44 hospitals. The sampling interval was calculated as 44 divided by 8 (5.5). Then it was converted to 6, meaning that every sixth hospital was drawn into the sample
- Step 3: the researcher decided on the starting point for the sample by picking a hospital on the list. The first hospital selected was given the code GH 1 (Government Hospital 1) and the last GH 8 (Government Hospital 8).

The targeted respondents for the survey process were the professional nurses working in each of the sampled public sector hospital. Owing to the tight work programme of the professional nurses, the researcher decided to focus on a total number of 20 professional nurses for the completion of the research questionnaire in each hospital.

ii. Public sector education

Considering the nature of the public sector education industry in the province, the researcher decided to include all curriculum advisors from the five government education districts into the sample. There were almost 450 curriculum advisors working in the five education districts of Limpopo Province. The education districts are organised in terms of the five districts of Limpopo Province as indicated in the map of the province (Appendix C). The survey questionnaires were sent to all the five education districts. All the 450 curriculum advisors were targeted for the survey process.

iii. Public sector business loans

The sample for the public sector business loans entity (a Limpopo Province government owned business) was drawn after identifying all the government owned business loans entities in the province. The researcher realised that two major government owned business loans entities operated in the province. Both were drawn into the sample. But upon commencement of the study, one of these two withdrew from participation. Therefore, the actual sample for the public sector business loans entity was based on one entity. This entity had 25 loan officers working in its two regional offices in the province. These officers were targeted for the completion of the survey questionnaires.

3.6.2. Sampling for the private sector

Private sector entities corresponding to the three research industries were purposively selected as research samples. The private sector in Limpopo Province was found to be very small as compared to the public sector. In order to provide for entities performing similar functions to those from the public sector, the researcher decided to include the available private sector entities in the three industries as follows:

Table 3.3: Sampled private sector entities

Industry	Respondents	Sample
1. Health	Professional nurses	Respondents drawn from two private hospitals
2. Education	Training officers	One private sector (Not-for-Profit) entity in teacher development
3. Business loans	Loan officers/Developmental financiers (DFs)	One private sector (Not-for-Profit) entity in developmental finance

These entities were drawn into the sample as follows:

i. Private sector health industry

The private sector health entities were chosen to correspond with those from the public sector. The researcher was interested in the private sector hospitals operating in the province. An investigation of the private hospitals landscape in Limpopo Province revealed just three hospitals under the same hospital group. The researcher earmarked all the three for the sample but after contacting each of the three, it was found that only two had a sizeable number of professional nurses of between 20 and 55. The other had a staff complement of just 12 respondents.

Having considered that some respondents might fail to return the questionnaires, the researcher decided to exclude this entity. Therefore, the sample for the private sector health entities consisted of respondents drawn from two private hospitals in the province.

ii. Private sector education industry

An investigation of the private sector education entities that would correspond with those from the public sector revealed very small entities of two, three and four staff. The researcher decided to ignore these for the purposes of this study. But one major NGO entity operating in the teacher development arena (the total staff complement was 25) was drawn as the sample for this study.

iii. Private sector business loans industry

Noting the unwillingness by commercial bank managers to participate in the study, the researcher decided on an NGO entity operating in the business loans industry. The entity had a staff complement of more than 250 employees.

3.7. DATA COLLECTION

Owing to the nature of the research design adopted for this study, both quantitative and qualitative data collection methods became imperative. A structured survey questionnaire was used for collecting data from the identified professionals in the sampled organisations while interviews were conducted with management of these entities.

3.7.1. The rationale for mixed methods of data collection

The use of both the quantitative and qualitative data collecting instruments allowed the researcher an opportunity to compare and substantiate the research findings. In line with this, a method of triangulating the research data was possible.

It should be noted that triangulation by multiple data collection methods provides for substantiation of constructs and ensures validity of the research results (Eisenhardt, 1989:538). Due to the use of mixed methods of data collection in this research, the researcher wanted to increase the validity of the research findings by reducing bias, thereby bringing some objectivity to the research (Cohen *et al*, 2000:112). The strength of the mixed methods of data collection adopted in this study lies in the fact that the survey questionnaires and interviews are contrasting measuring instruments and as such they tend to complement each other's weaknesses. The use of multiple methods where the researcher combines different methods and investigations in the same study overcomes the deficiencies that flow from one research design method (Babbie *et al.*, 2006:275).

3.7.2. Design of the data collecting instruments

The data collecting instruments (survey questionnaire and interview guide) were designed after a thorough literature review. The literature review led to the identification of the elements (research constructs, sub-construct and items) that possibly constitute the research variables.

3.7.2.1. Design framework and components of the questionnaire used

The survey questionnaire was designed based on a framework that has been established from the literature in chapter 2. The framework is linked to the four research hypotheses as follows:

- Application of ICT for information and knowledge sharing: testing hypothesis 1
- Effective achievement of knowledge-based outcomes: testing hypothesis 2
- Tacit knowledge acquisition: testing hypothesis 3
- Knowledge-oriented social variables: testing hypothesis 4.

3.7.2.1.1. Application of ICTs for information and knowledge sharing

Information technology (ICT) is viewed as a key tool in enabling the sharing of knowledge in modern organisations (Sieloff, 1999:51; Junnarkar & Brown, 1997:144, and Nonaka & Takeuchi, 1995:96). The role of technology in KM has also been emphasised by various knowledge scholars such as Coakes (2006:580), Hansen *et al.* (1999:107), and Pretorius and Steyn (2005:46). Hypothesis 1 is aimed at determining whether both public and private sector entities operating in the rural areas of South Africa face similar ICT constraints as observed by researchers in other parts of Africa. In line with hypothesis 1, the researcher identified nine ICT tools in order to test the extent of ICT application for information and knowledge sharing in both public and private sector entities in the three research industries. The nine tools are:

- Telephones
- Company cellphones
- Personal cellphones
- Office desk-top computers
- Company laptops
- E-mail
- Intranet
- Internet
- Video conferencing.

These tools have been observed in KM frameworks of entities from both the developed and developing regions as highlighted in various empirical cases cited in chapter 2.

3.7.2.1.2. Effective achievement of knowledge-based outcomes

It has been established in the literature that the effectiveness and productivity of organisations depend on the intelligent behaviour by the organisation's people (Wiig, 2002:230). Most firms which effectively achieve knowledge-based outcomes have been found to enjoy superior competitive advantage within their industries. It has also been demonstrated that effective Knowledge Management is reflected in the promotion of knowledge-based outcomes. In order to investigate the real nature of KM implementation in the research entities, the product of KM (KM benefits) should be assessed. In line with hypothesis 2, the researcher wanted to determine whether public and private sector entities in the three research industries did indeed achieve KM benefits through their application of ICTs and knowledge-oriented social factors.

The present study focused on investigating the degree of achievement of knowledge-based outcomes in both public and private sector entities operating in three research industries of Limpopo Province. The researcher was also interested in tracing the practices that could lead to the achievement of KM benefits in the research entities. These were addressed through the interview process. Based on the contributions of various researchers (namely: Pan & Scarbrough, 1998:62; Grant, 1996:112; Chase, 1997:41; Paloniemi, 2006:447-448; Arambaru & Sáenz, 2007:73-74; Johnson, 2007:134, and Metaxiotis *et al.* 2007:7), specific outcomes are associated with organisations that concentrate efforts on Knowledge Management initiatives. These are:

- Improved employee skill and competence
- A knowledge enterprising organisational culture characterised by innovation and creativity
- Continuous learning and teaching built into the job
- Productive use of knowledge throughout the organisation leading to increased productivity.

The effectiveness of Knowledge Management efforts is viewed in terms of the achievement of these knowledge-based outcomes. Section C of the survey questionnaire reflects these outcomes.

3.7.2.1.3. Tacit knowledge acquisition

It has been highlighted in chapter 2 that the socio-technical approach to Knowledge Management demands that the human as well as the technical variables should be given due emphasis. KM scholars (as cited in chapter 2) agreed that IT should be viewed as an enabler to KM, this implying that KM is not just about information dissemination but about the ability of information users to digest and use information more effectively. In line with the above, Nonaka and Takeuchi's (1995:8-9) argument that knowledge is primarily tacit is much relevant. While Nonaka and Takeuchi emphasised that tacit knowledge could not be taught, they conceded that it could be acquired (learnt) through direct experience.

However, Cantū *et al.* (2009:245) argued that tacit knowledge could not simply be codified, it could be “taught” whereby employees imitate or emulate others' behaviour through face-to-face communication and co-practice. It should be noted that since face-to-face interaction is the primary method of transferring tacit knowledge, some transfer methods should be formal (training events and conferences) while others should be informal like everyday employee interactions (Holste & Fields, 2010:130). The present researcher agrees that practices enhancing tacit knowledge acquisition should be rooted in KM initiatives encouraging people-to-people interaction. As highlighted by KM scholars, the KM related practices enhancing tacit knowledge acquisition should entail:

- People-to-people interactions
- A learning-oriented approach to knowledge in the form of training programmes
- People being regarded as a strategic resource while IT is a supporting infrastructure
- Investments on information infrastructure being balanced with investments on good people management initiatives.

ICTs only play a role in knowledge transfer once tacit knowledge is converted into explicit knowledge (Holste & Fields, 2010:129). Arising from the above, the research variables highlighted in section D of the survey questionnaire were developed to test the extent of tacit knowledge acquisition between public and private sector entities in the three research industries.

3.7.2.1.4. Knowledge-oriented social variables

The holistic approach to KM originates from the belief that KM is not only an IT challenge. This has been argued extensively by Coakes (2006:591) and Lamproulis (2007:40). It has been suggested that social variables play a key role in ensuring that a knowledge-intensive organisation achieves knowledge-based outcomes (Arambaru & Sàenz, 2007:72). The study on KM is not only an investigation of the extent of IT application in an entity, but also the degree to which social factors are knowledge-oriented so as to enhance effective KM.

Arising from the various empirical cases, namely Mertins *et al.*'s (2001:4) study on Knowledge Management practices of German TOP 1000 and Europe 200 companies and KM practices in the Malaysian telecommunications sector by Chong (2006:233) and Chong *et al.* (2009:77-79), the present researcher has identified four critical social factors imperative for the success of KM as follows:

- Knowledge-oriented organisational culture
- Knowledge-oriented organisational structures
- Knowledge-oriented HR practices
- Knowledge-oriented leadership styles.

These factors constitute the variables aimed at testing hypothesis 4. These are presented in section E of the survey questionnaire. The link between KM and the four factors is discussed below:

i. Knowledge-oriented organisational culture

The contribution of authors such as Mertins *et al.* (2001), Nonaka and Takeuchi (1995), Chase (1997), and Kalkan (2008) led to the identification of fifteen (15) key indicators that denote a knowledge-oriented organisational culture. These indicators are grouped under three categories as follows:

The philosophy and vision of the organisation

- Organisation value and encourage knowledge creation and sharing
- Openness, mutual trust and tolerance for making learning mistakes
- Reusability of ideas is promoted
- Highly innovative spirit and spirit of cooperation with more friendly and humane atmosphere.

The management style

- Emphasis on responsibilities and assignments than titles and positions
- Lean hierarchies removing barriers to communication
- Management developing confidence and trust in each employee
- Cross-functional teams and participative management style.

Physical structures

- Highly simplified office layout/open plan offices with building infrastructure creating an atmosphere of welcome
- Sharing of basic facilities between management and employees
- Offices create inviting and communicative atmosphere
- Manager's office is accessible.

ii. Knowledge-oriented organisational structures

The empirical work carried out by Claver-Cortés *et al.* (2007) on organisational structure features which supported the development of Knowledge Management processes laid a solid foundation in describing knowledge-oriented organisational structures. Together with the contribution by Nonaka and Takeuchi (1995:166), and Kalkan (2008:395), this led to the identification of fifteen indicators for knowledge-oriented organisational structures. These indicators are grouped under three main categories as follows:

Hierarchies

- Less-hierarchical, increasingly organic and flexible structures
- Mostly horizontal structures composed of multi-teams coupled with less bureaucracy
- Interdepartmental and inter-division groups
- Middle managers taking important decisions and providing enough operational guidance to employees.

Work design structures

- Work groups and project-based teams
- High degree of empowerment
- Multidisciplinary work teams and work subcommittees
- Collective learning involving supervisors and their subordinates.

Information flow

- Increased communication and relationship between supervisors and their subordinates
- Top down, horizontal and bottom up information flow
- Widespread communication across departmental levels
- High degree of collaboration where teams and collaboration are encouraged.

iii. Knowledge-oriented human resource (HR) practices

The ability of HR practices to promote positive learning attitudes by employees has already been identified through the research work conducted by Jaw and Liu (2004:230) as reflected in chapter 2. The conceptual framework used in Jaw and Liu's study is adapted for this study and is reinforced with the contribution of other scholars such as Mertins *et al.* (2001:5-6) and Kalkan (2008:395) who elaborated on the link between personnel management and Knowledge Management. There are twenty indicators in the survey questionnaire for knowledge-oriented human resource management practices as detailed below:

Empowerment

- Job content can vary frequently
- Employee can decide how to do the job
- Job allows the exploitation of employee capabilities
- Independence and freedom is built into the job.

Performance emphasis

- Employees feel some pressure to achieve performance goals
- Deadlines are strictly adhered to
- The jobs have performance indicators
- There are incentives for meeting and exceeding performance goals.

Supporting benefits programme

- There are flexible benefit options for employees
- Benefits meet the needs of employees
- Company encourages and supports employee social clubs, trips and various competitions
- The benefits package is attractive to employees.

Comprehensive training

- Further education and training programmes are promoted
- Educational qualifications are valued when coming to promotion to higher levels
- The company provides a variety of training programmes
- Company based training programmes are viewed to be productive by employees.

Encouraging commitment

- Employees feel confident that they are not overlooked for promotions
- Employees are allowed to engage in challenging tasks
- Sense of belonging and loyalty to the organisation
- Sense of pride in working for the organisation.

iv. Knowledge-oriented leadership

Literature on knowledge-oriented leadership has not yet provided a clear conceptual framework on the suitable leadership styles needed for effective management of knowledge workers. The work of Nonaka and Takeuchi in Japanese companies has gone a long way in highlighting the important role of both senior management and middle managers in a knowledge-intensive organisation. Furthermore, the Model CKO by Earl and Scott discussed in chapter 2 provides the foundation for an investigation on the leadership style required to promote knowledge-based outcomes.

In line with the social environmentalist-technologist and entrepreneur-consultant roles highlighted in Earl and Scott's Model CKO, there are sixteen indicators describing knowledge-oriented leadership styles developed from the work done by various Knowledge Management scholars as highlighted in chapter 2. These indicators are presented in the survey questionnaire in terms of four knowledge-oriented management roles:

Motivating knowledge workers towards knowledge-based outcomes

- Setting difficult but achievable performance targets which encourage individuals to use their knowledge and expertise
- Creating a learning environment whereby innovation and creativity are encouraged
- Supporting the acquisition and sharing of information and expertise
- Mentoring and coaching employees to achieve performance goals.

Creating atmosphere of safety within the organisation

- Manager creating an atmosphere of trust, transparency and caring within entity
- Ensure good communications between individuals and teams within organisation
- Manager clearly communicates tasks and trusts employees to perform these
- Employees are allowed some form of independent decision making.

Providing for the information and knowledge requirements of organisation

- Management performs and keeps a skills audit of all employees and understands the resource requirements of the organisation
- Employee competence is valued and encouraged in the organisation
- Management understands the systems, processes and developmental needs of the organisation
- Experienced and more knowledgeable employees are recruited in higher levels.

Acting as a creative and innovative knowledge entrepreneur

- By avoiding penalising ideas that do not work
- Putting systems in place to reward knowledge
- Acting as role model for learning and knowledge sharing
- Encouraging cross fertilisation of ideas and acceptance of differing perspectives.

These research constructs and their sub-constructs are fully reflected in the Survey Questionnaire attached as Appendix A in this report. The questionnaire was constructed to include the five constructs emanating from a holistic approach to KM as highlighted in chapter 2. Due to the number of the variables and indicators included in the structured questionnaire, the majority of the items in the questionnaire were constructed and presented in the **four-point Likert scale** response format ranging from **strongly disagree** to **strongly agree**. Babbie *et al.* (2006:233) highlighted the fact that this type of format allows respondents to complete the questionnaire faster.

Furthermore, Babbie *et al.* warned that the Likert response format might foster a response-set where some respondents might answer in a peculiar way, for example indicating ‘disagree’ throughout the questionnaire. To counteract this practice, **Yes** or **No** answer questions are included.

3.7.2.2. Design of the interview guide and reasons for its inclusion

Any criticism that could be attached to the use of structured questionnaires in this research could be rebuffed by the use of interviews as a way of triangulating the data. The interview guide is attached as Appendix B in this research report. The interviews were conducted because the researcher realised the added advantage of gaining a detailed understanding into the underlying issues inherent in knowledge efforts in the research entities (Hening, Van Rensburg & Smith, 2004:5). The interview guide was designed with a purpose of substantiating the findings from the survey questionnaire. The research constructs included in the survey questionnaire were taken as the major themes upon which the interviews were to revolve. This led to the design of a semi-structured interview guide. Semi-structured interviews “tend to work well when the interviewer has already identified a number of aspects he wants to be sure of addressing” (Hancock, 2002:10).

3.7.3. The data collection process

In order to collect data from the sampled entities, the researcher requested permission by writing to the management of these entities. In line with bureaucratic tendencies in government departments, permission to conduct the research in the government entities had to be granted by senior management at head office (Polokwane). This process took between two to three months to finalise. Realising that some entities might be unwilling to participate in the study, the researcher initially identified as many entities as possible from the three research industries.

The survey questionnaire and interview guide were attached to the request letters for permission to conduct the research. After receiving confirmation that the entities had granted permission for the study to commence, the researcher visited the entities to deliver individual survey questionnaires to the identified professional staff and conduct one-on-one interviews with management.

The interviews were conducted with members of the management team so as to compare the interview data with the responses of the knowledge workers collected through the survey questionnaires. In order to gain a more realistic picture of the extent of KM implementation in the research entities, the researcher preferred middle managers in those entities where senior management acceded to such a request. The respondents were given at least a week to complete the survey questionnaires. All survey questionnaires used during the data analysis process were personally collected by the researcher from the research entities. A total of 298 questionnaires were received from the respondents but 10 of these were not properly completed. The response profile for the six research entities is reflected in table 3.4 below

Table 3.4: Total number of respondents per sector

Sector	Number of completed questionnaires	Number of questionnaires sent
1. Health government sector	118	160
2. Health private sector	19	40
3. Education government sector	69	450
4. Education private sector	13	25
5. Business loans government	17	25
6. Business loans private sector	52	250
TOTAL NUMBER OF RESPONDENTS	288	950

3.8. DATA ANALYSIS

In line with the quantitative-qualitative research design paradigm adopted in this study, both quantitative and qualitative data analysis methods were used.

3.8.1. Quantitative data analysis

Data collected using the structured questionnaires were analysed using descriptive statistics methods. Inferential statistics in the form of the Mann-Whitney test were conducted on the research data in order to test the four hypotheses. Babbie *et al.* (2006:459) referred to descriptive statistics a method of presenting data in a manageable form. Quantitative data analysis involves aspects such as “the frequencies of variables, differences between variables, statistical test designed to estimate the significance of the results and the probability that they didn’t occur by chance” (Hancock, 2002:16).

Due to the fact that the data set does not display a normal distribution, non-parametric inferential statistics were used to test the four research hypotheses. The Mann-Whitney test was chosen because it provides far better statistics to compare unequal samples (Bryman & Cramer, 2009:167). Furthermore, since one of the objectives of the study was to compare KM practices between public and private sector entities in Limpopo Province in order to suggest a model for enhancing KM implementation in these entities, this could not be achieved without some form of multiple regression analysis. The multi-regression analysis helped the researcher to find out the degree to which each independent variable (ICTs and social factors) contributed to “successful prediction” about the achievement of knowledge-based outcomes in the research entities (Huck, 2000:587). These are fully presented in chapter 4.

Frequency count distributions and graphical representations of data in the form of tables, histograms and pie-charts are used in this study for the purposes of analysing responses provided through the survey questionnaires. The research data collected through the survey questionnaire was computed using the Statistical Programme for Social Sciences (SPSS) software package.

3.8.2. Qualitative data analysis

In order to manage the process of analysing data collected through interviews, the researcher ensured that the interview transcripts reflected what was exactly said by the interviewees. The researcher noted how the interviewees expressed their feelings and emotions by capturing these in the transcripts through the appropriate writing techniques such as punctuation marks and other techniques (Hancock, 2002:15). The interview transcripts were analysed based on the main research constructs used in the survey questionnaires. The main aim of the interviews was to substantiate the findings from the quantitative research process.

Data collected through the interviews were analysed using the qualitative methods of data analysis. The main modes of qualitative data analysis employed in this study are pattern-matching and explanation-building (Babbie *et al.*, 2006:283). According to Mouton (2001:108-109), data analysis needs to involve the inspection of relationship between the key variables and trying to see patterns that can be identified through the data set while integration would involve the synthesis of the data into a coherent picture. The researcher is confident that “convergent validity” was established in this research through the mixed methods of data analysis. One way of validating a research measure (instrument) is to compare its findings with those from “another measure” (Cohen *et al.*, 2000:121). As argued by Cohen *et al.*, the credibility of interview findings is increased when bias is minimised.

Apart from comparing the interview findings with the survey questionnaires findings, the researcher used “debriefing sessions” as a way of minimising interviewer bias in interpreting the interview data. Before finalising the analysis of the interviews, the researcher discussed the interview transcript with two colleagues (a PHD graduate who is a former lecturer at the University of South Africa and a PHD student working in the public sector education entity). Since the interview guide comprises of the major themes already identified through the survey questionnaire, a common understanding in terms of the interpretation of the interview data was easily achieved during these debriefing sessions. The research findings presented in chapter 4 are comprehensively triangulated through the mixed research approaches adopted for this study.

3.9. RELIABILITY AND VALIDITY

Reliability means that “a particular technique, applied repeatedly to the same object, would yield the same result each time” (Babbie *et al.*, 2006:119). On the other hand, Bartz (1979:104) indicated that validity meant the measuring instrument measured what it was intended to measure. Reliability is a synonym for consistency and replicability over time, over instruments and other groups of respondents (Cohen *et al.*, 2000:117).

3.9.1. Reliability of quantitative measuring instrument

In order to test the reliability of the survey questionnaire as a measuring instrument, the items on the research questionnaire were taken through a reliability analysis based on the *Cronbach's alpha* coefficient. For the purposes of the reliability analysis, the questionnaire items with missing answers were not considered. All the items on the questionnaire have been found to be highly reliable measures of the study's variables. The question that this researcher wanted to answer by performing the reliability test was first raised by Huck (2000:86):

To what extent do the individual items that go together to make up a test or inventory consistently measure the same underlying characteristics?

In order to answer this question, the reliability test was conducted on the seventeen research items in the four-point Likert-scale questionnaire. The researcher decided to exclude the factual questions (yes or no responses) from the reliability test as these tested KM related issues that could be tested on tangible proof (namely existence of telephones). These are collabourated through the interviews (as highlighted in chapter 4). The *Cronbach's Alpha* values for these research elements are captured in table 3.5 as follows:

Table 3.5: Reliability test

RESEARCH SUBCONSTRUCT	<i>CRONBACH'S ALPHA</i>	SAMPLE (N)
1. Achievement of knowledge-based outcomes elements	0.88	284
2. Balancing tacit knowledge and IT implementation	0.74	288
3. Philosophy and vision of organisation (Culture 1.1)	0.76	284
4. Management style (Culture 1.2)	0.85	284
5. Physical structures (culture 1.3)	0.78	284
6. Hierarchies (structure 1.1)	0.71	281
7. Work design structures (structure 1.2)	0.82	281
8. Information flow (structure 1.3)	0.86	282
9. Empowerment (HR 1.1)	0.82	282
10. Performance emphasis (HR 1.2)	0.76	281
11. Supporting benefits programmes (HR 1.3)	0.80	282
12. Comprehensive training (HR 1.4)	0.80	280
13. Encouraging commitment (HR 1.5)	0.82	280
14. Motivation for KM (leadership 1.1)	0.80	280
15. Creation of atmosphere of safety (leadership 1.2)	0.86	281
16. Provision of information and knowledge requirements (leadership 1.3)	0.83	284
17. Creation of knowledge enterprising organisational entity (leadership 1.4)	0.75	283

The *Cronbach's* alpha was used as the basis of the reliability test. It should be noted that the *Cronbach's* alpha has been found by Huck to be more versatile with the Likert scale. He describes the *Cronbach's* alpha as the underlying reliability coefficient used to provide a descriptive summary of the research data's consistency using a value between 0.00 and 1.00. As explained by Huck, zero (0) represents total absence of consistency and one (1) total consistency. It has been found that when the *Cronbach's* alpha is closer to 1 the measuring scale is more reliable (Bryman & Cramer, 2009:77).

Alpha values approaching closer to one (1) are deemed as denoting more reliability than alpha values closer to zero (0). Since computing the *Cronbach's* alpha is a very complex statistics, the alpha values discussed in this section were computed using the SPSS programme. As shown in table 3.5, all sub-constructs have higher alpha values between 0.7 and 0.9. Though the majority of the sub-constructs have alpha values ranging from 0.71 to 0.83, four sub-constructs have an alpha value closer to 0.9. These are: achievement of knowledge-based outcomes (0.88), management style (0.85), information flow (0.86) and creation of atmosphere of safety (0.86). These alpha values are very close to 1 (one), this signifying that the measurement scale used in this study is more reliable. Alpha values of between 0.7 and 0.9 are considered high enough so that the researcher could conclude that the items under each sub-construct go together consistently to measure the same underlying characteristic.

Since the research constructs included in the survey questionnaires have been identified from an intensive literature review, the researcher is confident that in line with their alpha values, these constructs realistically measured the extent of KM implementation in the research entities.

3.9.2. Reliability of the qualitative measuring instrument

Cohen *et al.* (2000:119) argued that "the canons of reliability for quantitative research may simply be unworkable for qualitative research". They demonstrated that in qualitative research reliability can be regarded as a fit between what researchers record as data and what actually occurs in the natural setting that is being researched.

Cohen *et al.* (2000:121) advised that since in interviewing there “are as many interpretations as there are researchers”, one way of controlling reliability was to have a highly structured interview with the same format and sequence of words and questions for each respondent. The semi-structured interview guide used in this research ensured the qualitative findings have some degree of reliability.

The fact that the interview guide is structured around the major themes (research constructs) comprising the survey questionnaire meant that the researcher was able to solicit a more standardised response from each interviewee. The major themes investigated through the interviews have been fully established from a detailed literature review as reflected in chapter 2. Since the measurement instruments (survey questionnaire and interview guide) used in this study has been constructed after a comprehensive in-depth review of empirical studies on KM implementation throughout various parts of the globe, the issue of reliability was unquestionable. The other pressing test this research needed to pass was the validity of the measurement instruments.

3.9.3. The validity of the research instruments

As defined by Babbie *et al.* (2006:122), validity means that an empirical measure adequately reflects the real meaning of the concept under consideration. This implies that the measuring instrument intended to measure certain attributes of KM should measure those attributes. Indeed the combination of the quantitative and qualitative research design techniques ensured that the measurement instruments remained valid. Babbie *et al.* (2006:125) indicated that the best solution towards the construction of valid measures was to use several different measures in order to tap the different aspects of the measured phenomenon.

This is the reason why the survey questionnaires have been used in conjunction with interviews in this study.

3.10. ETHICAL ISSUES

This research study was conducted with full hindsight on the proper conduct of a scientific enquiry. Just as highlighted by Babbie *et al.* (2006:525-526), there are specific codes of good practice a researcher needs to adhere to. These include ensuring that:

- Respondents are not coerced into participating in the study
- The right of respondents to anonymity and confidentiality should also be maintained to ensure there is no harm to the dignity of the respondents,
- The researcher should also clearly state the main objectives of the research before enlisting the responses of the respondents.
- Reporting should also be objective.

In this study, careful measures were taken to ensure that the study did not deviate from the above codes. Before any information was sourced from the responding organisations, a written permission to conduct the study was directed to top management of these companies. The study did not commence until the management had favourably responded to the request. Those entities which did not accord permission to the researcher to proceed with the study were excluded from the research.

The researcher maintained due care and diligence to ensure that the information provided by the respondents remained as confidential as possible. In this regard, the identity of the responding organisations and professionals was protected by withholding the names of the research entities as well as all persons who participated in the study. All data collected solely pertained to the key research objectives of this study and the testing of the four research hypothesis. The responding companies were also accorded an opportunity to access the research results once the data analysis process was completed.

3.11. SUMMARY

This chapter has captured the research methodology for the empirical research investigation conducted. The measuring instruments discussed in this chapter are attached separately at the end of the research report (Appendix A and Appendix B). Before the full scale empirical study commenced, the draft questionnaire was tested in a pilot small scale research involving those entities not part of the sampled organisations. Once the pilot study questionnaires were analysed and some adjustments made, the full scale empirical research commenced. The chapter was meant to provide the basis upon which the research data were to be collected and analysed. What is reflected in this chapter are the actual design processes including data collection and methods of data analysis employed. The next chapter captures the presentation of the research results arising from both the survey and interview processes.

CHAPTER 4: RESEARCH RESULTS AND INTERPRETATION

4.1. INTRODUCTION

This chapter presents the analysis and interpretation of the research data for the public and private sector organisations in the three research industries in Limpopo Province. The analysis follows the triangulation approach where data collected through the survey questionnaires are supported by data collected using the interviews. The chapter commences with a brief overview of the aims and objectives of the study, followed by an exposition of the research constructs and proceeds to present a biographical description of the study's respondents so as to lay a foundation for the presentation of the descriptive statistics, the qualitative data analysis and the statistical tests towards the testing of the four hypotheses.

4.2. RESTATING THE AIMS AND OBJECTIVES OF THE STUDY

The aim of this study was to provide empirical evidence to demonstrate that by following a holistic approach to KM, both public and private sector entities operating in rural areas of South Africa could successfully achieve knowledge-based outcomes despite the resource constraints in these areas. The research objectives are restated as follows:

Objective 1: To evaluate the extent of application of ICTs and social factors for information and knowledge sharing between public and private sector entities in three research industries in rural areas of South Africa (Limpopo Province)

Objective 2: To investigate the nature of KM implementation in three research industries of Limpopo Province by observing the degree of achievement of knowledge-based outcomes as well as tacit knowledge acquisition between public and private sector entities

Objective 3: To present a comparison of KM practices between public and private sector entities in three research industries of Limpopo Province aimed at suggesting a model for enhancing KM implementation in these entities.

The analysis of the research data was aimed at addressing the three research objectives.

4.3. RESEARCH CONSTRUCTS

Apart from the biographical information questions, the survey questionnaire comprised the following key variables as research constructs for the four study hypotheses:

- Application of ICT tools for KM
- Awareness about KM
- Achievement of knowledge-based outcomes (KBO)
- Degree of tacit knowledge acquisition
- Configuration of four social variables for KM: organisational culture, organisational structures, HR practices and leadership

Research constructs, “application of ICT tools for KM” and “awareness about KM” were tested using YES or NO response questions. The other variables were tested using a four-point Likert-scale questionnaire. The research constructs measured through the Likert-scale questionnaire are presented in table 4.1:

Table 4.1: The Likert-scale research constructs

<u>CONSTRUCT</u>	<u>SUBCONSTRUCT</u>	<u>NO. OF SUBCONSTRUCTS</u>
i. Achievement of knowledge-based outcomes (KBO)	Four KBO items	1
ii. Tacit knowledge acquisition	Three tacit knowledge items	1
iii. Configuration of four social variables for KM	Organisational culture	3
	Organisational structures	3
	HR practices	5
	Leadership	4

A total of seventeen sub-constructs were tested using the four-point Likert scale questions. As reflected in the research methodology chapter, these were formulated into the questionnaire after an intensive literature study on KM practices of knowledge-intensive organisations. By completing the questionnaire, respondents were benchmarking KM related practices in their organisations with those of successful knowledge-based organisations throughout the world.

The KM practices reflected in the literature review chapter represent cases of various sectors (corporations, NGOs and government institutions) from the various regions of the world. The gap remains however, to be the absence of a body of knowledge on KM implementation in organisations operating in rural areas in developing countries. The findings and results presented throughout this chapter were computed using the Statistical Package for Social Sciences (SPSS). The analysis commences with a detailed biographical description of the research respondents.

4.4. BIOGRAPHICAL DESCRIPTION OF THE SURVEY RESPONDENTS

Arising from the quantitative research data (biographical information of the respondents), the present researcher provides a biographical description of the respondents in terms of age, work experience, academic qualifications and gender as presented in tables 4.2, 4.3, 4.4 and 4.5 below:

Table 4.2: Percentage of respondents per age category

Respondents age category	Health government	Health private sector	Education government	Education private sector	Business loans government	Business loans private sector
Less than 30 years	14.4%	15.8%	0%	15.4%	11.8%	44.2%
30-39 years	24.6%	26.3%	8.7%	38.5%	23.5%	42.4%
40-49 years	40.7%	47.4%	47.8%	38.5%	47.1%	9.6%
50 years and above	20.3%	10.5%	43.5%	7.6%	17.6%	3.8%

All the industries have respondents spread across all the age groups except the public education sector which does not have any respondent below the age of 30 years.

Table 4.3: Percentage of respondents per work experience category

Respondents work experience category	Health government	Health private sector	Education government	Education private sector	Business loans government	Business loans private sector
< 5 years	23.7%	26.3%	10.1%	46.1%	23.5%	71.2%
5-10 years	11.9%	21.1%	0%	38.5%	41.2%	21.2%
11-15 years	11.0%	26.3%	14.5%	15.4%	11.8%	3.8%
16 years and above	53.4%	26.3%	75.4%	0%	23.5%	3.8%

As highlighted in table 4.3, all the industries have respondents spread across the four work experience categories except the public sector education industry where there are no respondents in the category work experience category 5-10 years.

Table 4.4: Percentage of respondents per academic qualifications category

Respondents academic qualifications category	Health government	Health private sector	Education government	Education private sector	Business loans government	Business loans private sector
Less than grade 12	3.4%	0%	0%	0%	0%	0%
Grade 12	15.1%	5.3%	0%	30.8%	17.6%	43.1% %
Diploma/certificate	52.1%	78.9%	1.5%	30.8%	47.2% %	43.2% %
Degree	13.4%	0%	25.0%	15.4%	17.6%	7.8% %
Postgraduate degree	16.0%	15.8%	73.5%	23.0%	17.6%	5.9%

While the researcher acknowledges that knowledge workers are generally highly knowledgeable and competent, it is interesting to note that the industry with the highest percentage of highly qualified respondents is the education industry with 73.5% in the public sector and 23.1% in the private sector having postgraduate degrees. On the other hand, only 16% (public health), 15.8% (private health), 17.6% (government business loans) and 5.9% (private business loans) respondents have postgraduate degrees. The biographical description of the respondents in terms of gender in the two sectors in the three research industries is depicted in table 4.5 below:

Table 4.5: Percentage of respondents per gender category

Respondents gender category	Health government	Health private sector	Education government	Education private sector	Business loans government	Business loans private sector
Male	28.6%	5.3%	71.0%	15.4%	66.7%	26.2%
Female	71.4%	94.7%	29.0%	84.6%	33.3%	73.8%

As highlighted in the above table, it is apparent that both gender categories are represented in all the research entities. This makes the research data more representative. The next section presents the research results emanating from both the survey questionnaires and interview process.

4.5. PRESENTATION AND ANALYSIS OF RESEARCH RESULTS

In line with the mixed research design approach adopted for the study, it has been highlighted in chapter 3 that the research data would be analysed based on both quantitative and qualitative data analysis methods. The approach adopted for this study is influenced by the urge to ensure that data collected through the survey questionnaires would be compared with data collected via the interviews. This is to ensure that all the gaps that might have happened should the survey questionnaire be used alone would be covered by the data emanating from the interviews.

Arising from the data collected through the survey questionnaires, the research results for both the public and private sector entities in the three research industries are presented in the form of tables, pie-charts and bar graphs. Apart from the interviews, the analysis is also enriched by examples noted in the empirical cases as provided in chapter 2. It should be noted that in the presentation of research data from the interview process, the participating entities are not referred to by names, but just as public sector education entity, private sector education entity, public sector health entity (public hospital 1, 2, 3, 4, 5, 6, 7 and 8), private sector health entity (private hospital 1 and 2), public sector business loans entity and private sector business loans entity according to the sector and industry the entities represent.

Hereunder follows the presentation and analysis of the research data in terms of the research constructs:

4.5.1. Application of ICTs for information and knowledge sharing

Respondents were asked on a YES or NO response question to indicate the ICTs that they were currently using in their organisations to share information and knowledge. On the same question format, respondents were also asked to indicate their preferred ICTs.

Data relating to the extent of application of ICTs was also collected through the interviews whereby the interviewees were asked to mention at least four ICTs used in their organisations for information and knowledge sharing. Based on the quantitative statistics arising from the SPSS, the current state of ICT application in the three industries can be summarily reflected as in table 4.6 while the preferred ICT tools are indicated separately in the form of bar-graphs. Based on the YES responses per ICT tool, the extent of application of ICTs for the research entities in the three industries is presented as follows:

Table 4.6: Current state of ICT usage in the three industries

ICT TOOL	PERCENTAGE OF THE RESPONDENTS PER ICT TOOL PER SECTOR					
	HEALTH GOVT	HEALTH PRIVATE SECTOR	EDUCATION GOVT	EDUCATION PRIVATE SECTOR	BUSINESS LOANS GOVT	BUSINESS LOANS PRIVATE SECTOR
1. Telephones	99.1	94.7	91.2	92.3	100	53.8
2. Company Cellphones	12.9	10.5	2.9	15.4	31.3	13.5
3. Personal Cellphones	49.1	42.1	85.3	92.3	68.8	84.6
4. Office-desktop Computers	66.4	57.9	41.1	84.6	93.8	34.6
5. Company Laptops	28.4	15.8	7.4	61.5	37.5	9.6
6. E-mail	41.4	68.4	16.2	84.6	100	34.6
7. Intranet	24.1	47.4	1.5	15.4	81.3	13.5
8. Internet	30.2	26.3	14.7	92.3	87.5	13.5
9. Video Conferencing	18.1	36.8	2.9	30.8	6.3	3.8
AVERAGE ICT USAGE PER INDUSTRY	41.1%	44.4%	29.2%	63.2%	67.3%	29.1%

The table above shows the percentage of respondents who used the nine (9) listed ICT tools in each of the three industries. As shown from the above table, it is imperative to make a holistic comparison of ICT usage for both public and private sector institutions in the same industry.

i. Application of ICTs in the health industry

As depicted in table 4.6, current usage of ICT tools by both public and private sector health institutions is spread across the nine ICT tools. The nine listed ICT tools included traditional tools (telephones and desktop computers) and the most recent tools (company cellphones, laptops, e-mail, intranet, the internet and video conferencing).

It is apparent that respondents from both public and private sector health institutions admit using both traditional and more recent ICT tools. The difference in ICT usage between public and private sector health institutions is very narrow. Almost all respondents from both the government health and private sector institutions indicated that they used telephones (99.1% and 94.7% respectively) to share information and knowledge. The next highest used ICTs in both sectors were office desktop computers (66.4% respondents in government institutions compared to 57.9 % in private sector health institutions). Less than half of the respondents (49.1% and 42.1% respectively for public and private health institutions) were using personal cellphones.

These findings are also consistent with those emanating from the interview process. In the interviews conducted with the hospital managers of private sector health entities (private hospitals 1 and 2), it was confirmed that the use of ICTs for information and knowledge sharing involved the following tools:

- Telephones
- Computers
- Laptops
- Internet
- Intranet.

Similar findings also emanated from the interviews conducted with management of public sector hospitals. Amongst the nine ICT tools, it was confirmed that telephones, computers and the internet were used for information and knowledge sharing in most public sector hospitals.

While e-mails were used by 68.4% of the respondents from the private sector hospitals, only 41.4% of the respondents were using e-mails in the government health institutions. These data reflect that ICT usage in the health industry was very high in traditional tools such as telephones and desktop computers, but there was also evidence of adoption of more recent tools. A notable example is the fact that both private sector and the government health institutions ranked 1st and 3rd respectively out of all the research entities in the usage of video conferencing. Furthermore, respondents were requested to indicate which of the nine ICT tools they would prefer using for information and knowledge sharing. The data for the ICT tools respondents believe they should use to share information and knowledge is captured in figure 4.1:

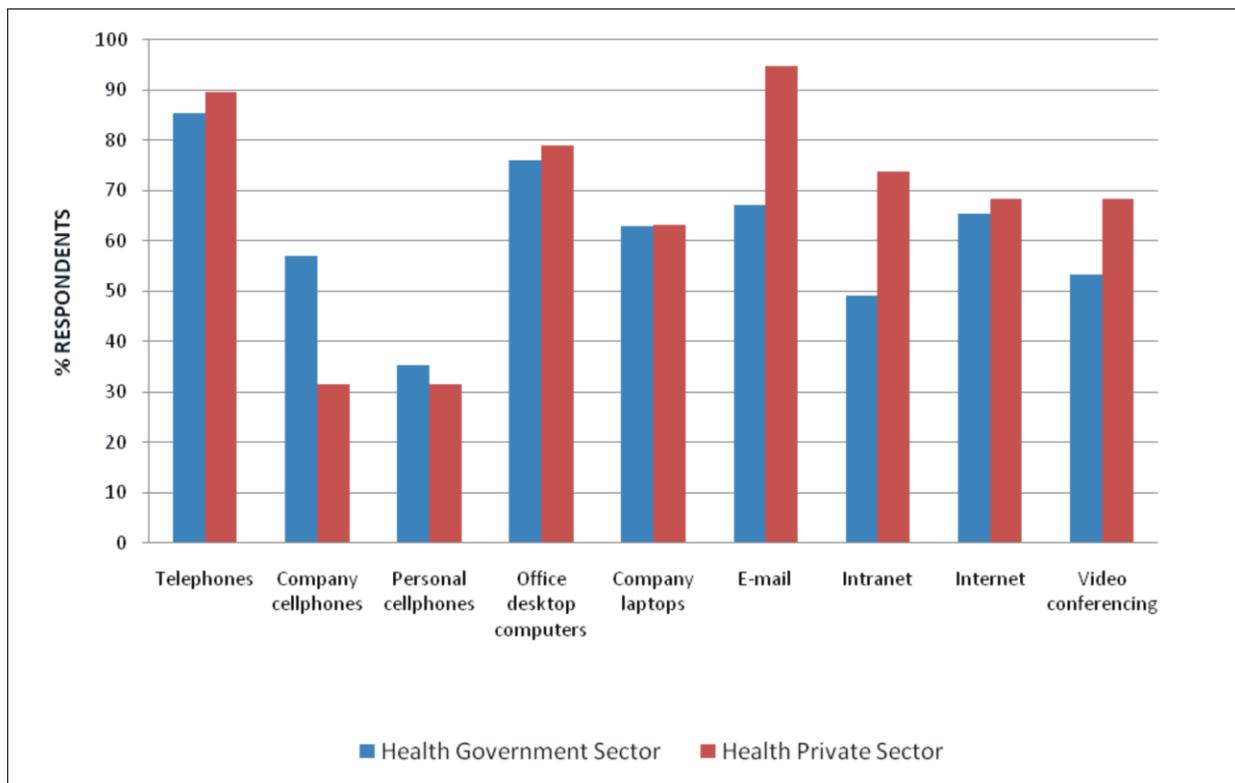


FIGURE 4.1: ICT TOOLS RESPONDENTS PREFER USING IN THE HEALTH INDUSTRY

The majority of the respondents (more than 50%) from the government and private health sector agreed that they would prefer the following ICTs to share information and knowledge:

- Telephones
- Office desktop computers
- Company laptops
- E-mail
- Internet
- Video conferencing.

As indicated in figure 4.1, both public and private sector health respondents appear to be uncomfortable in using personal cellphones for information and knowledge sharing for work. While a greater proportion of respondents from the private sector also prefer company cellphones for information and knowledge sharing, very few respondents from public hospitals agreed with this. Respondents from the public hospitals overwhelmingly prefer to use e-mails for information and knowledge sharing.

ii. Application of ICTs in the education industry

As highlighted in table 4.6, the level of ICT application for information and knowledge sharing by both public and private sector education entities reveal that there is widespread usage of telephones and personal cellphones in both sectors. On the other hand, there appears to be low levels of usage of tools such as company cellphones, company laptops, e-mail, intranet, the internet and video conferencing among the respondents from the public education sector. Contrary to the above, the sampled private sector education entity has a high proportion of respondents using six of the nine ICT tools (telephones, personal cellphones, office computers, company laptops, E-mail and Internet). These findings are consistent with those emanating from the interviews. These are fully reflected in the testing of hypothesis 1 later in this chapter.

Though the recorded usage of video conferencing is below the 50% mark, the private sector education entity ranks as the second highest in the usage of video-conferencing for information and knowledge sharing. 30% of the respondents from the entity indicated they used video conferencing for information and knowledge sharing at work. The only sector that recorded a much higher usage of video conferencing is the private health sector (at 36%). It is only with company laptops and the intranet where the percentage of respondents from the private sector education using these is less than 20%. These findings reflect that current ICT usage in the education industry is much more widespread in the private education entity than in the government education sector. The data showing the preferred ICT tools by the government and private sector education respondents is shown in figure 4.2:

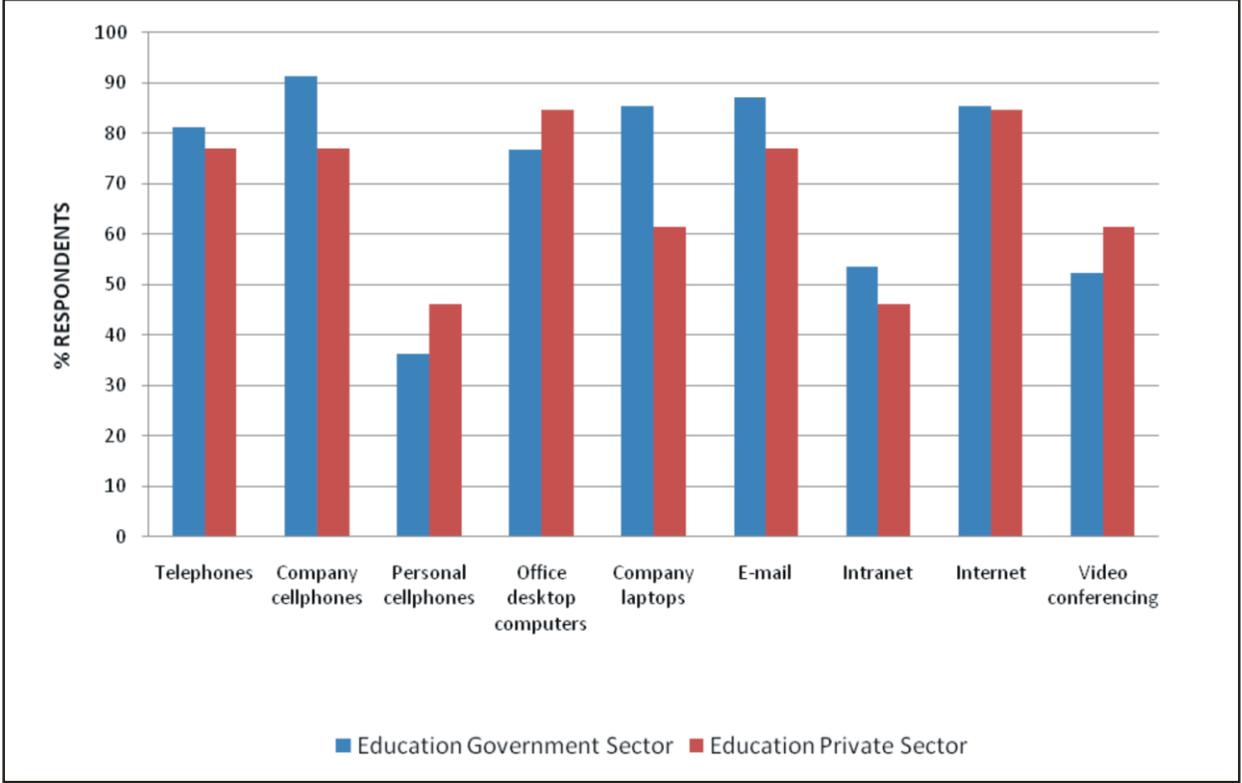


FIGURE 4.2: ICT TOOLS RESPONDENTS PREFER USING IN THE EDUCATION INDUSTRY

Figure 4.2, shows that the majority (more than 50%) of the respondents from both the government and private sectors in education are in agreement in their preference for the following seven ICT tools:

- Telephones
- Company cellphones
- Office desktop computers
- Company laptops
- E-mail
- Internet
- Video conferencing.

As in the health industry, preference for personal cellphones in relation to work related information and knowledge sharing has been found to be lower for both the public and private sector education respondents. This reflects that respondents were reluctant to use their cellphones for information and knowledge sharing during work.

iii. Application of ICTs in the business loans industry

Statistics on the current usage of ICTs in the business loans industry have already been captured in table 4.6. It is apparent that current ICT usage is higher in the government sector than in the private sector of the business loans industry. The government sector of the business loans industry recorded an average current ICT usage of 67.3% as compared to just 29.1% from the private sector. The current ICT usage by the public sector business loans entity is concentrated in six of the nine ICT tools (telephones, personal cellphones, office computers, E-mail, Intranet and Internet) while it is mainly in two ICTs (telephones and personal cellphones) in the private sector entity. These are also supported by the data from the interviews as captured in the testing of hypothesis 1 later in this chapter. Since respondents were also requested to indicate the ICT tools they believed they should use for information and knowledge sharing, the data collected on the preferred ICT tools for both the government and private sector business loans research entities is reflected in figure 4.3.

The majority of the respondents (more than 50%) from both the government and private sector business loans entities preferred using six of the nine ICT tools for information and knowledge sharing. The six ICT tools are:

- Telephones
- Company cellphones
- Office desktop computers
- Company laptops
- E-mail
- The internet.

Apart from these ICTs, the majority of the respondents from the government sector business loans entity also preferred the Intranet and video conferencing for information and knowledge sharing. These are clearly illustrated in figure 4.3 as highlighted below:

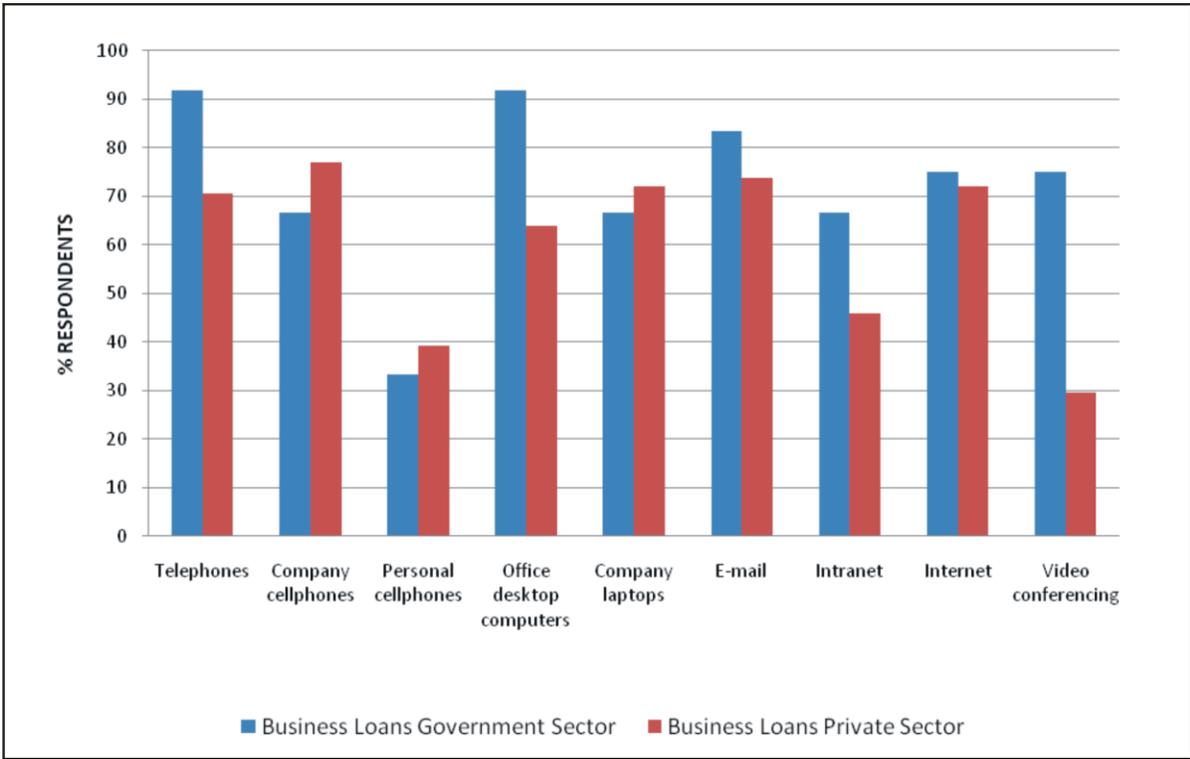


FIGURE 4.3: ICT TOOLS RESPONDENTS PREFER USING IN THE BUSINESS LOANS INDUSTRY

4.5.2. Awareness about KM

Having reflected on the findings about ICT application for information and knowledge sharing in public and private sector entities in the three research industries, it is now important to reveal the level of awareness about KM in both public and private sector entities in the sampled industries. The data for this analysis was collected by asking respondents through a YES or NO response question whether they had heard about the concept 'Knowledge Management' in their institutions. In cases respondents indicated YES for awareness, they were to indicate the KM element they were familiar with. Two elements were mentioned and respondents were to indicate in terms of YES or NO responses if these elements were associated with KM in their organisations. The elements are:

- IT connectivity systems
- Programmes designed towards skills development

The researcher also used the interview process to determine the level of awareness about KM in public and private sector entities in the three research industries. The question was: Are you implementing any KM strategy in your organisation and who is responsible for KM initiatives in your organisation? Already by indicating that they were not implementing any KM strategy, the managers were admitting that they were not familiar with KM.

i. Awareness about KM in the health industry

The pie-chart in figure 4.4 reflects the awareness rate about KM in the government health sector.

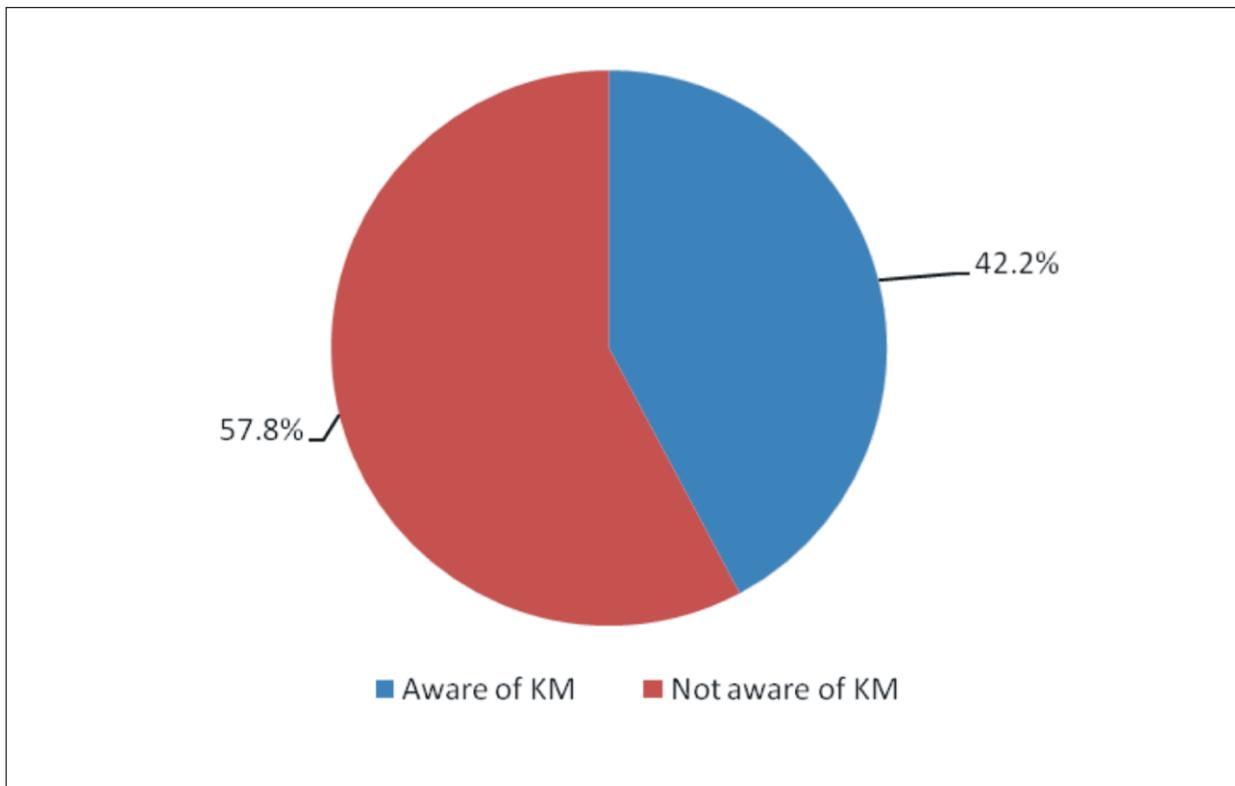


FIGURE 4.4: AWARENESS ABOUT KM IN THE PUBLIC HEALTH SECTOR

The research data reveal that 42.2% of the respondents from the public health sector have heard about the concept KM in their organisations. This is less than half of the respondents. Of the respondents who were aware of KM in the government health sector 69.4% associated KM with IT connectivity networks while 83.7% associated KM with programmes designed to enhance skills of employees. This clearly shows that out of the 42.2% respondents aware of KM, the majority associated KM with both IT connectivity networks and skills development initiatives.

Assessment of KM awareness in the private health sector reveals that 47.4% of the respondents admitted they were aware of the concept KM in their entities. This is still less than half of the respondents. Out of the 47.4% respondents who were aware of KM in the private health sector, a low 44.4% associated KM with IT connectivity networks while the greater proportion (88.9%) associated KM with skills development initiatives. Figure 4.5 captures the KM awareness rate in the private health sector:

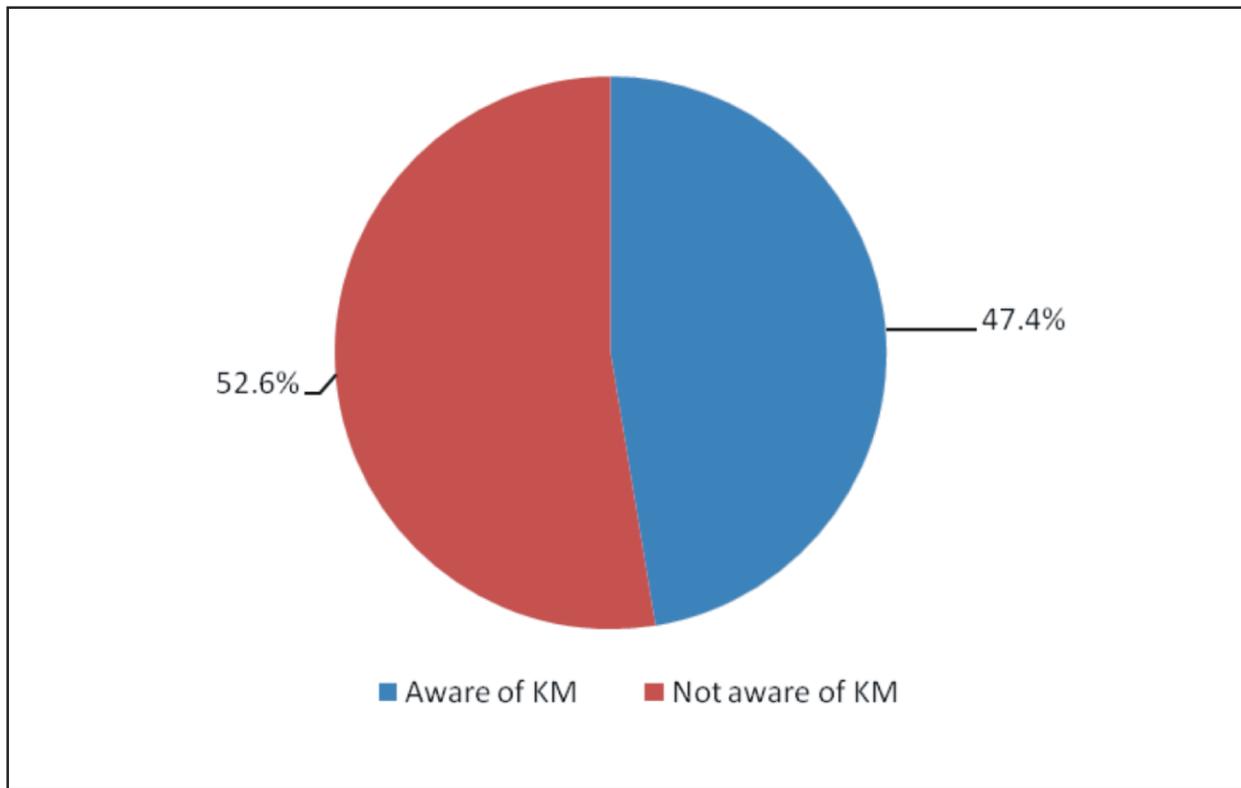


FIGURE 4.5: AWARENESS ABOUT KM IN THE PRIVATE HEALTH SECTOR

The KM awareness rate for both public and private sector institutions in the health industry shows that KM was not yet a popular concept. The interview data also confirm this.

Hospital managers for private hospital 1 and 2 were convinced during the interviews that even though they did not have a KM strategy in place they were implementing KM. The hospital manager of private hospital 1 indicated that the responsibility for KM aligned initiatives was assigned to the IT and clinical departments jointly. The manager indicated that “the IT department is the custodian of all knowledge while the clinical department is the owner of knowledge”. On the other hand, the hospital manager of private sector hospital 2 indicated that each departmental head (namely nursing manager) was responsible for knowledge sharing initiatives, but the overall responsibility for skills development lay with the training and development consultant. In his opinion, KM was associated with skills development and as such the entity had a skills development plan in place.

While in the interview with the CEO of public sector hospital 8, the CEO revealed that even though they did not have a KM strategy in place, responsibility for KM aligned initiatives rested with two departments: the Information and Records Department as well as the Human Resource Development Unit of the HR Department. He further indicated that “there is a committee that deals with HRD related issues comprised of various units of the hospital”.

That KM aligned initiatives were under the Information and Records Department was also confirmed in interviews conducted in the other public hospitals participating in the study. This might be linked to the fact that most public hospital CEOs associated KM with information and records management. But when the researcher probed into the exact role of the information and records directorate it was revealed by the interview participants that it performed the following roles:

- The information manager is responsible for keeping an up to date file of consolidated strategic planning documents (public hospital 1)
- The information and records department compile reports on statistics for human resource development (public hospital 8)
- Capturing statistics on patient information (public hospital 5).

The low level of awareness about KM as observed in both public and private sector entities of the health industry is consistent with findings from other developing economies. Chong (2006:246) also found that most respondents from the Malaysian telecommunication sector were still not familiar with KM. Lack of awareness about KM rather than lack of resources has been found by Matzkin (2008:157) in a KM study among three Social Development Programmes in Peru to be the key obstacle to KM implementation.

ii. Awareness about KM in the education industry

Figure 4.6 presents the proportion of respondents who were aware of KM in the government education industry. The KM awareness rate for the private sector education industry is presented in figure 4.7. The figures are explained below:

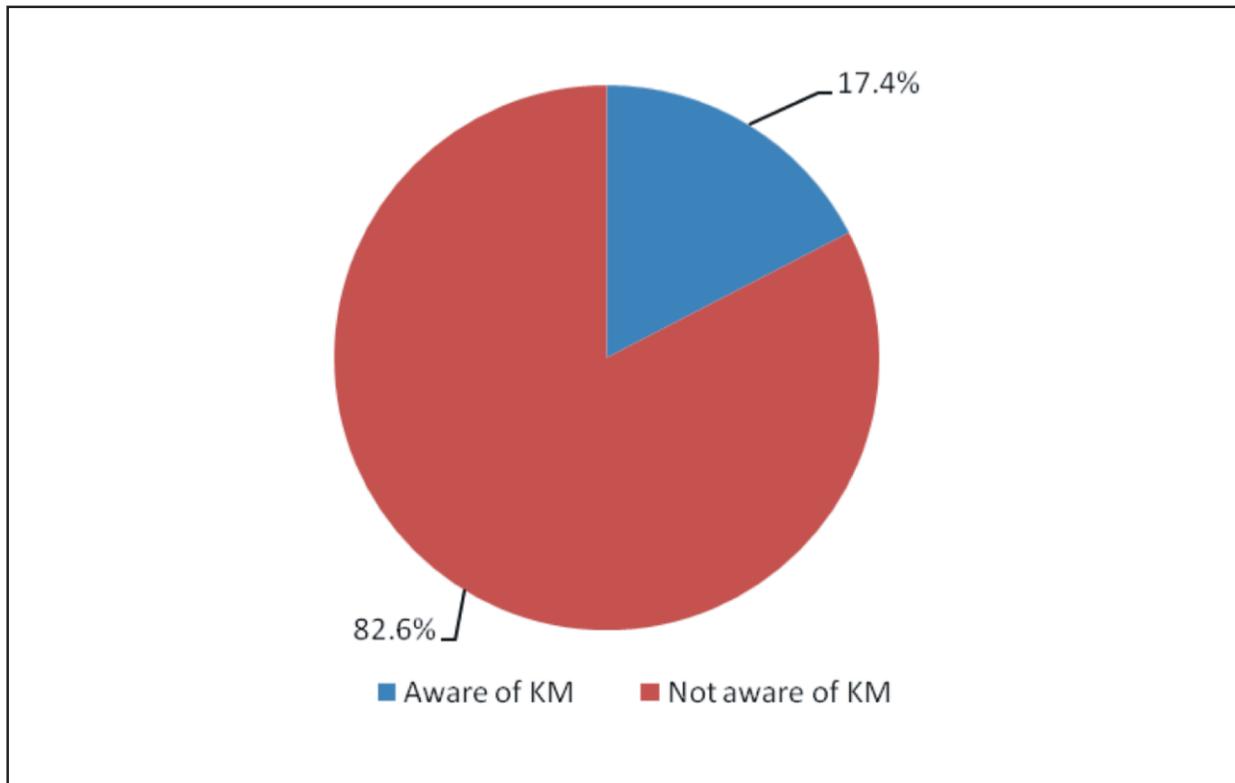


FIGURE 4.6: AWARENESS ABOUT KM IN THE PUBLIC EDUCATION SECTOR

An overwhelming majority of the respondents (82.6%) from the public education sector indicated they had never heard about the concept KM in their entities. It was also found that only 16.7% respondents out of the 17.4% who were aware of KM associated KM with IT connectivity systems while 91.7% associated KM with skills development initiatives. The 17.4% respondents who indicated that they had heard about KM in the government education sector is quite low compared to the 61.5% respondents who were aware of KM from the private education sector.

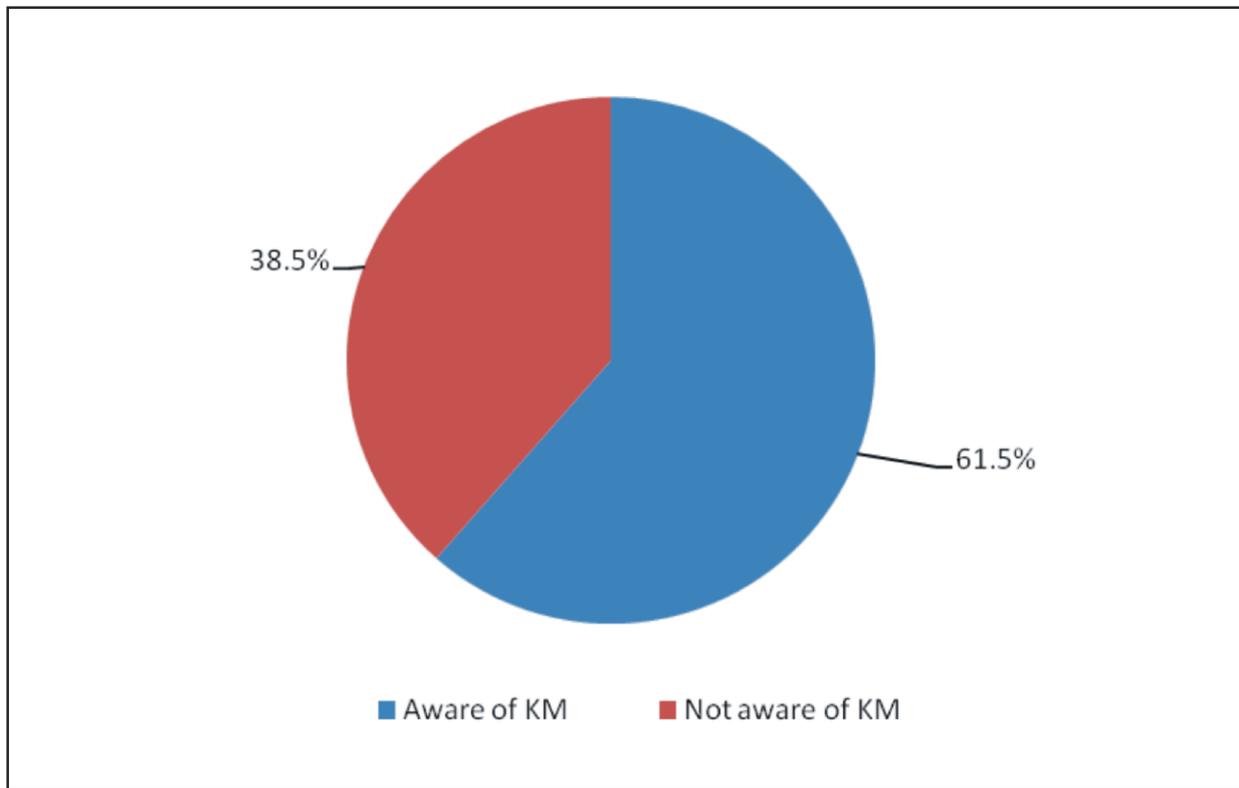


FIGURE 4.7: AWARENESS ABOUT KM IN THE PRIVATE EDUCATION SECTOR

Of the 61.5% respondents aware of KM in the private education sector, 62.5% associated KM with IT connectivity systems and 87.5% associated KM with skills development initiatives. This clearly shows that the majority of the respondents who were aware of KM in the private education sector associated it with both IT connectivity systems and skills development initiatives. The researcher concludes that KM awareness was higher in the private education sector than in the government education sector. With the private education entity having a higher KM awareness rate than the public education sector, the researcher used the data from the interviews in order to corroborate the above findings.

The interviews for both the public and private sector entities showed that KM was approached implicitly since there was no coordinated KM strategy within these entities. It emerged from the interview with the director of the private sector education entity that in line with the association of KM with skills development, it was believed in the entity that KM related initiatives were the responsibility of HR through its training unit.

But when the researcher probed further on how HR performed the KM function, the director admitted that they were on the process of developing their systems to incorporate a full KM function. She also admitted that as general manager of the entity she was aware that she had to play an acting role into managing the knowledge assets of the entity.

On the other hand, the public sector education manager who participated in the interview confessed that there was no particular coordinator for KM. In his words “things just happen”, this implying that issues pertaining to knowledge creation, acquisition and distribution were not coordinated. The researcher noted that the private sector education entity was implementing skills development initiatives as part of its management of knowledge and there was no coordination on issues pertaining to KM.

The data collected during these interviews confirm the survey finding in terms of KM awareness as depicted in figures 4.6 and 4.7.

iii. Awareness about KM in the business loans industry

The KM awareness as measured by the percentage of respondents who indicated YES in the KM awareness question for the government and the private sector business loans entities presents interesting findings. Figure 4.8 presents KM awareness for the government business loans sector and figure 4.9 depicts that of the private business loans sector as follows:

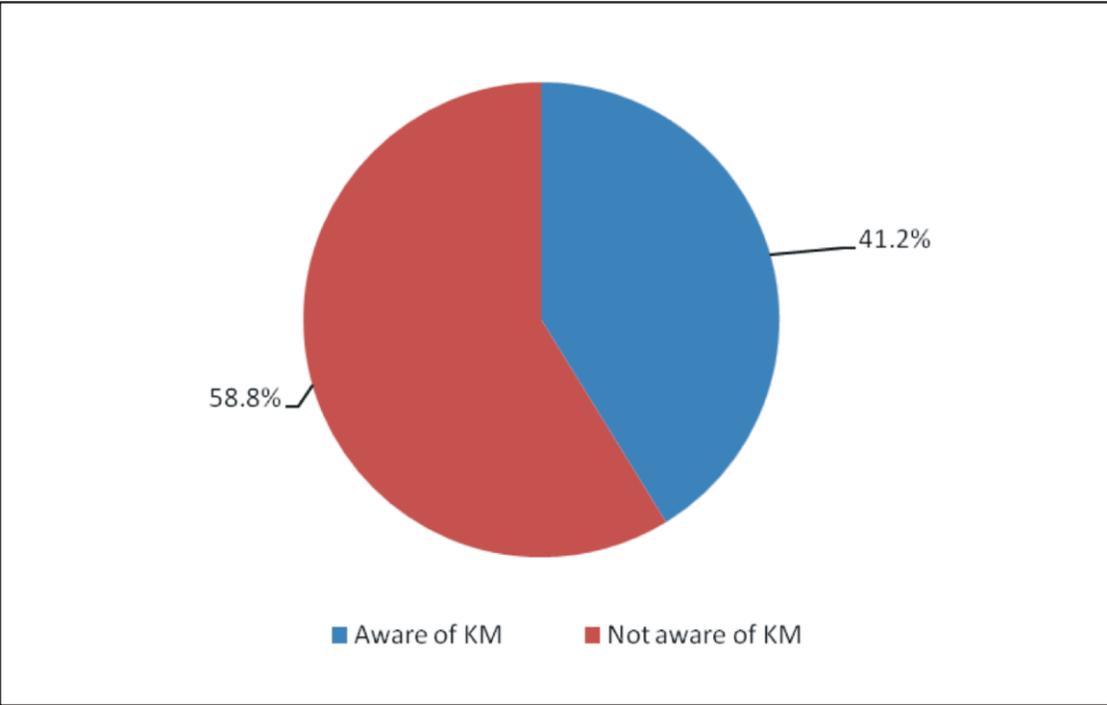


FIGURE 4.8: AWARENESS ABOUT KM IN THE PUBLIC BUSINESS LOANS SECTOR

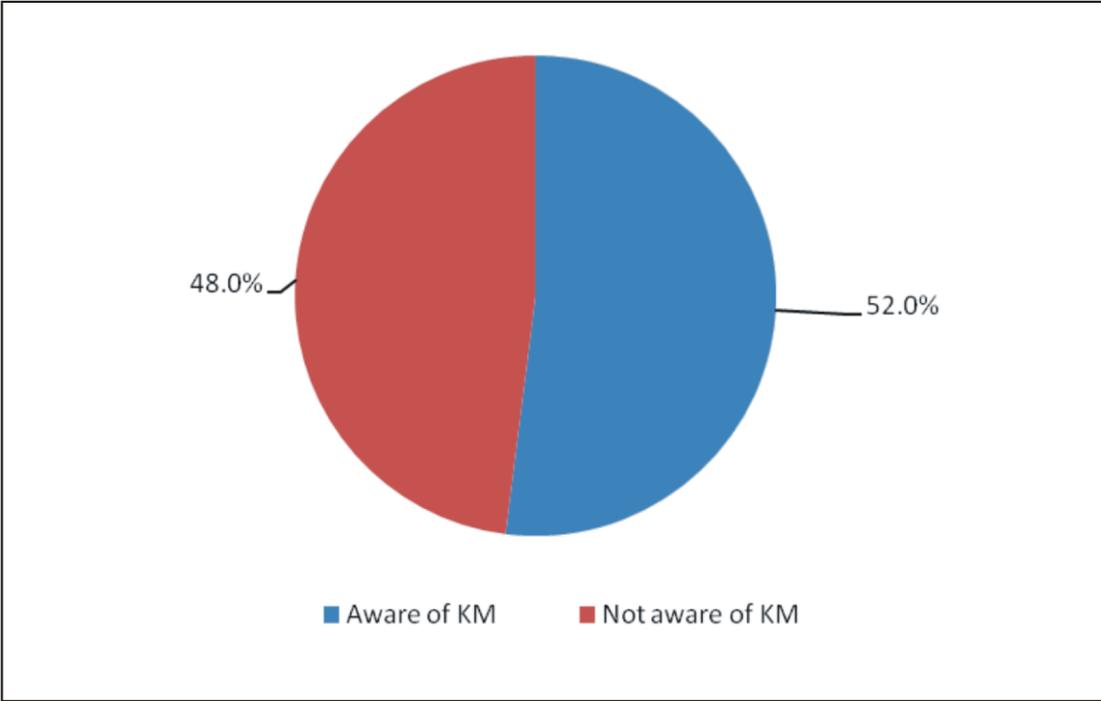


FIGURE 4.9: AWARENESS ABOUT KM IN THE PRIVATE BUSINESS LOANS SECTOR

While just 52.0% of the respondents from the private sector business loans industry have heard about the concept KM, only 41.2% of the respondents from the public sector business loans industry indicated that they were familiar with KM. This clearly shows that there is some popularity about KM in the private sector business loans industry, while KM appears not to be a popular concept in the government business loans sector.

The statistics further reveal that out of the 41.2% respondents aware of KM from the government business loans sector, all of them (100%) believed KM to be associated with both IT connectivity and skills development initiatives. While out of the 52.0% of the respondents aware of KM in the private business loans sector, 46.1% associated KM with IT connectivity networks and almost all (92.3%) associated KM with skills development initiatives.

These results are also consistent with the interview data. The interviews for the public and private sector business loans entities revealed no explicit KM initiatives. It was found from the interview with the Corporate Services Manager of the private sector business loans entity that KM was associated with training. All the branches of the entity had a training budget to run training for their employees. The responsibility for ‘these’ KM aligned initiatives lay with the entity’s training department. The Corporate Services Manager also indicated that training was the pillar of strength for the entity. He also alluded to the fact that “training is done by both internal and external people”. In this regard, the researcher observed that the entity depended on its in-house training unit for its training needs.

The Area Manager of the government business loans entity confirmed during the interview that instead of explicit KM initiatives, the entity was preoccupied with human capital management in line with their *Guidelines on Managing Human Capital*. He admitted that business processes within the entity were not yet fully functional, since the entity was on a restructuring process as a result of “problems of the past”.

Arising from the research results presented above, it is apparent that KM awareness is higher in the private sector of the education industry and the private sector of the business loans industry. The fact that KM was approached implicitly in both public and private sector entities in the three research industries of Limpopo Province, implies that these entities could not be described as mature knowledge-based organisations in the mould of Buckman Laboratories in the USA and Tata Consulting Services in India. These empirical cases are indicated in chapter 2 of this research report.

4.5.3. Achievement of knowledge-based outcomes

Owing to the fact that effective KM is associated with specific benefits or knowledge-based outcomes, the researcher used both the survey questionnaire and the interviews to determine whether the public and private sector entities in the three research industries were achieving knowledge-based outcomes.

Using the survey questionnaires, the extent to which knowledge-based outcomes were achieved in the three sampled industries was measured based on a set of four positive statements (items) using a four-point Likert scale question ranging from strongly disagree (1) to strongly agree (4). The items included as part of this measure are:

- Skills and expertise development opportunities
- Ability to create and share knowledge realised
- Organisational efficiency through knowledge application
- Encouraged to learn and teach others better ways of performing job tasks.

In order to determine the extent of achievement of knowledge-based outcomes (KBO), a KBO score was computed. This was done by adding the strongly agree and agree responses for each item and then the average for all the four items composited the KBO score. Furthermore, the achievement of knowledge-based outcomes in the research entities was investigated through the interviews. The interviewees were asked to mention the benefits of KM related practices they were implementing in their entities.

i. Achievement of knowledge-based outcomes in the health industry

An industry analysis of the extent of KBO for both government and private health sectors is based on the following table:

Table 4.7: Knowledge-based outcomes (KBO) scores for the health industry

Item	% positive response:		% positive response:	
	Government Health Sector		Private Health Sector	
1. Skills and expertise development opportunities	Agree	51.7	Agree	57.9
	<u>Strongly agree</u>	<u>32.8</u>	<u>Strongly agree</u>	<u>42.1</u>
	TOTAL	84.5%	TOTAL	100%
2. Ability to create and share knowledge is realised	Agree	59.5	Agree	63.2
	<u>Strongly agree</u>	<u>21.6</u>	<u>Strongly agree</u>	<u>36.8</u>
	TOTAL	81.1%	TOTAL	100%
3. Organisational efficiency through knowledge application	Agree	56.0	Agree	63.2
	<u>Strongly</u>	<u>21.6</u>	<u>Strongly agree</u>	<u>36.8</u>
	TOTAL	77.6%	TOTAL	100%
4. Encouraged to learn and teach others better ways of performing job tasks	Agree	43.1	Agree	52.6
	<u>Strongly</u>	<u>42.2</u>	<u>Strongly agree</u>	<u>47.4</u>
	TOTAL	85.3%	TOTAL	100%
KBO score	82.1%		100%	

The percentage of respondents who believed that knowledge-based outcomes were achieved is higher in the private sector than in the government health sector. This is demonstrated in a KBO score of 100% for the private sector health industry as compared to a KBO score of 82.1% for the private health sector. Though there is a clear gap between the KBO of government and private health sectors, both sectors have a greater proportion of respondents who were confident that knowledge-based outcomes were achieved in their organisations. The research data denote high achievement of the tested knowledge-based outcomes by both public and private sector health entities.

Though both the public and private sector entities in the health industry were implementing KM implicitly through KM related practices, the interview data confirm that KM benefits (knowledge-based outcomes) were achieved in these entities. As reflected through the interviews conducted with the hospital managers of the two private sector hospitals, the KM aligned practices implemented in the entities led to the following benefits:

- More empowered staff
- More knowledgeable staff
- More competent staff
- Better outcome on patient
- More satisfied staff (personal development)
- A stronger entity
- Improved communication.

Most CEOs from the public sector health entities were not aware of the concept 'KM'. Nevertheless, when the researcher explained to them that they were implementing KM unaware through a series of KM aligned practices, such as IT management, HR practices, performance appraisal and quality assurance programmes, they observed the benefits of these practices as listed below:

- To ensure integrated functioning of all units: public hospital 1
- Less medical hazards: public hospitals 1, 3 and 5
- "We treat patients correctly" (less harm): public hospitals 3 and 5
- "We are always alert, we take precautionary measures": public hospital 3
- "Nursing procedures guidelines ensure we avoid mistakes": public hospital 5
- Ensuring institutional policies are developed and implemented: public hospital 6
- People empowered with knowledge: public hospital 8.

ii. Achievement of knowledge-based outcomes in the education industry

The calculation of the KBO scores for both the public and private education sectors appears in table 4.8:

Table 4.8: KBO scores for the education industry

Item	% positive response:		% positive response:	
	Public Education Sector		Private Education Sector	
1. Skills and expertise development opportunities	Agree	62.3	Agree	38.5
	<u>Strongly agree</u>	<u>13.0</u>	<u>Strongly agree</u>	<u>61.5</u>
	TOTAL	75.3 %	TOTAL	100%
2. Ability to create and share knowledge is realised	Agree	65.2	Agree	30.8
	<u>Strongly agree</u>	<u>5.8</u>	<u>Strongly agree</u>	<u>61.5</u>
	TOTAL	71%	TOTAL	92.3%
3. Organisational efficiency through knowledge application	Agree	50.7	Agree	38.5
	<u>Strongly</u>	<u>1.4</u>	<u>Strongly agree</u>	<u>53.8</u>
	TOTAL	52.1%	TOTAL	92.3%
4. Encouraged to learn and teach others better ways of performing job tasks	Agree	60.9	Agree	38.5
	<u>Strongly</u>	<u>17.4</u>	<u>Strongly agree</u>	<u>53.8</u>
	TOTAL	78.3%	TOTAL	92.3%
KBO score		69.2%		94.2%

The gap between the KBO scores of public and private education sectors is far too wide. This is caused by a very high KBO score (almost 94.2%) for the private education sector compared to a relatively modest KBO score of 69.2% in the government education sector. It is thus apparent that almost all the respondents in the private education sector were confident that knowledge-based outcomes were achieved in their institution.

Though the KBO score of the government education sector is lower than that of the private education sector, the proportion of respondents who confirmed that the stated knowledge-based outcomes were achieved in the government education sector is also higher at 69.2%. Thus, the analysis confirms that even though there were a greater proportion of respondents who believed the stated knowledge-based outcomes were achieved in both government and private sector entities in the education industry, the private education sector has a higher KBO score than what the public education sector recorded.

The interviews conducted with public and private sector education management confirms that KM benefits (knowledge-based outcomes) were achieved in both sectors of the education industry. The director of the private sector education entity observed the following benefits arising from KM aligned practices in the entity:

- “Communication between different sections is strengthened”
- “One gets to know what is going on in each programme of the organisation”
- To identify problem areas early
- “We are able to keep up-to-date with latest trends”.

While the public sector education middle manager hinted that KM aligned practices were poorly coordinated in the public sector education entity, he however agreed that due to the high volume of employee training workshops in the sector, the following benefits were achieved:

- “Cascading of information to all employees”
- “Better understanding of departmental policies”
- “Sharing of information on a personal level”.

iii. Achievement of knowledge-based outcomes in the business loans industry

It has already been highlighted that both public and private sector health and education research entities recorded higher KBO scores in the stated knowledge-based outcomes.

This section presents the research results to determine the degree of achievement of knowledge-based outcomes by public and private sector research entities in the business loans industry. Table 4.9 depicts the KBO scores for both the government and private sector business loans research entities as follows:

Table 4.9: KBO scores for the business loans industry

Item	% positive response:		% positive response:	
	Public Sector Business Loans		Private Sector Business Loans	
1. Skills and expertise development opportunities	Agree	41.2	Agree	44.2
	<u>Strongly agree</u>	<u>47.1</u>	<u>Strongly agree</u>	<u>38.5</u>
	TOTAL	88.3%	TOTAL	82.7%
2. Ability to create and share knowledge is realised	Agree	58.8	Agree	53.8
	<u>Strongly agree</u>	<u>29.4</u>	<u>Strongly agree</u>	<u>25.0</u>
	TOTAL	88.2%	TOTAL	78.8%
3. Organisational efficiency through knowledge application	Agree	64.7	Agree	53.8
	<u>Strongly</u>	<u>23.5</u>	<u>Strongly agree</u>	<u>28.8</u>
	TOTAL	88.2%	TOTAL	82.6%
4. Encouraged to learn and teach others better ways of performing job tasks	Agree	41.2	Agree	55.8
	<u>Strongly</u>	<u>41.2</u>	<u>Strongly agree</u>	<u>32.7</u>
	TOTAL	82.4%	TOTAL	88.5%
KBO score		86.8%		83.2%

At 86.8% the KBO score of the government business loans sector is relatively higher than the KBO score of 83.2% for the private business loans sector. This implies that both the government and private sector business loans entities have a greater proportion of respondents who were convinced that knowledge-based outcomes were achieved.

During the interviews, the benefits of KM were also observed by management from both the public and private sector entities of the business loans industry. According to the Area Manager of the public sector business loans entity, the KM aligned practices adopted in the entity posed the following benefits:

- “Getting to know what is going on in the organisation”
- “Making each employee accountable for his/her performance”
- “Ease of access to information”.

These benefits were also echoed by the Corporate Services Manager of the private sector business loans entity when he indicated that “we get to know what is happening in the organisation so that we can institute improvement strategies”. Thus, the interview data are consistent with the survey questionnaire data in explaining the degree of achievement of knowledge-based outcomes in the business loans industry.

Based on the research data presented above, the researcher can conclude that the stated knowledge-based outcomes have been highly achieved by respondents from both the public and private sector entities in the three research industries. This then means that apart from those benefits mentioned by the interviewees, respondents from the three research industries were able to positively associate with the following knowledge-based outcomes:

- The jobs of employees offered opportunities for the development of their skills and expertise
- The employees were encouraged to create and share knowledge
- The entities depended on knowledge for organisational efficiency
- Employees were encouraged to learn and teach others better ways of performing job tasks.

These knowledge-based outcomes are consistent with those observed in mature knowledge-based organisations in other parts of the world as discussed in chapter 2, like those in the USA (the Buckman Laboratories case), Spain (the case of IDOM), Asia (the case of Tata Consulting Services in India). Similarly, there is evidence even within South African organisations (as highlighted in the CRF study, Best Employers in South Africa 2009/10) that organisations achieve KM benefits with either an explicit or implicit KM approach. The research entities in the present study approached KM implicitly, but they were able to achieve KM benefits. It is now imperative to observe the degree of tacit knowledge acquisition in the three research industries.

4.5.4. Tacit knowledge acquisition

KM scholars as highlighted in the literature review, agree that effective KM implementation should give equal consideration to both tacit knowledge acquisition and IT implementation. It has also been noted that though IT is an integral aspect of the KM system, it plays a value-adding component to the KM initiative (Metaxiotis *et al.*, 2005:12). Empirical evidence gathered in this report suggests that effective KM requires more investment on measures that enhance tacit knowledge acquisition within an entity.

The level of ICT application for information and knowledge sharing in both the public and private sector research entities in the three industries have been highlighted in table 4.6. This section is aimed at presenting the research results pertaining to the degree of tacit knowledge acquisition in both public and private sector research entities in the three industries. Through the survey questionnaires respondents were asked two sets of questions that aimed at determining whether there were measures in place in their organisations to enhance tacit knowledge acquisition.

The first set has been structured as a four-point Likert scale question consisting of three items/statements and the second is a YES or NO response question on four KM related practices (two for IT implementation practices and two for tacit knowledge practices). Data for the first question was computed into a tacit knowledge acquisition score in line with the following research items:

- Face to face knowledge sharing sessions (item no 1)
- Job experience valued (item no 3)
- Regular on the job support (item no 4).

Initially, the first set comprised four research items, but during the data analysis process, the researcher realised that item no 2 on the set of statements related more to IT implementation. Therefore, this question was not considered during data analysis.

Respondents were expected to answer each statement using a range of responses from strongly disagree to strongly agree on a four-point Likert scale question. Based on the responses gathered through the first question, data were computed by adding together the positive responses (strongly agree and agree) for the three research items and the average was used as the tacit knowledge score. To determine whether tacit knowledge was given enough emphasis, the tacit knowledge score should be above 50%.

The statistical data collected through the second question are depicted in the bar-graphs (figures 4.10 to 4.12) depicting the common KM related practices. The researcher was interested in showing how government and private sector entities in the three industries adopted KM related practices geared towards tacit knowledge acquisition. To be considered an effective promoter of tacit knowledge, an entity is expected to score higher than 50% in terms of two of the following tested practices:

- Employee training workshops
- Knowledge sharing meetings.

These were considered as KM related practices enhancing tacit knowledge acquisition considering that they encourage direct contacts among employees. It has been established in chapter 2 that tacit knowledge is acquired through face-to-face interaction. Relying on what has been established in KM literature, the researcher considered the other two practices, “electronic communication” and “E-learning programmes” as KM related practices linked to IT implementation. In order to ensure the validity of the findings, the researcher also used the interviews to probe on whether tacit knowledge acquisition practices and/or IT dependent practices were promoted in both public and private sector entities in the three research industries by asking the interviewees the following question:

How do you capture and share best practices in your organisation? And how do you transfer these to new staff?

i. Tacit knowledge acquisition in the health industry

The computation of the tacit knowledge scores for both the public and private sector entities in the health industry is provided in table 4.10:

Table 4.10: Tacit knowledge scores for the health industry

Item	Positive response:		Positive response:	
	Government Health Sector		Private Health Sector	
1. Face to face knowledge sharing sessions	Agree	44.1	Agree	47.4
	Strongly agree	28.0	Strongly agree	36.8
2. Job experience valued	Agree	51.7	Agree	42.1
	Strongly agree	32.2	Strongly agree	42.1
3. Regular on the job support	Agree	40.7	Agree	63.2
	Strongly agree	31.4	Strongly agree	21.1
Tacit knowledge score	76.0%		84.2%	

The government health sector has a tacit knowledge score of 76% compared to the score of 84.2% for the private sector health entities. These are high scores denoting that the majority of the respondents in both sectors were confident that initiatives were in place in their institutions for tacit knowledge acquisition. The private health sector has a higher tacit knowledge score due to the fact that for each item measuring tacit knowledge acquisition, there is a greater proportion of respondents who believed these were realised in their entity. The gap in the tacit knowledge scores for both the government and private health sectors is relatively minor considering that at 76% and 84.2% respectively, these scores are far above the 50% mark. This shows that tacit knowledge acquisition was given ‘enough’ emphasis in both sectors.

Since the researcher was interested in determining the practices that enhanced tacit knowledge in the three research industries, respondents were expected to indicate YES for a KM practice they believed was happening in their entity.

Based on the YES responses for each of the listed KM related practices, the degree of tacit knowledge acquisition for the public and private sector health entities is determined as in figure 4.10 below:

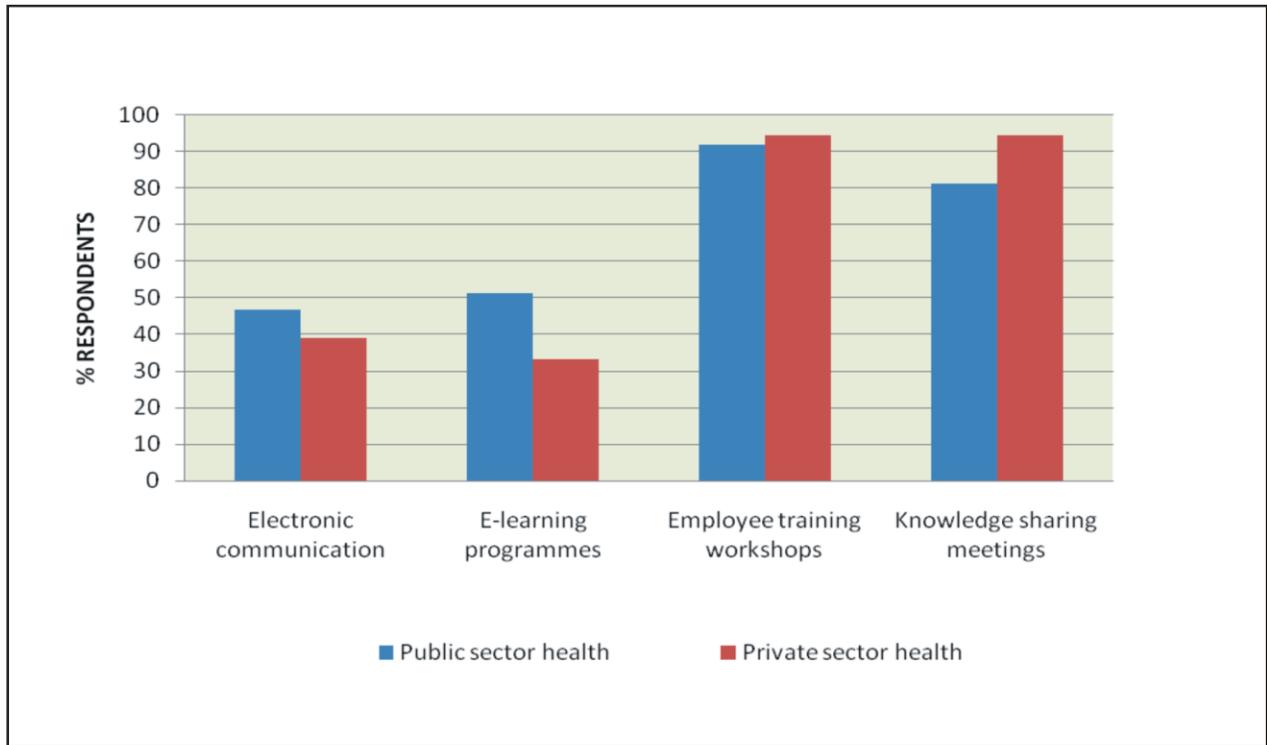


FIGURE 4.10: COMMON KM RELATED PRACTICES IN THE HEALTH INDUSTRY

As illustrated in figure 4.10, an overwhelming majority of respondents from the public and private sector organisations of the health industry believed KM related practices (employee training workshops and knowledge sharing meetings) enhancing tacit knowledge acquisition were being promoted. Almost all the respondents in both sectors believed employee training workshops were taking place in their organisations, while 81.1% respondents in the government health compared to over 94.4% respondents from the private sector health were confident that knowledge sharing meetings were practised in their organisations.

Only a small proportion of respondents from the two sectors of the health industry were confident that electronic communication and e-learning programmes were in place in their organisations.

Almost half of the respondents in the government health sector believed that electronic communication sessions (46.9%) and e-learning programmes (51.4%) were practised in their organisations. This is higher than the 38.9% and 33.3% for the same KM related practices by private sector health respondents. In line with these statistics, the researcher concludes that tacit knowledge acquisition was being facilitated through practices promoting direct face-to-face interactions such as employee training workshops and knowledge sharing meetings in both the public and private sector research entities of the health industry. How consistent are these findings to the interview data?

The interview findings for the private sector hospitals 1 and 2 are almost similar. This might be because they belong to the same hospital group (this is a group of more than 50 hospitals in the country). The hospital manager of private hospital 1 indicated that “we share our best practices through our Best Practice Sharing sessions”. When probed about how these best practices are captured and shared, the hospital manager responded as follows:

We put it (best practice) on paper, we formulate a guideline or policy or protocol and say this is the standard. The section/unit that formulates best practice gives presentation to others. When we hire new staff we get them to an orientation session. Normally it is five days for nursing staff, where we convey these best practices.

It is apparent that both explicit (best practice put on paper) and tacit knowledge (unit that formulate best practice gives presentation to others) modes of knowledge sharing were promoted in private hospital 1. The hospital manager of private hospital 2 also talked about the Best Operating Practices (BOP) which were published by all the 50 plus hospitals in the group on the group’s intranet. He also confirmed that new staff members were expected to go through a detailed orientation programme and that the re-orientation of staff involved a three year cycle.

The interview data point out that both tacit-knowledge-enhancing practices and ICTs were used for the capturing and sharing of best practices in the private sector entities of the health industry. Emanating from these interviews, the researcher was able to observe that the capturing and sharing of best practices in the private sector hospital entities involved the following practices:

- Determining a standard practice
- Formulating the practice on paper
- Transferring the system on an IT system
- Orientation of new staff using the standard practices
- Re-orientation of existing staff regularly.

The above is consistent with Nonaka's tacit-explicit knowledge conversion modes as described in chapter 2. The researcher was also intent on observing whether there was a defined best practice capturing and sharing programme within the public health entities. Based on the interview transcripts from the public sector health institutions, the following findings were made in terms of how best practices were captured and shared:

According to the Information and Records Manager of public sector hospital 5, the capturing and sharing of best practices involved monthly peer review presentations where all the managers from different units would come together to present their reports. The Information Manager indicated that as a way of capturing the best practices, "I compile a comprehensive report of the various reports". The CEO of public hospital 6 indicated that the "best practices are captured and shared using circulars, memos, meetings, and staff induction programmes" in the entity. At public sector hospital 8, the CEO elaborated on how best practices were acquired and shared as follows:

Here we conduct induction sessions for new staff. We also have a school where we train nurses. The school is managed by the Deputy Manager Nursing.

The CEO was strongly convinced that the best practices were acquired practically through experience in the wards. The CEO emphasised the fact that best practices were captured as a policy or regulations. She gave the example of the procedure file for the nursing staff. This was described as a file containing standard procedures for administering health services to a patient in the wards. The file is compiled by senior nurses who try to capture their experience manually in a file. All new nurses are taken through the procedure manual when inducted into the hospital.

The nursing manager of public hospital 3 also emphasised the use of the procedures file in inducting new staff when indicating that “we have a file plus procedures book for recording, where we record that we have taken the new staff through an orientation. That involves showing them the layout of the physical environment of the hospital, the operations and procedures”

The researcher also made a follow-up with all the other sampled public sector health institutions and found the procedure file being a normal practice in all these institutions. Based on the data collected during the interviews in the public sector institutions, the researcher observed that practices enhancing tacit knowledge acquisition together with “manual methods” were used for transferring and sharing best practices among staff. While it is indicated in figure 4.10 that the majority of respondents from both sectors agreed that KM practices enhancing tacit knowledge acquisition were in place in their entities, this is confirmed by the interview data.

ii. Tacit knowledge acquisition in the education industry

Using data collected through the two set of questions (the four-point Likert scale questions and the YES or NO responses on the four KM related practices), the extent to which tacit knowledge acquisition was enhanced in the government and private sectors of the education industry was measured as depicted in table 4.11 as below:

Table 4.11: Tacit knowledge scores for the education industry

Item	Positive response:		Positive response:	
	Public Education Sector		Private Education Sector	
1. Face to face knowledge sharing sessions	Agree	49.3	Agree	38.5
	Strongly agree	10.1	Strongly agree	38.5
2. Job experience valued	Agree	56.5	Agree	69.2
	Strongly agree	32.2	Strongly agree	30.8
3. Regular on the job support	Agree	58.0	Agree	46.2
	Strongly agree	5.8	Strongly agree	46.2
Tacit knowledge score	70.6%		89.8%	

The tacit knowledge score recorded by the private education sector (89.8%) is higher than the 70.6% tacit knowledge score recorded by the government education sector. This demonstrates that an overwhelming majority of the respondents in the private sector education entity were confident that tacit knowledge acquisition was enhanced. Based on the research data collected via the second question, the level of emphasis in terms of the four KM related practices is analysed for both sectors of the education industry as captured in figure 4.11.

In line with its level of ICT application, the government sector of the education industry recorded far very low percentages of respondents in “electronic communication” and “e-learning programmes” as compared to the overwhelming proportion of respondents who believed that “employee training workshops” and “knowledge sharing meetings” were taking place. Even though the private sector of the education industry recorded a far greater proportion of respondents in KM practices enhancing tacit knowledge (employee training workshops and knowledge sharing meetings) than in the IT related practices, many respondents believed that electronic communication sessions and e-learning programmes were also taken into consideration. These statistics are presented in figure 4.11 as follows:

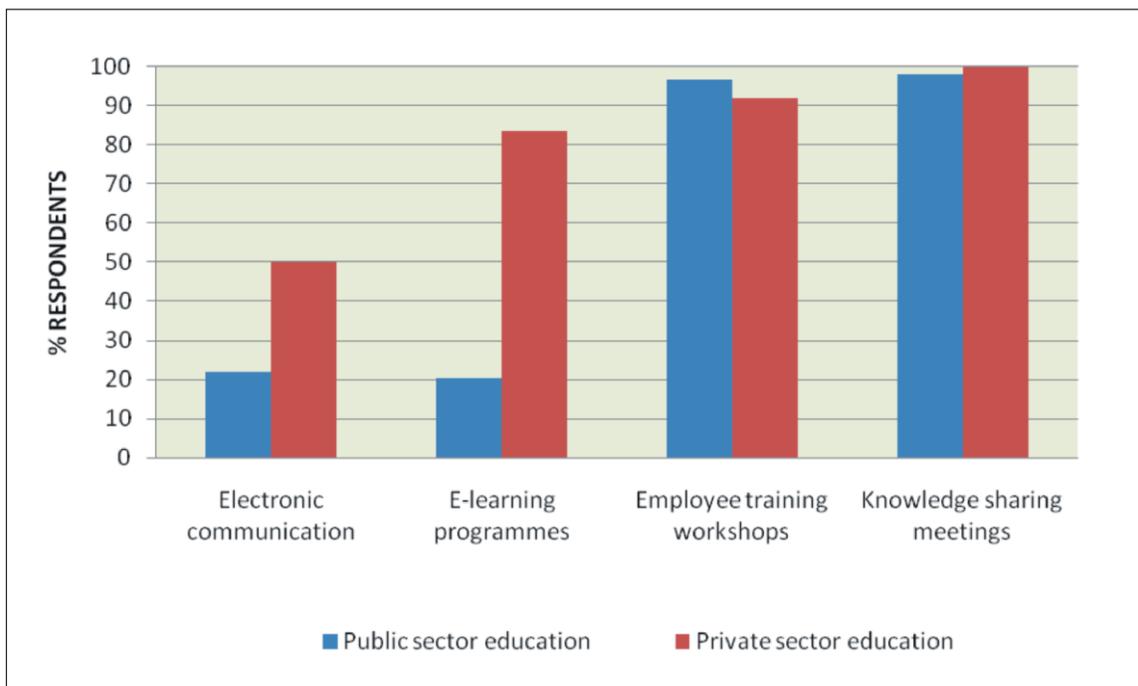


FIGURE 4.11: COMMON KM RELATED PRACTICES IN THE EDUCATION INDUSTRY

All the four KM related practices appear to be commonly practised in the private sector education entity considering the information depicted in table 4.11. Though almost all the respondents (91.7% and 100% respectively) believed employee training workshops and knowledge sharing meetings were taking place in their entity, a sizeable portion of the respondents (50% and 83.3%) from the private sector education believed that KM related practices associated with IT implementation were also practised.

This implies that respondents from the private sector of the education industry were more confident that both KM related practices enhancing tacit knowledge acquisition and IT dependent KM related practices were promoted. Arising from these results, the researcher concludes that the level of ICT application (as depicted in table 4.6) in the research entity determines the extent to which IT related practices are promoted. Both the public and private sector research entities of the education industry are characterised by higher tacit knowledge scores as well as KM related practices enhancing tacit knowledge acquisition. The extent of tacit knowledge acquisition in the two sectors could be clearly assessed through the interview data.

According to the director of the private sector education entity, best practices were acquired through experience and shared using policies and procedures and also through the Internet. She admitted that these policies and procedures were still not developed into a full manual, but since these were in the process of being accredited, they would be formulated into a manual once accredited.

It was found during the interview with the manager from the public education entity that the post 1994 educational transformations (affecting South Africa's education system) have created a situation where the best practices were not generated from the real experience of staff, but taken from other successful nations. He was apprehensive that the education system might collapse due to a lack of a clearly coordinated best practice acquisition programme. He admitted though that meetings and employee training workshops were playing a positive part in ensuring that best practices were shared and transferred to new staff. He indicated that every time new employees were appointed as a group, they were taken into a workshop where they were inducted on the policies and procedures of the department.

But as the researcher probed deeper, it was apparent that there was a problem of inducting employees individually. The public education sector manager confessed that “some new employees happen to learn the art of trade in this department by chance rather than through planned induction programmes”.

These interview findings are consistent with those emanating from the survey questionnaires.

iii. Tacit knowledge acquisition in the business loans industry

Table 4.12 presents the computation of the tacit knowledge scores for the government and private sector entities in the business loans industry as highlighted hereunder:

Table 4.12: Tacit knowledge scores for business loans industry

Item	Positive response:		Positive response:	
	Government Business Loans		Private Sector Business Loans	
1. Face to face knowledge sharing sessions	Agree	41.2	Agree	50.0
	Strongly agree	11.8	Strongly agree	19.2
2. Job experience valued	Agree	58.8	Agree	50.0
	Strongly agree	23.5	Strongly agree	17.3
3. Regular on the job support	Agree	47.1	Agree	40.4
	Strongly agree	23.5	Strongly agree	32.7
Tacit knowledge score	68.6%		69.9%	

The tacit knowledge scores for both the government and private sector business loans research entities are almost equivalent at 68.6% and 69.9% respectively. In both sectors a greater proportion of respondents believed that there were measures in place to enhance tacit knowledge acquisition.

While both the public and private sector research entities in the business loans industry have a greater proportion of respondents who believed that tacit knowledge acquisition was being enhanced, the majority of respondents from the public sector believed three of the four KM related practices were promoted in their entity. These are “electronic communication”, “employee training workshops” and “knowledge sharing meetings”.

On the other hand, the research results show that in the private sector of the business loans industry the majority of the respondents felt KM related practices enhancing tacit knowledge acquisition were more entrenched than IT dependent KM related practices. These results are presented in figure 4.12 below:

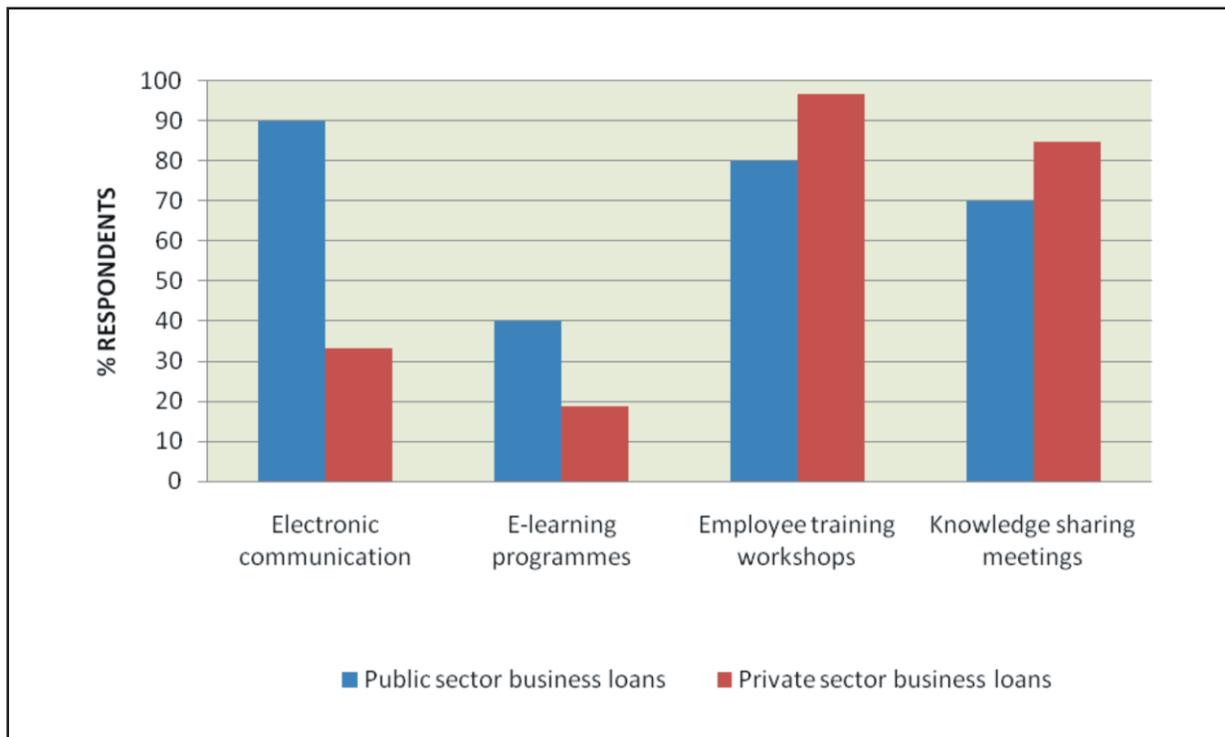


FIGURE 4.12: COMMON KM RELATED PRACTICES IN THE BUSINESS LOANS INDUSTRY

These statistics confirm that the government sector of the business loans industry puts more emphasis on both KM related practices, enhancing tacit knowledge acquisition and those dependent on IT implementation than is the case in the private sector. These results further prove that the level of ICT application in the three research industries determines the extent to which an entity would promote IT dependent KM related practices.

The interviews conducted with management from the business loans industry reveal that KM related practices enhancing tacit knowledge acquisition were entrenched in both sectors of the business loans industry.

In the interview conducted with the Corporate Services Manager of the private sector entity (NGO entity) in the business loans industry, the manager revealed that employee training programmes such as workshops were organised where the best performing employees shared knowledge with their colleagues. There was also a four-month induction programme in place where new employees were taken through a four-phase process which allowed them to acquire the best practices of the entity. The four phases are as follows:

- Phase 1: two week partnering with experienced loan officer
- Phase 2: 25 days class training
- Phase 3: new staff goes back to the field
- Phase 4: final “pass out” exam.

The Corporate Services Manager pointed out that for an employee to proceed to the next phase, he/she would go through a rigorous assessment process. The researcher found out that these phases indeed prepared new staff into the work environment, as well as in acquiring the tacit knowledge that would be imperative for them to become better performing employees. During the interview with the Area Manager of the government sector business loans entity, it was also revealed that best practices were shared through an induction programme involving three phases:

- Phase 1: the first three months is called relationship building where the new employee acclimatise with the area of work
- Phase 2: information provision where the new employee has to study the loan guidelines
- Phase 3: new employee is teamed up with experienced staff member.

The researcher also noted from the interview with the Area Manager of the government sector business loans entity that employee training workshops constituted a greater part of sharing of best practices among staff members. That tacit knowledge acquisition was entrenched in the business loans industry could be traced to the induction programmes applied in both sectors. The researcher noted that the difference in the induction programmes of the two sectors related to the level of emphasis on assessment (“pass out”) which was emphasised in the private sector entity. The government sector entity did not put emphasis on “pass out”. This implies that new staff members pass through the phases without being assessed on whether they have mastered what is required of them or not.

4.5.5. Configuration of social variables for KM

Together with IT implementation, knowledge-oriented social factors have been proven to be crucial towards the success of a KM initiative. The importance of social factors in information and knowledge sharing has been established in literature. An organisation should put more emphasis on social factors when it pursues a Knowledge Management strategy (Chase, 1997:47). Having made a thorough literature search to determine the social factors behind the success of KM, the researcher found that the four overriding social factors for effective information and knowledge sharing are: organisational culture, structures, HR practices and leadership. These are fully discussed in chapter 2.

The researcher was interested in comparing the level or degree of knowledge-oriented social factors between public and private sector entities in the three research industries. The four social variables (organisational culture, structures, HR practices and leadership) have been tested based on the identified underlying characteristics of knowledge-oriented social factors as observed in mature knowledge-based organisations. Respondents were asked to respond to a number of statements under a given sub-construct in each construct (social variable) based on a four-point Likert scale response question ranging from strongly disagree (1) to strongly agree (4).

Realising that it was difficult to get reliable data on the degree of knowledge-oriented organisational culture, structures and leadership, based on verbal responses, the researcher decided to concentrate the interviews only on those variables which could be easily measured through narrative responses. Therefore, two variables measuring knowledge-oriented HR practices (“recruitment and placement of staff” and “performance emphasis”) were investigated through the interviews. The research results presented below arose extensively from the analysis of the survey questionnaires.

4.5.5.1. Organisational culture

A set of three sub-constructs were used to measure the degree of knowledge-oriented organisational culture of both the public and private sector organisations in each industry. The sub-constructs are as follows:

- i. Philosophy and vision of organisation
- ii. Management style
- iii. Physical structures.

A set of four positive statements describing organisational culture features promoting knowledge creation, sharing, application and distribution were developed from KM theory for each sub-construct. These are fully reflected in the survey questionnaire (Appendix A). On the four point Likert scale response question, respondents were to choose their responses in terms of strongly agree, agree, disagree and strongly disagree in each item.

- i. Organisational culture in the health industry

Based on the percentage of respondents who responded positively (strongly agree and agree) on each statement describing a knowledge-oriented organisational culture in terms of the philosophy and vision of organisation, the management style and physical structures, the average percentage for the three subconstructs was computed for both the public and private sector entities in the health industry. Table 4.13 depicts these calculations.

Table 4.13: Knowledge-oriented organisational culture in the health industry

SUBCONSTRUCT	Positive response: Government Health		Positive response: Private Sector Health	
1. Philosophy and vision: In my organisation....				
Knowledge creation and sharing are valued and encouraged	Agree	53.4	Agree	55.6
	Strongly agree	28.4	Strongly agree	33.3
There is tolerance for making learning mistakes	Agree	54.3	Agree	44.4
	Strongly agree	12.9	Strongly agree	11.1
I am allowed to come up with new ideas to improve my performance	Agree	50.9	Agree	44.4
	Strongly agree	26.7	Strongly agree	27.8
There is a spirit of cooperation	Agree	47.4	Agree	55.6
	Strongly agree	29.3	Strongly agree	16.7
Average % for sub-construct		75.8%		72.2%
2. Management style: In my organisation...				
More emphasis is on responsibilities and assignments than titles and positions	Agree	46.6	Agree	50.0
	Strongly agree	14.7	Strongly agree	11.1
Management is consultative	Agree	45.7	Agree	55.6
	Strongly agree	23.3	Strongly agree	05.6
Management has a sense of trust in us	Agree	50.9	Agree	44.4
	Strongly agree	22.4	Strongly agree	11.1
Staff members are consulted when important decisions are made	Agree	41.4	Agree	38.9
	Strongly agree	25.0	Strongly agree	11.1
Average % for sub-construct		67.5%		57.0%
3. Physical structures: In my organisation...				
Our offices are client-friendly	Agree	41.4	Agree	44.4
	Strongly agree	25.0	Strongly agree	11.1
Management and employees share use of basic facilities	Agree	58.6	Agree	77.8
	Strongly agree	17.2	Strongly agree	00.0
Offices create an inviting and communicative atmosphere	Agree	45.7	Agree	33.3
	Strongly agree	16.4	Strongly agree	05.6
The office of our supervisor is accessible	Agree	52.6	Agree	38.9
	Strongly agree	39.7	Strongly agree	27.8
Average % for sub-construct		74.2%		59.7%

As illustrated in the above table, the government sector of the health industry has been found to have a higher percentage of respondents who felt positive about each of the three sub-constructs. About 75.8% of the respondents in the government health industry were confident that the philosophy and vision of their organisations encouraged knowledge creation and sharing. This relatively compares to 72.2% of the respondents from the private sector of the health industry who expressed the same sentiments about the philosophy and vision of their organisations.

The 67.5% respondents from the government health sector expressing the view that the management style in their entities was more consultative in the sense that employees worked in an environment of trust, where responsibilities rather than titles and positions were emphasised is slightly higher than the 57.0% respondents expressing the same view from the private health sector. A significant gap exists between the percentage of respondents from the two sectors who expressed the feeling that physical structures in their entities enhanced knowledge acquisition and distribution. A high percentage of respondents (74.2%) from the public sector as compared to just 59.7% from the private health sector believed that the physical structures of their institutions were knowledge-oriented:

- Offices creating client friendly atmosphere: this is confirmed by 66.4% and 55.5% of the respondents from public and private health respectively
- Management and subordinates sharing use of basic facilities: confirmed by 75.8% and 77.8% of the respondents from public and private health respectively
- Offices creating inviting and communicative atmosphere: a view of 62.1% of the respondents from government health and 38.9% of the respondents from private sector health
- Office of supervisor being accessible: a view expressed by 92.3% of the respondents from government health and 66.7% of the respondents from private sector health.

These statistics demonstrate that a slightly higher percentage of respondents from the government health sector compared to those from the private sector of the health industry felt that the organisational culture in their institutions was conducive to knowledge acquisition and distribution. These results demonstrate that even though both sectors recorded a greater proportion of respondents who believed that the organisational culture of the entities was knowledge-oriented, the organisational culture in the public sector health entities could be described as being more knowledge-oriented than that of the private sector entities.

ii. Organisational culture in the education industry

The extent to which the organisational culture of both government and private sector entities in the education industry has been found to be knowledge-oriented is explained based on statistical data presented in table 4.14 in the next page.

There is a huge gap between the government education sector and the private education sector in terms of the percentage of respondents who felt that their organisational culture was knowledge-oriented. Almost all the respondents (94.2%) from the private education sector believed that the philosophy and vision of their entities encouraged knowledge creation, acquisition and distribution. The percentage of respondents expressing the same view, though it is also high in the government education sector, is lower than that of the private sector education at 77.2%. According to the data presented in table 4.14, the philosophy and vision of the sampled private sector entity of the education industry could be described as a tool for promoting knowledge creation, acquisition and sharing through the following key activities:

- Knowledge creation and sharing encouraged: this view is supported by all (100%) the respondents
- Tolerance for making learning mistakes: 92.3% of the respondents felt positive about this
- Employees allowed to come up with new ideas: supported by 92.3% of the respondents
- A spirit of cooperation: a view expressed by 92.3% of the respondents.

Table 4.14: Knowledge-oriented organisational culture in the education industry

SUBCONSTRUCT	Positive response: Government Sector Education		Positive response: Private Sector Education	
1. Philosophy and vision: In my organisation....				
Knowledge creation and sharing are valued and encouraged	Agree	65.2	Agree	53.8
	Strongly agree	07.2	Strongly agree	46.2
There is tolerance for making learning mistakes	Agree	69.6	Agree	61.5
	Strongly agree	02.9	Strongly agree	30.8
I am allowed to come up with new ideas to improve my performance	Agree	68.1	Agree	38.5
	Strongly agree	11.6	Strongly agree	53.8
There is a spirit of cooperation	Agree	71.0	Agree	30.8
	Strongly agree	13.0	Strongly agree	61.5
Average % for sub-construct		77.2%		94.2%
2. Management style: In my organisation...				
More emphasis is on responsibilities and assignments than titles and positions	Agree	52.2	Agree	30.8
	Strongly agree	14.5	Strongly agree	38.5
Management is consultative	Agree	52.2	Agree	30.8
	Strongly agree	07.2	Strongly agree	46.2
Management has a sense of trust in us	Agree	58.0	Agree	53.8
	Strongly agree	07.2	Strongly agree	30.8
Staff members are consulted when important decisions are made	Agree	37.7	Agree	15.4
	Strongly agree	10.1	Strongly agree	46.2
Average % for sub-construct		59.8%		73.1%
3. Physical structures: In my organisation...				
Our offices are client-friendly	Agree	53.6	Agree	38.5
	Strongly agree	11.6	Strongly agree	53.8
Management and employees share use of basic facilities	Agree	66.7	Agree	38.5
	Strongly agree	08.7	Strongly agree	53.8
Offices create an inviting and communicative atmosphere	Agree	46.4	Agree	53.8
	Strongly agree	01.4	Strongly agree	30.8
The office of our supervisor is accessible	Agree	73.9	Agree	53.8
	Strongly agree	17.4	Strongly agree	46.2
Average % for sub-construct		69.9%		92.3%

The gap between the two sectors in terms of how the management style lends itself to enhancing knowledge creation, acquisition and distribution is also wide. A high percentage of 73.1% of the respondents from the private sector compared to just 59.8% from the government sector of the education industry felt confident that the style of management in their entities promoted positive knowledge-based outcomes by ensuring that:

- Responsibilities and assignments emphasised more than titles and positions: a view expressed by 66.7% of the respondents from the government sector compared to 69.3% of the respondents from private sector
- Management being consultative: 59.4% of the respondents from the government sector and 77.0% from private sector hold this view
- “Management has a sense of trust in employees”: this is supported by 65.2% of the respondents from the government sector compared to 84.6% from private sector
- Employees consulted when important decisions are made: this is the view of only 47.8% of the respondents in government compared to 61.6% from private sector.

These statistics prove that a relatively high percentage of respondents from the private sector as compared to the government sector of the education industry felt that their organisational culture was knowledge-oriented. The proportion of respondents from the private sector of the education industry who believed that the organisational culture in their entity was knowledge oriented in terms of three sub-constructs ranges from 73.1% for sub-construct “management style”, to 92.3% for sub-construct “physical structures” and 94.2% for sub-construct “philosophy and vision”. On the other hand, the proportion of respondents for the three sub-constructs in the government sector of the education industry ranges from 59.8% for sub-construct “management style”, 69.9% for sub-construct “physical structures” and 77.2% for sub-construct “philosophy and vision”.

iii. Organisational culture in the business loans industry

Table 4.15 illustrates positive response rates for the three sub-constructs measuring knowledge-oriented organisational culture in public and private sector entities of the business loans industry.

Table 4.15: Knowledge-oriented organisational culture in the business loans industry

SUBCONSTRUCT	Positive response: Government Business Loans		Positive response: Private Sector Business Loans	
1. Philosophy and vision: In my organisation....				
Knowledge creation and sharing are valued and encouraged	Agree	70.6	Agree	54.9
	Strongly agree	05.9	Strongly agree	33.3
There is tolerance for making learning mistakes	Agree	41.2	Agree	56.9
	Strongly agree	05.9	Strongly agree	07.8
I am allowed to come up with new ideas to improve my performance	Agree	52.9	Agree	45.1
	Strongly agree	11.8	Strongly agree	37.3
There is a spirit of cooperation	Agree	52.9	Agree	49.0
	Strongly agree	17.6	Strongly agree	33.3
Average % for sub-construct		64.7%		79.4%
2. Management style: In my organisation...				
More emphasis is on responsibilities and assignments than titles and positions	Agree	41.2	Agree	43.1
	Strongly agree	05.9	Strongly agree	17.6
Management is consultative	Agree	58.8	Agree	56.9
	Strongly agree	00.0	Strongly agree	15.7
Management has a sense of trust in us	Agree	52.9	Agree	47.1
	Strongly agree	05.9	Strongly agree	27.5
Staff members are consulted when important decisions are made	Agree	41.2	Agree	51.0
	Strongly agree	17.6	Strongly agree	13.7
Average % for sub-construct		55.9%		68.2%
3. Physical structures: In my organisation...				
Our offices are client-friendly	Agree	88.2	Agree	45.1
	Strongly agree	11.8	Strongly agree	45.1
Management and employees share use of basic facilities	Agree	64.7	Agree	58.8
	Strongly agree	23.5	Strongly agree	31.4
Offices create an inviting and communicative atmosphere	Agree	47.1	Agree	56.9
	Strongly agree	23.5	Strongly agree	29.4
The office of our supervisor is accessible	Agree	52.9	Agree	43.1
	Strongly agree	41.2	Strongly agree	45.1
Average % for sub-construct		88.2%		88.7%

Based on the data provided in table 4.15, there is a huge gap between the public and private sectors of the business loans industry in the percentage of respondents for two of the three sub-constructs. 79.4% of the respondents from the private sector as compared to just 64.7% from the public sector believe that the philosophy and vision of their entity enhance knowledge creation, acquisition and distribution. While 68.2% of the respondents from the private sector felt confident that the management style employed in their entity promoted knowledge-based outcomes, only 55.9% felt the same from the public sector of the business loans industry.

However, the majority of respondents from both sectors felt that physical structures in their entities enhanced knowledge creation and sharing. It is found that 88.7% of the respondents from the private sector compared to 88.2% from the public sector of the business loans industry felt confident that physical structures in their entities promoted positive knowledge-based outcomes in terms of the following characteristics:

- Offices creating client-friendly atmosphere: 90.2% of the respondents in the private sector compared to 100% respondents from government entity
- Management and subordinates sharing the use of basic facilities: 90.2% of the respondents from private sector as compared to 88.2% from government entity
- Offices creating inviting and communicative atmosphere: 86.3% and 70.6% of the respondents respectively from the private and government sectors
- Office of the supervisor being accessible: 88.2% of the respondents from private sector and 94.1% from government sector.

Even though the average positive response rate gap between the two sectors is narrower in sub-construct “physical structures”, the gap existing within the other two sub-constructs leads the researcher to conclude that the private sector of the business loans industry has a greater proportion of respondents than its public sector counterpart who expressed the view that their organisational culture was knowledge-oriented. The research results captured in this section demonstrate that except in the health industry, a higher percentage of respondents from the private sector entities believed that the organisational culture in their entities were knowledge-oriented. Does this scenario apply in the other social variables?

To answer this question, the next section presents the analysis of the degree of knowledge-oriented organisational structures in the three research industries.

4.5.5.2. Organisational structures

An overwhelming body of literature presented in chapter 2 led to the identification of three sub-constructs in order to measure the extent of knowledge-oriented organisational structures in the public and private sector entities in the three research industries. When one discusses the issue of knowledge-oriented organisational structures three key elements overrides such discussion. The three elements (sub-constructs) are again listed as they appear in the section on research constructs:

- i. Hierarchies
- ii. Work design structures
- iii. Information flow.

In order to capture an ideal knowledge-oriented organisational structure, each of these three elements have been described in the research questionnaire in terms of a set of four positive items. The four items per sub-construct describe the model knowledge-oriented organisational structure. On a four-point Likert scale, respondents were expected to rate each item as it applied in their own organisation on a score of 1 to 4, one (1) being strongly disagree and four (4) being strongly agree. Based on the collected responses, the researcher analysed the extent to which the organisational structures of the public and private sector entities in the three industries have been found to enhance knowledge creation, acquisition and distribution.

- i. The organisational structures in the health industry

A reflection of the extent to which the organisational structures of the public and private sectors of the health industry were found to be knowledge-oriented is presented in table 4.16 below:

Table 4.16: Knowledge-oriented organisational structures in the health industry

SUBCONSTRUCT	Positive response: Government Health		Positive response: Private Health Sector	
1. Hierarchies: In my organisation...				
The decision making process is less complicated	Agree	51.7	Agree	56.6
	Strongly agree	09.5	Strongly agree	16.7
Management is accessible	Agree	51.7	Agree	44.4
	Strongly agree	25.9	Strongly agree	22.2
Coordination within departments/divisions is promoted	Agree	50.0	Agree	61.1
	Strongly agree	25.0	Strongly agree	05.6
My supervisor makes important decisions and provides me with guidance as I work	Agree	53.4	Agree	61.1
	Strongly agree	25.0	Strongly agree	27.8
Average % for sub-construct		73.1%		73.9%
2. Work design structures: In my organisation...				
Working with others in groups/teams is encouraged	Agree	51.7	Agree	61.1
	Strongly agree	41.4	Strongly agree	22.2
Various divisions engage in joint projects	Agree	60.3	Agree	72.2
	Strongly agree	14.7	Strongly agree	00.0
Various teams come together for planning purposes	Agree	57.8	Agree	50.0
	Strongly agree	18.1	Strongly agree	11.1
Collective learning involving supervisors and their subordinates is promoted	Agree	56.9	Agree	61.1
	Strongly agree	22.4	Strongly agree	16.7
Average % for sub-construct		80.8%		73.6%
3. Information flow: In my organisation...				
There is increased communication and relationships between supervisors and subordinates	Agree	51.7	Agree	66.7
	Strongly agree	23.3	Strongly agree	11.1
Information flow takes place throughout all levels of the organisation	Agree	51.3	Agree	66.7
	Strongly agree	19.1	Strongly agree	11.1
There is continuous information sharing	Agree	47.8	Agree	66.7
	Strongly agree	25.2	Strongly agree	16.7
Employees meet to share best practices	Agree	47.8	Agree	61.1
	Strongly agree	20.9	Strongly agree	05.6
Average % for sub-construct		71.8%		76.4%

A synopsis of the research data reveals that a majority of respondents from the two sectors have been confident that the organisational structures of their entities were knowledge-oriented. The two sectors are relatively comparable in all the three sub-constructs. While 73.1% of the respondents from the government health sector felt that the hierarchical nature of their organisations enhanced knowledge creation, acquisition and distribution, this is almost equivalent to the 73.9% of the respondents from the private sector who expressed the same view. On the other hand, 80.8% of the respondents from government health as compared to 73.6% from the private health sector believed that the design of work structures in their entities encouraged knowledge creation and distribution through the following elements:

- Employees working together in teams (or groups): this is expressed by 93.1% of the respondents from government health and 83.3% from private sector
- Joint projects involving various divisions: the view of 75% and 72.2% of the respondents from government and private sector respectively
- Various divisions coming together for planning purposes: supported by 75.9% of the respondents from government health and 61.1% from private sector
- Collective learning involving supervisors and their subordinates: view of 79.3% of the respondents from government health and 77.8% of the respondents from private sector.

Though the government health sector has a far greater proportion of respondents than the private health sector in sub-construct “work design structures”, the private health sector recorded a slightly higher percentage of respondents (76.4%) than its government sector counterpart (71.8% of the respondents) who believed that information flow was enhanced in their organisations. These results also reflect that both sectors have a far greater proportion of respondents confident that the organisational structures in their entities were knowledge-oriented.

ii. Organisational structures in the education industry

The extent of knowledge-oriented organisational structures in the education industry is depicted in table 4.17 as follows:

Table 4.17: Knowledge-oriented organisational structures in the education industry

SUBCONSTRUCT	Positive response: Government Education Sector		Positive response: Private Education Sector	
1. Hierarchies: In my organisation...				
The decision making process is less complicated	Agree	59.7	Agree	46.2
	Strongly agree	00.0	Strongly agree	30.8
Management is accessible	Agree	80.9	Agree	61.5
	Strongly agree	08.8	Strongly agree	38.5
Coordination within departments/divisions is promoted	Agree	51.5	Agree	30.8
	Strongly agree	01.5	Strongly agree	38.5
My supervisor makes important decisions and provides me with guidance as I work	Agree	48.5	Agree	46.2
	Strongly agree	05.9	Strongly agree	30.8
Average % for sub-construct		64.2%		80.8%
2. Work design structures: In my organisation...				
Working with others in groups/teams is encouraged	Agree	77.9	Agree	38.5
	Strongly agree	11.8	Strongly agree	46.2
Various divisions engage in joint projects	Agree	52.2	Agree	30.8
	Strongly agree	03.0	Strongly agree	46.2
Various teams come together for planning purposes	Agree	50.7	Agree	38.5
	Strongly agree	07.5	Strongly agree	53.8
Collective learning involving supervisors and their subordinates is promoted	Agree	50.7	Agree	38.5
	Strongly agree	06.0	Strongly agree	46.2
Average % for sub-construct		65.0%		84.7%
3. Information flow: In my organisation...				
There is increased communication and relationships between supervisors and subordinates	Agree	57.4	Agree	53.8
	Strongly agree	10.3	Strongly agree	38.5
Information flow takes place throughout all levels of the organisation	Agree	39.7	Agree	53.8
	Strongly agree	07.4	Strongly agree	23.1
There is continuous information sharing	Agree	42.7	Agree	46.2
	Strongly agree	05.9	Strongly agree	30.8
Employees meet to share best practices	Agree	58.8	Agree	15.4
	Strongly agree	04.4	Strongly agree	53.8
Average % for sub-construct		56.7%		78.9%

The data presented in the above table clearly show that an overwhelming majority of respondents from the private sector education believed each of the three sub-constructs enhanced knowledge creation, acquisition and sharing. This signifies a relatively huge gap between the private sector and the government sector in terms of the respondents who felt that their organisational culture was knowledge-oriented. Amongst the three sub-constructs, the private sectors' average positive responses range from 78.9% for "information flow" to 80.8% for "hierarchies" and 84.7% for "work design structures" as compared to 56.7%, 64.2% and 65.0% for the same sub-constructs respectively, for the government sector of the education industry. The gap between the the two sectors is more significant in sub-construct, "information flow" (56.7% and 78.9% of the respondents from the government and private sector entities respectively). These are explained in terms of research data as follows:

- There is increased communication and relationships between supervisors and subordinates: this is supported by 67.7% of the respondents from the government sector and 92.3% from the private sector
- Information flow takes place throughout all levels of the organisation: this is a view of 47.1% of the respondents from the government sector and 76.9% from the private sector
- There is continuous information flow: this is supported by 48.6% and 77.0% of the respondents from both the government and private sectors respectively
- Employees meet to share best practices: 63.2% of the respondents from government sector hold this view compared to 69.2% from the private sector.

Based on the data presented, the private sector education entity could be described as more knowledge-oriented than the public sector entity.

iii. Organisational structures in the business loans industry

Table 4.18 presents the configuration of organisational structures in the public and private sector of the business loans industry:

Table 4.18: Knowledge-oriented organisational structures in the business loans industry

SUBCONSTRUCT	Positive response: Government Business Loans		Positive response: Private Sector Business Loans	
1. Hierarchies: In my organisation...				
The decision making process is less complicated	Agree	41.2	Agree	44.0
	Strongly agree	05.9	Strongly agree	02.0
Management is accessible	Agree	64.7	Agree	66.0
	Strongly agree	11.8	Strongly agree	18.0
Coordination within departments/divisions is promoted	Agree	29.4	Agree	62.7
	Strongly agree	17.6	Strongly agree	21.6
My supervisor makes important decisions and provides me with guidance as I work	Agree	58.8	Agree	52.9
	Strongly agree	00.0	Strongly agree	25.5
Average % for sub-construct		57.4%		73.2%
2. Work design structures: In my organisation...				
Working with others in groups/teams is encouraged	Agree	64.7	Agree	49.0
	Strongly agree	17.6	Strongly agree	51.0
Various divisions engage in joint projects	Agree	76.5	Agree	51.0
	Strongly agree	05.9	Strongly agree	13.7
Various teams come together for planning purposes	Agree	47.1	Agree	62.7
	Strongly agree	17.6	Strongly agree	15.7
Collective learning involving supervisors and their subordinates is promoted	Agree	35.3	Agree	54.0
	Strongly agree	17.6	Strongly agree	24.0
Average % for sub-construct		70.6%		80.3%
3. Information flow: In my organisation...				
There is increased communication and relationships between supervisors and subordinates	Agree	41.2	Agree	56.9
	Strongly agree	17.6	Strongly agree	23.5
Information flow takes place throughout all levels of the organisation	Agree	35.3	Agree	47.1
	Strongly agree	11.8	Strongly agree	23.5
There is continuous information sharing	Agree	47.1	Agree	51.0
	Strongly agree	11.8	Strongly agree	25.5
Employees meet to share best practices	Agree	58.8	Agree	41.2
	Strongly agree	11.8	Strongly agree	41.2
Average % for sub-construct		58.9%		77.5%

The data presented in table 4.18 show a huge gap between the private and the government sectors of the business loans industry in terms of the percentage of respondents who believed each of the three sub-constructs enhanced knowledge creation, acquisition and distribution in their entities. With the private sector recording 73.2% for sub-construct “hierarchies”, 80.3% for “work design structures” and 77.5% for “information flow”, the government sector recorded 57.4%, 70.6% and 58.9% respectively in the same sub-constructs. The private sector recorded a far greater proportion of respondents than its public sector counterpart in all the three sub-constructs. However, respondents from the public sector felt relatively confident that work design structures in their entity enhanced the degree of knowledge-oriented organisational structures. This is explained by the following activities:

- Employees encouraged to work in groups or teams: 82.3% of the respondents
- Various divisions engaging in joint projects: 82.4% of the respondents
- Various divisions coming together for planning purposes: 64.7% of the respondents
- Collective learning involving supervisors and their subordinates: this is a view expressed by 52.9% of the respondents from the public sector of the business loans industry.

These statistics prove that employees from the public sector business loans entity felt confident that they were encouraged to work in groups and teams, and also in the form of joint projects. KM scholars such as Sieloff (1999:48) and Lamproulis (2007:34) have found that groups and teams promote knowledge acquisition and sharing as is evident in communities of practice (CoPs). Nevertheless, the private sector entity in the business loans industry has a significant higher percentage of respondents than their private sector counterpart confident that their organisational structures were knowledge-oriented.

The analysis conducted in this section reveals that saving the health industry, private sector entities recorded higher percentages of respondents who believed that organisational structures in their entities were knowledge-oriented. The next section captures the analysis of research results pertaining to the degree of knowledge-oriented HR practices in the three research industries.

4.5.5.3. Human resource (HR) practices

Relying on an extensive study of the role of HR in knowledge-based entities as discussed in chapter 2, the researcher identified five elements (sub-constructs) to explain knowledge-oriented human resource practices in public and private sector entities in the three research industries. These elements are:

- i. Empowerment
- ii. Performance emphasis
- iii. Supporting benefits programmes
- iv. Comprehensive training
- v. Encouraging commitment.

Using a four-point Likert scale questionnaire, respondents were required to rate each statement on a scale of 1 to 4 (1 being strongly disagree and 4 meaning strongly agree) as it applied in their organisations. Based on the data collected through interviews, two variables measuring knowledge-oriented HR practices are incorporated into the quantitative analysis. These are: recruitment and placement of staff as well as performance emphasis. The researcher used the interviews to understand whether the recruitment and placement of staff as well as performance expectation on staff members were in line with the practices in knowledge-intensive organisations as highlighted in chapter 2 of this report. The guiding questions were:

- How do you ensure that you always recruit the best candidates for positions advertised in your organisation?
- How do you make sure that employees in this organisation perform at their peak?

These questions are linked to the sub-construct “performance emphasis”. KM scholars agree that because the organisation’s people are considered of strategic significance, effective KM should entail attracting and keeping people with abilities, behaviours and competencies that add value to the organisation’s knowledge stock (Kalkan, 2008:395). A presentation of the degree of knowledge-oriented HR practices for the three research industries follows.

i. HR practices in the health industry

A presentation of the average positive responses (combining agree and strongly agree responses) for the government and private sectors of the health industries is presented in figure 4.13. The bar-graph clearly demonstrates that both the public and private sector respondents from the health industry expressed confidence that HR practices in their organisations enhanced knowledge-based outcomes in terms of four (empowerment, performance emphasis, comprehensive training and encouraging employee commitment) of the five sub-constructs. The only sub-construct which respondents felt was not encouraging knowledge acquisition and distribution is the sub-construct “supporting benefits programme”. That there is no huge gap in the views expressed by respondents from both sectors in terms of each of the sub-construct measuring knowledge-oriented HR practices is evident as reflected in figure 4.13 below:

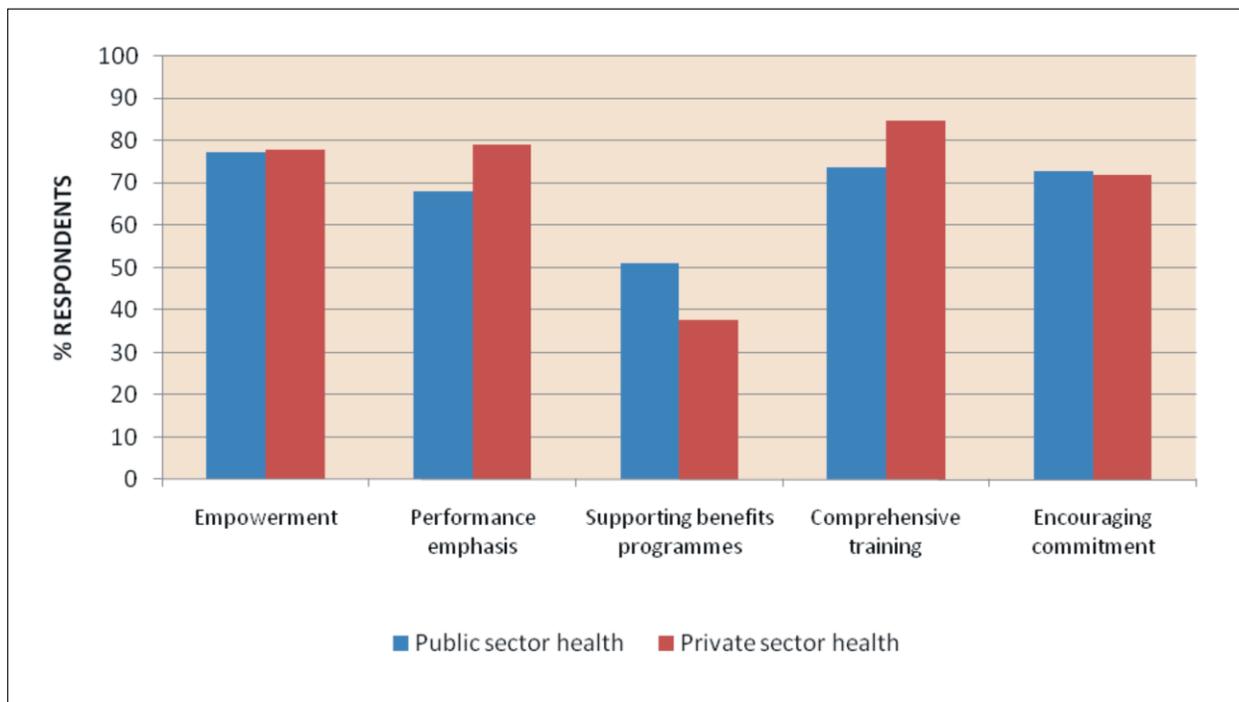


FIGURE 4.13: KNOWLEDGE-ORIENTED HR PRACTICES IN THE HEALTH INDUSTRY

A detailed analysis based on the above figure reveals that the public and private sectors of the health industry recorded almost equivalent percentages for sub-construct empowerment and encouraging commitment. A greater proportion of respondents from the private sector than from the public sector felt that performance was emphasised and comprehensive training was promoted in their entities. About half of the respondents from the public sector believed that supporting benefits programmes were in place in their entities. This might be explained by the fact that many government nurses had just received new salary structures during the time of the investigation. Very few respondents from the private health sector were confident that employee supporting benefits programmes were in place in their entities.

The interview data revealed the following scenario in terms of recruitment and placement of staff in the two sectors of the health industry:

All private sector hospitals managers indicated that they played an active role in the head-hunting, short-listing and interviewing of staff. Though the recruitment and placement of hospital managers and other senior managers was managed at the group's head office, in all matters relating to recruitment and placement of staff for their entities, the hospital managers indicated they were playing a bigger role.

The hospital manager of private hospital 1 reflected that issues of recruitment of staff in terms of headhunting, short-listing and interviews were handled by a team comprised of HR, General Management, Client Services and the recruiting unit. He also emphasised the fact that advertisements of posts were circulated widely through the hospital using the hospital's intranet, internet and the media. The interviews revealed that the recruitment and placement of staff in both entities of the private health sector involved the following five key processes:

- Advertisements
- Short-listing
- Screening process
- Competency tests
- Interviews.

As it was revealed in the private sector entities, top management posts were short-listed and interviewed at head office in the public sector health entities.

The interviews with the management of the public sector hospitals revealed that advertisement of posts was controlled at the provincial office (Head office of all government departments) with the individual hospitals allowed to short-list and interview for staff below the senior managerial level. The researcher wanted to know from the interviewees whether these did not impact negatively on the ability of hospitals to recruit key personnel. The CEO of public hospital 1 pointed out: “Head office gives us guidelines on recruitment and since our core business is health, we have to get the best people”. This implies that head office did not dictate to individual hospital whom to appoint. Clarity on the role of head office and individual entities in the recruitment and placement of staff was elaborated by the Information and Records Manager of public hospital 5 who indicated that “The department advertises, we do the short-listing and interviews. We always go for the best candidates”.

The nursing manager of public hospital 3 was convinced that the hospital was not negatively affected by the nature of recruitment in public service as “we do get the people we want”. The CEO of public hospital 8 was concerned that though the nature of the recruitment process did not negatively impact on the ability of the hospital to recruit and place the best candidates, some of the legislations that they had to follow impacted negatively on the hiring systems. He cited two important legislations in this regard, namely the Employment Equity Act and Affirmative Action quotas. The CEO further indicated that sometimes they were forced to bypass the best candidate because he/she did not represent the ‘right’ previously disadvantaged group.

It is apparent from the analysis of the interview transcripts that there is little that separates private and public sector entities in terms of the recruitment and placement of staff. While emphasis in the private sector entities was on five key recruitment processes (advertisements, short-listing, screening, competency testing and interviews), the public sector entities appear to put more emphases on three of the five key recruitment processes, namely advertisement, short-listing and interviews.

As highlighted in figure 4.13, the majority of respondents from both sectors of the health industry were convinced that performance was emphasised in their entities, and the researcher wanted to determine whether this could be confirmed through the interviews.

In the interview with the hospital manager of private hospital 1, it was revealed that at the heart of the entity's performance monitoring, was the application of Quality Assurance Programmes (QAPs) run by the hospital group's Monitoring and Quality Assurance Teams (MQATs). Apart from the QAPs, the entity's employees were able to tap the best operating practices of other hospitals in the group through the group's intranet system.

The hospital manager of private hospital 2 was rather more elaborative when indicating that performance appraisal was done twice a year for all the staff members. According to him, the process involved a staff member identifying areas in his/her work which needed to be improved. From this the employee's performance and development plan would be drawn. The hospital manager of private hospital 2 was adamant that performance monitoring was all about quality improvement. He explained the quality improvement process in the entity as a cycle with five activities as follows:

- Step 1: Identifying areas of improvement
- Step 2: Finding cause of poor performance
- Step 3: Identifying possible solutions (adjust process)
- Step 4: Implementing performance improvement measure
- Step 5: Evaluating outcome.

In line with the quality improvement process administered in the entity, the hospital manager indicated that the hospital continuously monitored its systems. He further demonstrated that any mistake or mishap happening within the entity was regarded as a quality failure. In order to correct it, the five steps in the quality improvement process were followed.

As explained by the hospital manager of private hospital 2, the main objective behind the entity's quality improvement process was to ensure that the performance of the employees was continuously monitored to prevent any performance deviations that could occur. He stated that "Quality is part of our core values". He cited an example of a quality failure as when "a patient slips on the floor, we go through the quality improvement cycle". The hospital manager also emphasised that in order to prevent quality failure (performance mishap) each employee was properly trained to the job.

The issue of quality assurance was also revealed in the interviews with the senior managers of the public health sector entities. Each public hospital visited by the researcher had a separate directorate dealing with quality assurance. In the interview with the Information and Records Manager of public hospital 5, the response to the question on how to ensure better performing employees was "we work according to performance agreements". These were said to be quarterly evaluations of employee performance which ultimately culminate in an annual performance evaluation which lead to performance bonuses for employees scoring a good performance rating.

The researcher wanted to know what happened to employees scoring a bad performance rating. According to the manager, those who continuously failed were assisted through the Employees Wellness Programme (EWP). The CEO of public hospital 6 elaborated on the implementation of the performance appraisal system in the public sector health institutions when indicating that "At the beginning of the year, each employee enters into a performance agreement". She cited other programmes which were linked to the performance appraisal process as follows:

- Skills audit and implementation of skill development plans
- Peer reviews
- Participation in quality improvement programmes
- Continuous professional development.

Furthermore, the Nursing Manager of public hospital 3 highlighted the fact that in order to ensure employees were better performing “we supervise, we check whether they are performing, we rate them quarterly. We use the PMS (Performance Management System) to rate them”.

According to the CEO of public hospital 8, “if you follow the PMS to the latter you cannot have difficulty assisting your staff to improve their performance”. He therefore, conceded that the problem with PMS was that it was abused by both managers and employees in most public sector institutions. The CEO indicated that the success of PMS depended much on setting service standards. He admitted that these service standards emanated from the national norms and standards for the Department of Health set by the national government.

The CEO indicated that as a hospital “we customize these national norms and standards into the hospital’s service standards”. He indicated further that these service standards informed the PMS as well as the hospital's quality assurance programme. Also aligned to these service standards was a detailed in-service education programme for the nursing staff. According to him, a PMS system aligned to the quality assurance programme would not fail to impact positively on improved employee performance. The CEO of public sector hospital 1 also conceded that many people in the public service did not have a proper understanding of PMS. She stressed that if it was done well it could be an effective performance improvement tool. As she elaborated, “the success of PMS depends on the top management of the hospital. If management is careful in implementing then it would be fine”.

Though the interviews demonstrate that private sector hospital entities appeared more inclined towards quality improvement systems than their public sector counterparts, the researcher could not establish a statistical basis to suggest that private and government sector entities in the health industry depicted significant differences in the percentages of respondents who were confident that HR practices in their institutions were knowledge-oriented. Respondents from the public health sector might have been tempted to overstate the facts, since the questions related mostly to their “own” perceptions. This has also been observed in others studies (Goh & Hooper, 2009:25).

ii. HR practices in the education industry

The extent to which public and private sector organisations in the education industry have knowledge-oriented HR practices is reflected in figure 4.14 below:

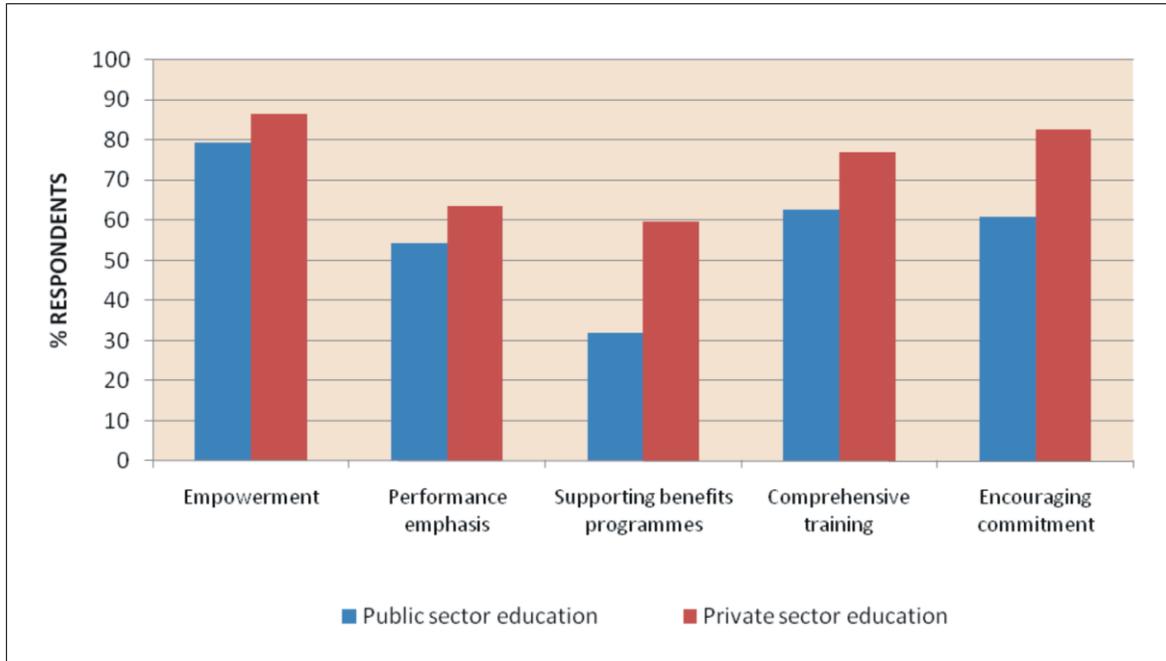


FIGURE 4.14: KNOWLEDGE-ORIENTED HR PRACTICES IN THE EDUCATION INDUSTRY

The configuration of knowledge-oriented HR practices in the education industry as reflected in figure 4.14 above shows that the private sector education entity is far ahead its government sector counterpart in terms of the percentage of respondents who felt that the five sub-constructs enhanced knowledge-based outcomes in their entity. In all the five sub-constructs, the majority of private sector respondents believed these were configured in a way that promoted knowledge acquisition and distribution.

The majority of respondents from the government sector felt confident that only four of the five sub-constructs encouraged knowledge acquisition and distribution. The government education sector recorded higher percentages in sub-constructs “empowerment” (79.4%), “comprehensive training” (62.7), “encouraging commitment” (60.9) and “performance emphasis” (54.3%).

Though the government sector is lagging behind the private sector in terms of the percentage of respondents who felt that HR practices in their sector were able to promote knowledge creation, acquisition and distribution, it has recorded relatively higher percentages for three of the sub-constructs. But the research results depict that very few (31.9%) respondents from the public education sector were confident that there were appropriate employee-supporting benefits programmes. The private sector entity recorded 59.6% respondents who felt employee-supporting benefits programmes were in place.

A comprehensive comparison between the two sectors in terms of respondents' positive responses (agree and strong agree) for each of the four research items testing sub-construct "supporting benefits programmes" is presented below:

- Employees getting support when they need it: 84.7% respondents from the private sector compared to just 40.6% from government sector
- Employee social clubs being encouraged: just 30.8% respondents from the private sector compared to 39.1% from government sector
- Employee trips and competitions promoted: 61.5% respondents from the private sector compared to only 27.5% from government sector
- Attractive benefits programmes: 61.5% respondents from the private sector and just 20.2% from the government sector.

The above demonstrates that very few respondents from the government education sector were convinced that employee benefits programmes were given enough attention to enhance their ability to create, acquire and distribute knowledge.

Considering the quantitative data presented above, the researcher notes that when compared to the public sector, the private sector of the education industry has a greater proportion of respondents who believed that HR practices were knowledge-oriented in their entity. The interview data pertaining to the two variables measuring knowledge-oriented HR practices clearly confirm these findings.

In terms of the recruitment and placement of staff, it was revealed during the interview with the director of the private sector education entity that for promotional posts, “we first look at our own staff before any outsider is considered”. The director also emphasised the fact that head-hunting was a more favoured recruitment process in the entity. The researcher also noted based on the interview transcript that the recruitment and placement of staff in the entity involved the following processes:

- Advertisement (internal advertising for promotional posts)
- Head-hunting
- Short-listing
- Interviews.

In all these processes, the director played an active role. On the other hand, the interview with the government education middle manager revealed that the HR unit at head office was the key driver of recruitment and placement of staff with districts implementing the directives of head office. All curriculum advisors posts were advertised, short-listed and interviewed by head office. The middle manager admitted that in some cases the district managers (or their representatives) were not even involved in the short-listing and interviews for posts within their own districts. The researcher also noted during the interview that there was low morale among middle managers (as observed from the interviewee’s attitude) as they believed that posts were political appointments.

The education manager interviewed cited the fact that he and other middle managers at districts were not exactly sure of the recruitment policy and guidelines followed when appointing or promoting staff. That middle managers in the public education sector were poorly motivated does not bode well for effective KM. Middle managers play a strategic role in KM by ensuring that the visionary ideals of senior management are appropriately implemented by the front-line workers (Nonaka, 2000:104).

The emphasis on performance for the two sectors of the education industry (as reflected in figure 4.14) is clarified by the interview data. The director of the private sector education entity admitted that performance appraisal was not seriously given due attention in the past. But the entity was in the process of implementing an appraisal system linking the objectives of the entity with each employee's job description. On the other hand, the interview with the public sector education manager revealed that the PMS was the tool used to ensure performance improvement.

The public sector middle manager admitted that the way the PMS system was implemented was not related to performance improvement but "just the filling of forms". The picture he presented was that the system was being abused by managers and employees who associated it with financial incentives. He added that some managers would rate an employee's performance bad as a way of punishment rather than an actual reflection of the employee's performance.

Based on the analysis presented in this section, the researcher concludes that the private sector of the education industry has a higher degree of knowledge-oriented HR practices than its public sector counterpart.

iii. HR practices in the business loans industry

Just like in the other two industries (health and education), the researcher would like to make a detailed presentation of the research results pertaining to the degree to which public and private sector entities in the business loans industries have knowledge-oriented HR practices. The degree to which the government and private sectors of the business loans industry have knowledge-oriented HR practices is reflected in figure 4.15:

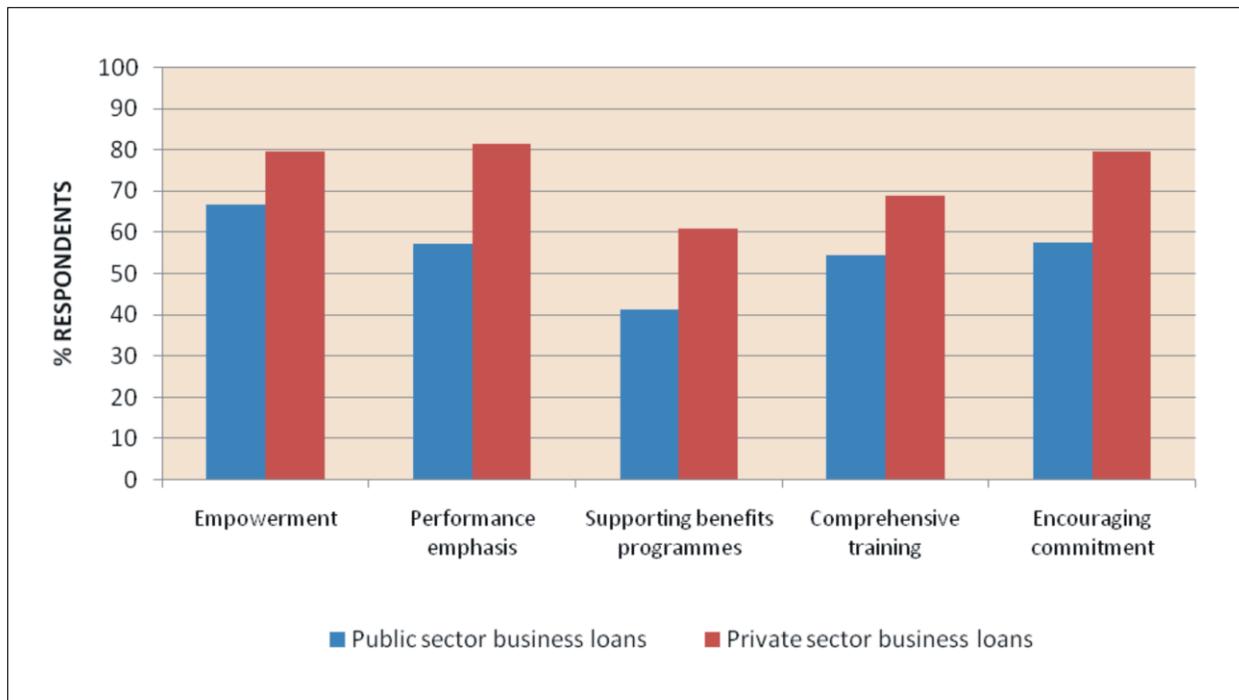


FIGURE 4.15: KNOWLEDGE-ORIENTED HR PRACTICES IN THE BUSINESS LOANS INDUSTRY

A comparative analysis of the degree to which HR practices in the public and private sectors of the business loans industry have been found to be knowledge-oriented reveals a huge gap between the two sectors. The private sector of the business loans industry recorded a far greater proportion of respondents in the five sub-constructs than their government sector counterpart. The lowest percentage recorded by the private sector is 61.0% for sub-construct “supporting benefits programmes”, while the highest is 81.3% for “performance emphasis”.

The government sector recorded the lowest percentage (41.2% of the respondents) in sub-construct “supporting benefits programmes”. In terms of these research results, the public sector of the business loans industry could be described as having low to modest knowledge-oriented HR practices, while the private sector entity could be described as having highly knowledge-oriented HR practices. Are these findings consistent with those emanating from the interviews?

During the interview with the Area Manager of the government business loans entity, the following underlying principles of the entity's staff recruitment and placement processes were revealed:

- Posts are advertised externally and internally
- Vacancies are handled by HR unit at head office
- The Area Manager is basically the recruitment manager (plays a key role in the short-listing and interview process and has a say in the recommendations).

When the researcher probed further why the Area Manager was regarded as the recruitment manager, the Area Manager indicated that since he was responsible for the overall performance of the entity, any bad recruitment would ultimately backfire on him. Hence, he had to ensure that he played an active role in the recruitment and placement of the best available candidates. The interview with the Corporate Services Manager of the NGO business loans entity also revealed very crucial recruitment processes as follows:

- Advertisement
- Math test
- Voice test
- Personal profile assessment (PPA)
- Essay writing
- Two weeks partnering with experienced loan officer (DF)
- 25 days formal 'class' training
- Going back to field before final pass out assessment.

The researcher notes that these recruitment processes as practised in the private sector business loans entity though they might appear to be stringent staff recruitment processes, they are rich in tacit knowledge acquisition. The interview data confirm that performance emphasis was highly valued in the private sector business loans entity than in the public sector entity in line with figure 4.15 in this section.

Nevertheless, the Area Manager of the public sector business loans entity observed during the interviews that since the entity was strictly monitored, there was a performance pressure on the entity's employees. The Area Manager indicated that a performance improvement plan was instituted in the entity. The plan involved the following:

- Performance indicators clearly spelt out
- Identification of performance problems
- Putting targets
- Time-frame for performance improvement.

According to the Area Manager, the performance problems were viewed as training needs. When a performance problem was identified in a particular employee, such an employee was given the necessary training. On the other hand, the Corporate Services Manager of the private sector business loans entity indicated that employees were motivated to better performance in the entity due to the implementation of a proper employee growth plan. He indicated that “best performers grow from DF to branch managers to zonal managers and then regional manager” as a result of the entity's succession planning programme. In terms of the employee growth plan, for any employee to be promoted to the next higher level, he/she should be a proven performer.

These results demonstrate that the private sector of the business loans entity has a relatively higher degree of knowledge-oriented HR practices compared to the public sector entity.

The findings presented throughout this section further confirm that saving the health industry, private sector entities in the other two industries could be described as having more knowledge-oriented HR practices than public sector entities. Having extensively reflected on the degree of knowledge-oriented HR practices in the public and private sector entities in the three research industry, the emphasis now moves to an analysis of the degree of knowledge-oriented leadership in the three research industries.

4.5.5.4. Leadership practices

Four elements of a knowledge-oriented leadership have been identified by the researcher based on an extensive study of literature related to the role of leadership in KM. These elements have been adopted as research sub-constructs measuring the degree of knowledge-oriented leadership in the three research industries. The elements are listed below as they appear in the research questionnaire:

- Motivation for KM
- Creation of atmosphere of safety within the organisation
- Provision of the information and knowledge requirements of the organisation
- Developing a knowledge enterprising culture.

Each of these four elements was tested using a set of four items. These items were in the form of positive statements describing the ideal knowledge-oriented leadership practices. Using a four-point Likert scale questionnaire ranging from strongly agree to strongly disagree, the researcher asked the respondents to rate each statement as it applied in their own organisation. The rating scale was structured so that 1 refers to strongly disagree and 4 to strongly agree. Based on the collected data, the researcher was able to present the degree of knowledge-oriented leadership practices in public and private sectors of the three industries as follows:

i. Leadership in the health industry

Based on the research data, a positive response rate for both the public and private sectors of the health industry was calculated. The positive response rate was computed by adding agree and strongly agree percentages for the four items testing each research element and then determining the average positive rate for each sub-construct. The average positive response rates for the four research elements measuring the degree of knowledge-oriented leadership are presented in table 4.19 as follows:

Table 4.19: Knowledge-oriented leadership in the health industry

Sub-construct (Research element)	Positive response rate: Government Health Sector	Positive response rate: Private Health Sector
1. Motivation for KM	68.3%	70.9%
2. Creating atmosphere of safety	76.3%	73.6%
3. Provision of information and knowledge requirements	67.8%	61.2%
4. Creating knowledge enterprising culture	62.9%	64.4%

Based on the above table, one notices that there is a minor gap between the government and private sectors of the health industry in terms of the percentages of respondents who felt that leadership practices in their organisations enhanced knowledge creation, acquisition and distribution. Even though each of the two sectors appears to have an advantage over the other in two of the four research elements, the percentage differences between the two is relatively small. The 70.9% and 64.4% respondents recorded by the private health sector for sub-constructs “motivation for KM” and “creating knowledge enterprising culture” respectively are higher than the 68.3% and 62.9% recorded by the government health sector for the same sub-constructs. The difference is less than 3% in each case.

Similarly, the 76.3% respondents recorded by the government sector for sub-construct “creating atmosphere of safety” is relatively comparable to the 73.6% respondents recorded by the private health sector for the same sub-construct. Even though there is a 6.6% gap between the two sectors in research element “provision of information and knowledge requirements”, the two sectors could be described as within reach of each other.

Having recorded 67.8% respondents for this sub-construct, the government sector has a slightly greater proportion of respondents than the 61.2% respondents from the private sector who believed that management was playing its role of providing the information and knowledge resources needed in their organisation. The statistics provided so far have proven that there is, as a matter of fact, no significant difference between the two sectors of the health industry in terms of the percentage of respondents who felt that the leadership practices within their respective sectors were knowledge-oriented.

ii. Leadership in the education industry

Based on the positive response rates computed for the four sub-constructs measuring knowledge-oriented leadership, the degree of knowledge-oriented leadership for the public and private sector entities of the education industry is explained in table 4.20 below:

Table 4.20: Knowledge-oriented leadership in the education industry

Sub-construct (Research element)	Positive response rate: Government Education	Positive response rate: Private Sector Education
1. Motivation for KM	63%	71.2%
2. Creating atmosphere of safety	71.4%	88.5%
3. Provision of information and knowledge requirements	52.9%	82.7%
4. Creating knowledge enterprising culture	53.6%	76.9%

The statistical data presented above confirm the trend that has already manifested in the other three social variables for the education industry. The trend is that the private sector entity of the education industry has a greater proportion of respondents than the government sector in the four social variables. It is, therefore, apparent when considering the data presented in table 4.20 that there is a gap between the two sectors in terms of the degree of knowledge-oriented leadership.

When compared to the government sector, the private sector of the education industry recorded a higher percentage of respondents who felt that each of the four research elements manifested in their own entity. The lowest positive response rate recorded by the private sector of the education industry is 71.2% for research element “motivation for KM” and the highest is 88.5% for research element “creating atmosphere of safety” within the organisation. This shows that an overwhelming majority of the respondents from the private sector of the education industry believed that the four leadership practices were prevalent within their organisations.

These scores are comparatively higher considering that the government sector recorded between 52.9% of the respondents for research element “provision of information and knowledge requirements” and 71.4% for research element “creating atmosphere of safety”. Considering these statistics, the private sector of the education industry could be described as having more knowledge-oriented leadership practices than the government education sector entities.

iii. Leadership in the business loans industry

Table 4.21 presents the average positive response rates for the public and private sectors of the business loans industry for the four sub-constructs measuring knowledge-oriented leadership.

Table 4.21: Knowledge-oriented leadership in business loans industry

Sub-construct (Research element)	Positive response rate: Government Business Loans	Positive response rate: Private Sector Business Loans
1. Motivation for KM	61.8%	73.8%
2. Creating atmosphere of safety	47.1%	75.5%
3. Provision of information and knowledge requirements	45.6%	70.2%
4. Creating knowledge enterprising culture	42.7%	70.7%

As highlighted in table 4.21, the private sector of the business loans industry recorded very high percentages in all the four sub-constructs, while the public sector entity recorded very low percentages except in sub-construct “motivation for KM”. Based on these results, the researcher concludes that the majority of the respondents from the private sector of the business loans industry were convinced that leadership practices within their entity were knowledge-oriented. Only less than half of the respondents from the government sector hold the same view.

The lowest positive response rate for the private sector is 70.2% for sub-construct “provision of information and knowledge requirements” while the highest positive response rate is 75.5% for the sub-construct “creating atmosphere of safety”. These response rates are rather high. They clearly demonstrate that an overwhelming majority of the respondents from the private sector of the business loans industry were confident that their entity possessed knowledge-oriented leadership practices.

These high positive response rates contrast markedly with the research results for the government sector of the business loans industry. The government sector of the business loans industry recorded positive response rates ranging from 42.7% to 61.8%. It is apparent that the majority of respondents from the government sector of the business loans industry were not convinced that leadership within their entity was capable of enhancing knowledge creation, acquisition and distribution.

4.5.6. Key elements for effective KM implementation

In determining the key elements for effective KM implementation in the three research industries, the researcher asked the respondents to indicate the extent of emphasis they required for each of the five research elements (as adopted from the holistic approach to KM) in order for their entities to become knowledge power-houses. A knowledge power-house is defined in this research in terms of a mature knowledge-based entity which successfully implements KM.

It has already been illustrated in chapter 2 that successful KM implementation leads to the achievement of knowledge-based outcomes. There is empirical evidence of various endeavours undertaken by organisations to become more knowledge-oriented.

The researcher was interested in understanding the key elements necessary to transform each of the research entity into a knowledge-based organisation. In order to determine those key elements, the researcher asked the respondents to mark each of the five listed research element on a scale of 1 to 4 in terms of whether they believed the element should be emphasised to make their entity a knowledge powerhouse. In terms of the scale, 1 means strongly disagree and 4 implies strongly agree. For the purpose of this analysis, the five elements are recaptured as follows:

- Investment on information technology
- Changing the culture of the organisation
- Redesigning the organisational structures
- Restructuring of the HR practices
- Training of the management team.

Based on the responses provided, the researcher was able to determine those elements of the holistic approach to KM which deserved more emphasis to make each of the research entity in the three industries a knowledge power-house as follows:

- i. Elements necessary for effective KM implementation in the health industry

The research results for the public and private sector entities of the health industry arising from the positive responses (agree and strongly agree) respondents provided for each of the tested statement are presented in table 4.22:

Table 4.22: Key elements for effective KM implementation in the health industry

Research factor	% Positive response: Public Sector Health	% Positive response: Private Sector Health
1. Investment on Information Technology	77.4	66.7
2. Changing the organisational culture	73.0	50.0
3. Redesigning the organisational structures	76.5	55.5
4. Restructuring the HR practices	84.2	66.6
5. Training the management team	85.2	72.2

A far greater proportion of respondents from the public sector than from the private sector of the health industry believed that the five elements (IT, organisational culture, organisational structures, HR practices and leadership) deserved more emphasis in order to increase continuous learning, information sharing and development of new ideas in their entities. Only about half the respondents from the private sector felt that the organisational culture in their entities should be changed and organisational structures redesigned. The most interesting aspect about these results is that both sectors have not recorded below 50% in all the five research elements.

That both sectors recorded a higher percentage of respondents who felt that there should be investment on IT to make their entities more knowledge-oriented is understandable considering that the level of ICT application (as captured in table 4.6) in both sectors has been found to be unsatisfactory. There is no other evidence in the research data why the majority of respondents from the two sectors believed in the restructuring of HR practices and training of management teams since other research results prove that respondents from the two sectors in the health industry were of the opinion that these were already knowledge-oriented.

ii. Elements necessary for effective KM in the education industry

Based on the positive response rates calculated from the strongly agree and agree responses for the five research elements, the key elements for effective KM in public and private sector research entities of the education industry could be analysed as presented in table 4.23 below:

Table 4.23: Key elements for effective KM implementation in the education industry

Research factor	% Positive response:	% Positive response:
	Public Sector Education	Private Sector Education
1. Investment on Information Technology	76.8	83.3
2. Changing the organisational culture	66.7	25.0
3. Redesigning the organisational structures	68.1	16.7
4. Restructuring the HR practices	72.4	66.6
5. Training the management team	86.9	83.3

A higher percentage of respondents from the government education sector than from the private education sector entity believed that emphasis should be placed on changing the organisational culture, restructuring of the organisational structures, redesigning of HR practices and training of the management team in order to increase continuous learning, information sharing and development of new ideas within their entities. The majority of the respondents from the private sector entity appear comfortable with the organisational culture and structures but they believed that there should be more investment on IT, redesign of HR practices and training of the management team.

While these results are consistent with other findings presented earlier in this chapter, it is surprising why a greater proportion of respondents from the private sector entity than from the public sector education entities felt that investment in IT was necessary to make their entity a knowledge powerhouse considering that this sector recorded far higher rates of respondents in terms of ICT application.

iii. Elements necessary for effective KM implementation in the business loans industry

The research results relating to ICT application in the business loans industry reveal extensive usage of ICTs by the public sector respondents as compared to their private sector counterparts. Nevertheless, a far greater proportion of the respondents from the private sector than from the public sector believed the four social factors were knowledge-oriented in their entity.

In order to validate these findings, the researcher assesses those elements of the holistic approach to KM which should deserve emphasis in order to enhance KM implementation in the two sectors. Table 4.24 presents the key elements necessary for effective KM implementation in the public and private sectors of the business loans industry.

Table 4.24: Key elements for effective KM implementation in the business loans industry

Research factor	% Positive response:	% Positive response:
	Public Sector Business Loans	Private Sector Business Loans
1. Investment on Information Technology	66.7	70.6
2. Changing the organisational culture	50.0	54.9
3. Redesigning the organisational structures	55.5	72.5
4. Restructuring the HR practices	66.6	74.5
5. Training the management team	72.2	86.6

The majority of the respondents from the private sector of the business loans industry felt that all the five research elements deserved more emphasis to make their entity a knowledge powerhouse. There is an overwhelming high percentage of respondents from the private sector entity who believed that there should be more emphasis on investment in IT (70.6%), redesigning of the organisational structures (72.5%), restructuring of HR practices (74.5%) and training of the management team (86.6%). It is not surprising why private sector respondents felt that there should be more investment on IT considering that the majority of respondents from the sector believed that the level of ICT application for information and knowledge sharing was low.

The majority of respondents from the government sector business loans entity believed more emphasis should be placed on investment in IT (66.7%), redesign of the organisational structures (55.5%), restructuring of the HR practices (66.6%) and training of the management team (72.2%). Only half (50.0%) believed there should be more emphasis on the organisational culture. Arising from the descriptive statistics presented thus far, it is now imperative to provide a strong statistical case for the testing of the four research hypotheses. The next section presents statistical tests and analysis in testing the four research hypotheses.

4.6. HYPOTHESES TESTING

Having noted that the descriptive statistics emanating from the quantitative research data do not depict a typical normal distribution, the researcher decided to rely on non-parametric statistics in order to lay a solid statistical foundation in testing the four research hypotheses. The Mann-Whitney test has been adopted as the main inferential statistics in testing the four hypotheses. The Mann-Whitney test was chosen above other non-parametric tests because of the following reasons:

- It can be applied together with the median test
- It uses the mean rank scores rather than the mean.

Due to the fact that the distribution of the research data arising from this study is highly skewed, the median is a better representation of the centre of the distribution than the mean (Antonius, 2004:46). The median is not affected very much by the addition of a single score at the extreme end of the data set (Bartz, 1979:33). The Mann-Whitney test was chosen because it is more powerful than the median test. It provides far better statistics to compare unequal samples. The Mann-Whitney test compares the number of times a score from one of the samples is ranked higher than a score from the other sample (Brymann & Cramer, 2009:167).

In testing the four research hypotheses, the hypothesis testing procedure involved the following six steps:

- i. Identifying the assumption underlying the test: the use of a two-tailed test
- ii. Stating the appropriate null and alternative hypothesis
- iii. Identifying the test statistics: the test statistics is the Mann-Whitney test
- iv. Computing the test statistics
- v. Comparing the p-values to the critical values
- vi. Decision rule: the p-value is used to make a decision whether or not to reject the null hypotheses (at p-value less than 0.05, the researcher rejects the null hypotheses).

4.6.1. Hypothesis 1

Data relating to hypothesis 1 was collected using the YES or NO response questions asking respondents whether they were using the nine (9) listed ICT tools to share information and knowledge as they work. The null hypothesis is thus reproduced as follows:

Null hypothesis 1: There is no statistically significant difference in the application of ICT for information and knowledge sharing between public and private sector entities in three industries in Limpopo Province.

This hypothesis relates to the extent of ICT application for information and knowledge sharing between public and private sector entities in three separate industries of Limpopo Province. Nine ICT tools were listed upon which respondents were to indicate YES if they were using the tool and NO if they did not use it. The hypothesis arose from an observation made by the researcher that ICTs facilitate the flow of information and knowledge across time and space even between people who might not know each other (Sieloff, 1999:50) and that technology enhances the efforts of staff (Lamproulis, 2007:39).

Both the null and alternative hypotheses are stated as follows:

- H0: the extent of ICT application for information and knowledge sharing is the same in both public and private sector entities per industry
- H1: the extent of ICT application for information and knowledge sharing differs between the public and private sector entities per industry.

Table 4.25 presents the statistical test used to test this hypothesis:

Table 4.25: Statistical tests on the extent of ICT application in the three industries

ICT application	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	116	67.4	3.0	0.66
Private Sector Health	19	71.6	4.0	
Government Education	69	36.3	2.0	0.000
Private Sector Education	13	69.0	6.0	
Government Business Loans	17	53.2	6.0	0.000
Private Sector Business Loans	52	29.1	2.0	

Owing to the fact that hypothesis 1 relates to ICT application in the three research industries, the hypothesis is tested as it applies in each of the three industries. The statistical tests presented in table 4.25 reveal the following scenario in terms of the extent of ICT application in public and private sector entities in the three industries:

i. The extent of ICT application in the health industry

The private sector of the health industry has recorded a mean rank score of 71.6 compared to 67.4 by the public sector entities. This shows that the application of ICTs for information and knowledge sharing is higher in the private sector of the health industry than in the public sector. This is also confirmed by the median values. The median value for the private sector industry is 4.0. This demonstrates that out of the nine (9) ICT tools listed in the questionnaire the majority of the respondents from the private sector use at least four (4).

The median value for the government sector health institutions is 3.0, a value slightly below the median of the private sector health institutions. It could be seen from the descriptive statistics that there are at least three (3) ICT tools that are used by the majority of respondents from the government sector of the health industry. While the researcher agrees with other KM scholars that technology alone is not KM, it appears that both public and private sector entities in the health industry have some ICTs for information and knowledge sharing.

Decision rule:

Based on the p-value of 0.66 ($p \text{ value} > 0.05$) for the health industry, the researcher notes that there is no statistically significant difference between public and private sector entities of the health industry in the application of ICT tools for information and knowledge sharing. Therefore, the researcher fails to reject the null hypothesis as it applies in the health industry in Limpopo Province. This confirms that there is no statistically significant difference in the application of ICT tools for information and knowledge sharing between public and private sector entities in the health industry in Limpopo Province.

Since the test statistics indicate that there is no statistically significant difference in the application of ICTs for information and knowledge sharing between public and private sector entities in the health industry, the researcher would like to verify whether this is reflected in the data from the interview sessions. The analysis of the interview transcripts for both public and private sector health entities reveal the extent of ICT application in the health industry as follows:

The hospital managers of private sector entities (private hospital 1 and 2) confirmed the use of telephones, faxes, desk-top computers, laptops, internet, intranet and leadership development satellite video transmission for information and knowledge sharing. The hospital manager of private hospital 2 described the extent of ICT application in the hospital when indicating that “we use Excel PDF and Access through our intranet system with access to information to the 50 plus hospitals in the country”.

The CEOs of public sector hospitals 6 and 8 agreed during the interview that staff used intranet, internet, telephones, cellphones, teleconferencing and intercom for information and knowledge sharing in their entities. During the interview conducted in public hospitals 8, it was revealed that though there were various ICT tools in place, some wards did not have access to the internet as the department was busy upgrading the hospital's networking system.

The researcher also observed that in certain public sector hospitals such as public sector hospital 1 and 3, ICT application was mostly in the form of telephones and personal cellphones with no internet and working computers. The Nursing Manager of public sector hospital 3 confessed that "we are still doing everything manually". In the interview with the hospital CEO of public sector hospital 1 it was revealed that telephones were being complemented by manual systems such as notice boards and reports for information and knowledge sharing. Furthermore, the CEO indicated that all employees have access to the internet. But company cellphones were only allocated to certain strategic people within the entity.

Though the interviews confirmed that there is indeed no statistically significant difference in the application of ICT tools for knowledge sharing between public and private sector health entities, it is apparent that even though various ICTs were available in public health entities, they were not as extensively applied as it was in the private sector health entities. With their sophisticated intranet facility, the private hospitals were able to rely on electronic data transmission as compared to the manual data system still prevalent in public hospitals.

The research results emanating from the health industry do not confirm what Ondari-Okemwa (2004:362) noted that the rural areas of South Africa face similar challenges as the rest of Africa in terms of ICTs. Both public and private sector entities in the health industry appear to possess the 'required' ICTs for information and knowledge sharing, the problem might be: How effective is ICT application for information and knowledge sharing in the public and private sector entities of the rural areas of South Africa?

ii. The extent of ICT application in education industry

The researcher observes from the statistics presented in table 4.25 that there is a big gap between the mean rank scores of public and private sector organisations in the education industry. The mean rank score of 69.0 recorded for the private sector education entity is too high as compared to the mean rank score of 36.3 recorded for the government sector institutions.

The big gap in the mean rank scores of the two sectors is also consistent with the big difference in the median values for both the public and private sector education entities. The private sector education entity recorded a median value of 6.0 compared to just 2.0 for the government sector education entities. These tests are also consistent with the findings presented through the descriptive statistics frequency tables. As highlighted in table 4.6, the majority (50% and above) of the respondents in the private sector of the education industry used at least six ICT tools to share information and knowledge compared to just two ICT tools used by respondents from the government sector institutions.

Decision rule:

Considering the big gap in both the mean rank scores and the median values, the p-value recorded for the education industry is less than 0.001. The researcher thus rejects the null hypothesis. This implies that the alternative hypothesis applies in the education industry. This states that there is a statistically significant difference in the application of ICT for information and knowledge sharing between public and private sector entities in the education industry in Limpopo Province.

The descriptive statistics and the interview data confirm that the private sector education entity used more ICTs for information and knowledge sharing than the public sector entity.

The descriptive statistics findings for the application of ICTs for information and knowledge sharing revealed that the private sector entity use more ICT tools than the public sector entities. In the interview with the director of the sampled NGO in education and training, she revealed that her entity was relying on the following ICT tools for information and knowledge sharing:

- Telephones
- Cellphones
- Faxes
- E-mail
- Internet.

The director was very explicit when she indicated that “We depend much on the e-mail, our biggest strategy, but we also use telephones, cellphones and faxes to some extent”. According to her “the internet helps to be up to date with developments”. She was adamant that due to the nature of their business, they were not able to work without the internet. On the other hand, the interview conducted with the public sector education Middle Manager revealed that the use of ICTs was not properly coordinated.

The public education sector interviewee confessed that there were three main tools used: telephones, faxes and personal e-mails, but went on to indicate that even these were not reliable. The manager indicated that the problem was not with lack of resources but was with the IT support services. He indicated that “the IT section set-up the networking system, but because of lack of support to the system it collapsed”. The interview data confirm the findings from the quantitative study that the private sector education entity used more ICT tools for information and knowledge sharing than the public sector entity.

iii. The extent of ICT application in the business loans industry

That there is a difference in ICT application in the public and private sector entities of the business loans industry is clearly observable from the statistical tests presented in table 4.25. The public sector of the business loans industry recorded a mean rank score of 53.2 as compared to just 29.1 for the private sector. There is indeed a big gap in the mean rank scores between the two sectors.

The big difference in ICT application between the two sectors is apparent, considering that a median value of 6.0 is recorded for the public sector entities compares to 2.0 for the private sector. This proves that the majority of respondents from the public sector of the business loans industry used at least six ICT tools compared to the two ICT tools used by the majority in the government sector. These statistics confirm the descriptive statistics (frequency data) presented in table 4.6.

Decision rule:

At p-value less than 0.001 for the business loans industry, the researcher rejects the null hypothesis. Thus, the alternative hypothesis applies. This states that there is a statistically significant difference in the application of ICT for information and knowledge sharing between private and public sector entities in the business loans industry in Limpopo Province.

Since the test statistics revealed that there is a statistically significant difference between public and private sector entities in the business loans industry in terms of application of ICTs for information and knowledge sharing, the researcher was interested in observing whether the interview data supported this finding.

The interview with the Area Manager of the public sector business loans entity revealed the use of ICT tools such as telephones, faxes, internet, intranet and the e-mail system. In demonstrating the extent of ICT application in the entity, the manager showed the researcher how he was able to monitor the work of all staff members using source documents saved in the IT system.

On the other hand, the extent of ICT usage in the private sector business loans entity (in terms of the percentage of respondents as in table 4.6) was found to be lower than in the public sector entity. The interview conducted with the Corporate Services Manager of the NGO entity revealed that the loan officers did not have access to the entity's sophisticated ICT system. The researcher was interested in finding out which ICTs the loan officers were using for information and knowledge sharing.

The Corporate Services Manager indicated that the "branches do not have computers" and since the "loan officers report to the branch managers", they "use two main ICT tools" for information and knowledge sharing. These are; cellphones ("they are given a cellphone allowance") and landline telephones located in the branches.

As indicated by the Corporate Services Manager, the nature of the job of the loan officers "does not require access to computers". The researcher observed during the interview that computers, e-mails, internet and intranet were used by the admin staff when processing loan applications. Loan officers relied much on the entity's policy manual document than ICTs for their work. This policy manual is a handbook detailing how a loan application should be completed properly. The decision on the use of ICTs for information and knowledge sharing in the private sector business loans entity is congruent with the argument raised by Rizzi *et al.* (2009:83). They are of the view that a company should invest in KM technologies if these could add significant benefits to its operations.

Based on the statistical tests conducted, the researcher observes that the public sector of the education industry as well as the private sector business loans entity could be described as low technologically in terms of ICT application for information and knowledge sharing.

As highlighted by Call (2005:26-27) a low tech solution to KM would be the best strategy to be followed by these entities. Such a strategy should focus on the organisation's people as a core component of the KM strategy. But as indicated by Hansen *et al.* (1999:112), technology should not be completely neglected as either way effective KM demands an 80-20 configuration between IT and people centred practices. Are the public and private sector entities in the three research industries constraint of ICTs or is there a lack of a coordinated effort for ICT application?

This question could be seen in the context of the observation made by Ondari-Okemwa (2004: 350) and Ikoja-Odonga (2006:206) that most parts of Africa have inadequate information and communication technologies. The research results demonstrate that not all the entities in the three industries lack ICTs for information and knowledge sharing. It is also apparent that the hindrances in ICT application are not solely faced by public sector entities. It should be noted that the two most technologically advanced entities in terms of ICT application for information and knowledge sharing are from the public-private sector divide in the form of a government owned business loans entity and a private sector education entity.

That most respondents in the research entities (save the health industry) rely on personal cellphones for information and knowledge sharing is consistent with the findings of a Community Survey conducted in the province by Statistics South Africa in 2007. The survey found that almost 70.5% of the households in Limpopo Province had access to a cellphone. Cellphones provide organisations in the province with a viable platform for information and knowledge sharing. The researcher argues that the problem faced by public and private sector entities in the three research industries is a lack of a coordinated effort for ICT application.

4.6.2. Hypothesis 2

The null hypothesis for hypothesis 2 is stated below:

Null hypothesis 2: There is no statistically significant difference in the achievement of knowledge-based outcomes between public and private sector entities in the three industries in Limpopo Province.

This hypothesis relates to the degree to which four knowledge-based outcomes should be achieved in both public and private sector entities in the three research industries. These four knowledge-based outcomes are:

- Job offering skills and expertise development opportunities
- Ability to create and share knowledge is realised
- Organisational efficiency through knowledge usage
- Employees learn and teach one another better ways of performing job tasks.

The hypothesis has been influenced by the desire to observe whether both public and private sector entities in the three research industries achieved knowledge-based outcomes. These knowledge-based outcomes have been noted by various KM scholars such as Nonaka (1995:120), Pan and Scarbrough (1999:56), Coakes (2006:589), and Sharma *et al.* (2007:35).

The null and alternative hypotheses as they relate to hypothesis 2 are as follows:

- H0: the degree of achievement of knowledge-based outcomes is the same in both public and private sector entities per industry
- H1: the degree of achievement of knowledge-based outcomes differs between the public and private sector entities per industry.

The statistical tests used to test hypothesis 2 are reflected in table 4.26 as follows:

Table 4.26: Statistical tests on achievement of knowledge-based outcomes in the three industries

Achievement of knowledge-based outcomes	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	116	66.0	12.5	0.13
Private Sector Health	19	80.5	13.0	
Government Education	68	37.4	12.0	0.000
Private Sector Education	13	63.3	16.0	
Government Business Loans	17	35.9	12.0	0.73
Private Sector Business Loans	51	34.0	13.0	

Since this hypothesis has to be tested in the three research industries, the statistical tests need to be analysed per individual industry so as to make a decision rule on the hypothesis reflecting each research industry.

- i. The degree of achievement of knowledge-based outcomes in the health industry

Having noted that the private sector of the health industry has recorded a higher mean rank score (80.5) than its government sector counterparts (66.0), the researcher was interested in analysing whether this difference is significant or not. Based on the median values for the two sectors, the private sector entities recorded a median value of 13.0 compared to 12.5 for the government sector. The median values of 13.0 and 12.5 for the two sectors are high considering that the research construct, “achievement of knowledge-based outcomes” was measured based of a set of four items on a four-point Likert scale questionnaire.

The expected total score from the research construct is 16.0. Therefore, the median values recorded for the two sectors indicate that a majority of respondents in both sectors were convinced that knowledge-based outcomes were achieved in their entities. But in order to really make a statistical decision on whether the difference in the mean rank scores and median values are really significant or not, the researcher will have to make a decision on whether to reject or fail to reject the null hypothesis.

Decision rule:

The p-value recorded for the health industry is 0.13, a value greater than the 0.05 which is the decision point for rejecting or failing to reject the null hypothesis. At p-value of 0.13, the researcher fails to reject the null hypothesis. This implies that the null hypothesis applies in the health industry of Limpopo Province. It therefore, means that there is no statistically significant difference in the achievement of knowledge-based outcomes between public and private sector entities in the health industry.

ii. The degree of achievement of knowledge-based outcomes in the education industry

With the mean rank score being 63.3 for the private sector and 37.4 for the government sector of the education industry, it is apparent that more respondents from the private sector than from the public sector of the education industry were confident that knowledge-based outcomes were achieved in their entities. This is also confirmed through the descriptive statistics.

That the gap in the proportion of respondents who believed knowledge-based outcomes were achieved in the two sectors is significant is apparent when considering the median values for the two sectors. With its higher mean rank score, the private sector recorded a median value of 16.0 compared to 12.0 for the government sector. Since the significance of the gap in the achievement of knowledge-based outcome is clearly observable even before the test statistics is analysed, the researcher now moves on to analyse the test statistics in order to make a statistically sound decision on the hypothesis.

Decision rule:

The p-value recorded for the education industry is less than 0.0001. At this p-value (p-value < 0.05), the researcher rejects the null hypothesis. The alternative hypothesis applies in the education industry. The researcher concludes that there is a statistically significant difference in the achievement of knowledge-based outcomes between public and private sector entities in the education industry in Limpopo Province.

iii. The achievement of knowledge-based outcomes in the business loans industry

The degree of achievement of knowledge-based outcomes between public and private sector entities in the business loans industry can best be statistically measured based on the statistical tests presented in table 4.26.

Based on these statistical tests, it has been found that the public sector of the business loans industry recorded a mean rank score of 35.9 which is higher than the 34.0 for the private sector. Having an interest on whether the difference in achievement of knowledge-based outcomes between the two sectors is significant or not, the researcher observes that the two sectors recorded relatively comparable median values. The private sector recorded a median value of 13.0 compared to 12.0 for the government sector. These are high median values showing that the majority of respondents in both sectors were confident that knowledge-based outcomes were achieved in their entities.

Decision rule:

The p-value for the business loans industry is 0.73, a value far greater than the 0.05. At 0.73, the researcher fails to reject the null hypothesis as it applies in the business loans industry. The researcher thus states that there is no statistically significant difference in the achievement of knowledge-based outcomes between public and private sector entities in the business loans industry in Limpopo Province.

The statistical tests highlighted above confirm what has been established in literature that both public and private sector entities could enjoy knowledge-based outcomes (benefits of KM) as long as they are characterised by knowledge-seeking behaviour. Since Knowledge Management involves increased information and knowledge acquisition and sharing by an organisation's people, Wiig (2002:225) has argued that Knowledge Management could strengthen public service effectiveness in the public sector, and also it could lead to increased operational efficiency in the private sector (Metaxiotis *et al.*, 2005:9).

It appears from these statistics that in the health and business loans industries, there is no statistically significant difference in the achievement of knowledge-based outcomes between public and private sector entities. But the statistics demonstrate that there is a statistically significant difference in the achievement of knowledge-based outcomes between the public and private sector entities in the education industry. Just as demonstrated by the descriptive statistics, the achievement of knowledge-based outcomes appears significant in all the research entities, but in case of the education industry, the public sector entities lag far behind their private sector counterparts. While observing that the public sector education entity was characterised by poor ICT application, based on the available data, the researcher would not be able to conclude that there is a link between ICT application and the achievement of knowledge-based outcomes.

4.6.3. Hypothesis 3

The null hypothesis for hypothesis 3 is stated hereunder as follows:

There is no statistically significant difference in the degree of tacit knowledge acquisition between public and private sector entities in the three research industries in Limpopo Province.

Hypothesis 3 has been triggered by the realisation that effective KM is not just a matter of “processing” information, but is about how the tacit and “highly subjective insights, intuitions, and hunches of individual employees” are tapped to benefit the company as a whole (Nonaka, 1991:97).

In line with the above, the researcher was interested in determining the extent to which tacit knowledge acquisition was promoted by both public and private sector entities in the three research industries. In order to measure the extent of tacit knowledge acquisition in both the public and private sector entities in the three research industries, the researcher requested respondents to respond to a four point Likert scale question (comprised of three research statements) as discussed in the descriptive statistics. The test is thus conducted in line with the null and alternative hypotheses as reflected hereunder:

- H0: the degree of tacit knowledge acquisition is the same in both public and private sector entities per industry
- H1: the degree of tacit knowledge acquisition differs between the public and private sector entities per industry.

The statistical tests depicting the degree of tacit knowledge acquisition in the three research industries are presented in table 4.27.

Table 4.27: Statistical tests on the degree of tacit knowledge acquisition in the three industries

Tacit knowledge acquisition	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	118	67.8	9.0	0.38
Private Sector Health	19	76.4	10.0	
Government Education	69	38.4	8.0	0.006
Private Sector Education	13	57.8	9.0	
Government Business Loans	17	33.7	8.5	0.76
Private Sector Business Loans	52	35.4	9.5	

The statistical tests as presented above reveal the following scenario in terms of the degree of tacit knowledge acquisition per industry:

i. The degree of tacit knowledge acquisition in the health industry

The private sector of the health industry recorded a higher mean rank score of 76.4 as compared to a score of 67.8 by the public sector. Considering that the difference in the median values of public (median value of 9.0) and private sector (median value of 10.0) health entities is not significant, the researcher notes that both sector achieved higher tacit knowledge scores as reflected in the descriptive statistics. As presented in the descriptive statistics, it would appear that both sectors of the health industry focused much on KM practices enhancing tacit knowledge acquisition. These are presented earlier in table 4.10 (tacit knowledge scores) and figure 4.10 (common KM related practices enhancing tacit knowledge acquisition).

Decision:

The p-value recorded for tacit knowledge acquisition by both sectors of the health industry is 0.38 ($p > 0.05$). At this p-value, the researcher fails to reject the null hypothesis as it applies in the health industry. This implies that there is no statistically significant difference in the degree of tacit knowledge acquisition between public and private sector entities in the health industry.

ii. The degree of tacit knowledge acquisition in education industry

While it appears that the difference in the median values between public and private sector education entities is smaller at 8.0 and 9.0 respectively, the mean rank score of the private sector education entity is far higher at 57.8 than the 38.4 for the public education sector.

The question that needs to be answered here is whether there is a statistically significant difference in the degree of tacit knowledge acquisition between the public and private sector education entities.

Decision:

The p-value of 0.006 recorded by the two sectors of the education industry is less than 0.05. At p-value less than 0.05, the researcher rejects the null hypothesis. This means that there is a statistically significant difference in the degree of tacit knowledge acquisition between public and private sector entities in the education industry. The descriptive statistics are consistent with the test statistics. As highlighted earlier in the descriptive statistics, the private sector education entity recorded a higher tacit knowledge score compared to the public sector (table 4.11).

iii. The degree of tacit knowledge acquisition in business loans industry

As highlighted in table 4.27, the public sector business loans entity has recorded a mean rank score of 33.7 compared to 35.4 by the private sector entity. These appear to be relatively comparable mean rank scores, though the median values between the two sectors differ at 8.5 and 9.5 respectively. The researcher notes that relatively comparable mean rank scores lead to p-values greater than 0.05.

Decision:

The p-value of 0.76 recorded by the business loans industry is greater than 0.05. At this p-value, the researcher fails to reject the null hypothesis. This implies that there is no statistically significant difference in the degree of tacit knowledge acquisition between public and private sector entities in the business loans industry. The descriptive statistics (as reflected in table 4.12) also show almost equivalent tacit knowledge scores for the public (68.6%) and private (69.9%) sector entities in the business loans industry.

In testing hypothesis 3, the researcher notes that all the research entities have practices in place which enhance tacit knowledge acquisition. In order to promote the learning capabilities of individuals and the organisation, KM practices which could promote tacit knowledge acquisition are crucial (Pretorius & Steyn, 2005:47).

It has been established in literature that employee training workshops and knowledge sharing meetings are popular examples of practices that organisations apply in order to enhance tacit knowledge acquisition. These practices have also been observed in all the research entities during the present study. Though all the entities recorded higher tacit knowledge scores (descriptive statistics), the public sector in the education industry lags far behind its private sector counterpart in the degree of tacit knowledge acquisition. This is also confirmed through the interviews as reflected earlier in this chapter.

A study conducted by Kruger and Johnson (2010:65) in a South African urban area context also found that the government and education sectors were far below the other sectors (industries) in terms of KM maturity in variables ranging from ICTs, IM and KM. This demonstrates that the government and education sectors in South Africa are not so vigorous in KM implementation. They are losing the benefits enjoyed by the post-capitalist society led by the United States of America (Drucker, 1993:5).

4.6.4. Hypothesis 4

The null hypothesis 4 is stated as follows:

There is no statistically significant difference in the degree of knowledge-oriented social variables (organisational culture, structures, HR practices and leadership) between public and private sector entities in the three research industries in Limpopo Province.

This hypothesis relates to measuring the degree to which four social variables were found to be knowledge-oriented between public and private sector entities in three research industries. As highlighted in empirical cases (reflected in chapter 2) such as the Buchman Laboratories case, the IDOM case and KM in the Malaysian telecommunications sector, apart from IT, effective KM is also associated with knowledge-oriented social variables.

In order to determine whether both public and private sector entities in the rural areas of South Africa depend on social variables for effective KM, the researcher included four social variables (knowledge-oriented organisational culture, structures, HR and leadership) to collect research data for testing hypothesis 4. The test would thus be conducted in line with the null hypothesis and the alternative hypothesis as follows:

- H0: the degree of knowledge-oriented social variables is the same in both public and private sector entities per industry
- H1: the degree of knowledge-oriented social variables differs between the public and private sector entities per industry.

Since there are four social variables upon which this hypothesis relates, the hypothesis would be tested with the four social variables. The hypothesis testing process for hypothesis 4 is presented in sub-sections 4.5.4.1 to 4.5.4.4.

4.6.4.1. Hypothesis 4 and knowledge-oriented organisational culture

The null hypothesis is restated as it applies to social variable organisational culture as follows:

Null hypothesis 4 (knowledge-oriented organisational culture): There is no statistically significant difference in the degree of knowledge-oriented organisational culture between public and private sector entities in three industries in Limpopo Province.

KM scholars from both the developed world such as Pan and Scarbrough (1999:62) and Sieloff (2006:48), and developing world (Huang *et al.*, 2008:80 and Chin Wei *et al.*, 2009:79) have realised the importance of a knowledge-oriented organisational culture in KM. The hypothesis relates to the degree to which the organisational culture of public and private sector entities were found to be knowledge-oriented.

The test is undertaken based on the statistical tests presented in table 4.28 below:

Table 4.28: Statistical tests on knowledge-oriented organisational culture in the three industries

Knowledge-oriented organisational culture	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	116	69.4	35.0	0.15
Private Sector Health	18	55.3	32.5	
Government Education	69	38.0	33.0	0.002
Private Sector Education	13	59.9	38.0	
Government Business Loans	17	20.6	33.0	0.017
Private Sector Business Loans	51	34.7	36.0	

The research construct, “knowledge-oriented organisational culture” was measured using three sub-constructs. Each of the three sub-construct comprised of a set of four research statements (items). Therefore, the whole construct was composed of 12 items testing the extent of knowledge-oriented organisational culture in public and private sector organisations in the three research industries. This implies that for the purposes of the median value, the construct was expected to have a total score of 48.

As highlighted by the median values, the descriptive statistics confirm that the majority of respondents from all the research entities agreed that knowledge-oriented organisational culture was promoted in their entities.

But this does not mean that there is no statistically significant difference in terms of knowledge-oriented organisational culture in the research entities. The statistical tests as depicted in table 4.28 above show that the difference between the public and private sector entities in terms of the mean rank scores and the median values is bigger in the education and business loans industry than is the case in the health industry.

Decision rule:

The decision to reject or fail to reject the null hypothesis as it applies in the three industries is taken based on the p-values as reflected in table 4.28. The decision for the three industries is applied as follows:

i. Health industry

Due to the fact that the p-value recorded for the health industry is 0.15 which is greater than 0.05, the researcher fails to reject the null hypothesis as it applies in the health industry. This implies that there is no statistically significant difference in the degree of knowledge-oriented organisational culture between public and private sector entities in the health industry in Limpopo Province.

ii. Education industry

The p-value recorded for the education industry is 0.002 which is less than 0.05. At this p-value, the researcher rejects the null hypothesis. This means that the alternative hypothesis applies in the education industry. This states that there is a statistically significant difference in the degree of knowledge-oriented organisational culture between public and private sector entities in the education industry in Limpopo Province.

iii. Business loans industry

The business loans industry recorded a p-value of 0.017 which is less than 0.05. At p-value less than 0.05, the researcher rejects the null hypothesis and this implies that the alternative hypothesis applies in the business loans industry. This means that there is a statistically significant difference in the degree of knowledge-oriented organisational culture between public and private sector entities in the business loans industry in Limpopo Province.

4.6.4.2. Hypothesis 4 and knowledge-oriented organisational structures

The null hypothesis related to measuring the degree of knowledge-oriented organisational structures between public and private sector entities in the three industries is stated as follows:

Null hypothesis 4 (knowledge-oriented organisational structures): there is no statistically significant difference in the degree of knowledge-oriented organisational structures between public and private sector entities in the three research industries.

The hypothesis relates to the degree of knowledge-oriented organisational structures between public and private sector entities in the three research industries. Knowledge-oriented organisational structures have been found by Claver Cortés *et al.* (2007:49) as key to facilitating dissemination of information and knowledge throughout an organisation.

For the purposes of interpreting the median values, one needs to indicate that the research construct, “knowledge-oriented organisational structures” was expected to produce a total score of 48 due to the use of the four-point scale research questionnaire. The statistical tests that are reflected in table 4.29 clearly describe the degree of knowledge-oriented organisational structures in the public and private sector entities in the three research industries. Table 4.29 presents the statistical tests as follows:

Table 4.29: Statistical test on knowledge-oriented organisational structures in the three industries

Knowledge-oriented organisational structures	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	115	68.1	35.0	0.65
Private Sector Health	18	63.6	35.5	
Government Education	67	38.0	32.0	0.008
Private Sector Education	13	56.9	39.0	
Government Business Loans	17	19.8	32.0	0.010
Private Sector Business Loans	50	34.9	36.0	

It is apparent from the above table that there is a significant gap in both the mean rank scores and the median values between the public and private sector entities in the education and business loans industries than is the case in the health industry. In the education and business loans industries, the private sector entities have far greater mean rank scores and median values than their government sector counterparts. Based on these statistics, the researcher would make the following decisions in terms of hypothesis 4 (knowledge-oriented organisational structures):

Decision rule:

- i. Health industry

The p-value recorded for the health industry is 0.65. At this p-value ($p\text{-value} > 0.05$), the researcher fails to reject the null hypothesis as it applies to the health industry. Therefore, it implies that there is no statistically significant difference in the degree of knowledge-oriented organisational structures between public and private sector entities in the health industry in Limpopo Province.

ii. Education industry

The p-value of 0.008 recorded for the education industry is less than 0.05. At this p-value, the researcher rejects the null hypothesis. This implies that the alternative hypothesis applies in the education industry. The alternative hypothesis states that there is a statistically significant difference in the degree of knowledge-oriented organisational structures between public and private sector entities in the education industry in Limpopo Province.

iii. Business loans industry

The test statistics for the business loans industry recorded a p-value of 0.010. At this p-value (p-value < 0.05), the researcher rejects the null hypothesis. Thus, the alternative hypothesis applies in the business loans industry. This states that there is a statistically significant difference in the degree of knowledge-oriented organisational structures between public and private sector entities in the business loans industry in Limpopo Province

4.6.4.3. Hypothesis 4 and knowledge-oriented HR practices

The null hypothesis as it applies to the social variable HR practices is captured below:

Null hypothesis 4 (knowledge-oriented HR practices): There is no statistically significant difference in the degree of knowledge-oriented HR practices between public and private sector entities in the three research industries in Limpopo Province.

This hypothesis (H4) relates to the degree to which HR practices of public and private sector entities in the three research industries were found to be knowledge-oriented.

Knowledge-oriented HR practices in the form of good people management strategies have been credited with laying the foundation for a corporate culture encouraging knowledge creation and sharing (Sieloff, 1999:48). The importance of knowledge-oriented HR practices for KM has been established in KM literature as reflected in chapter 2. It is an established fact in KM literature that effective human resources management generates “a higher capacity to attract and hold employees who are qualified and motivated for good performance” (De Pablos & Lytras, 2008:49-50).

The research construct, “knowledge-oriented HR practices” was measured based on five sub-constructs. In line with the median values computed on the research data, the construct was expected to have a total score of 80 based on the 20 research items on the four-point Likert scale questionnaire. The statistical tests computed are presented in table 4.30 below:

Table 4.30: Statistical tests on knowledge-oriented HR practices in the three industries

Knowledge-oriented HR practices	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	118	67.4	57.0	0.92
Private Sector Health	19	68.3	56.0	
Government Education	67	38.4	51.0	0.006
Private Sector Education	13	58.0	62.0	
Government Business Loans	17	16.9	49.0	0.002
Private Sector Business Loans	47	35.6	58.0	

These statistics denote a big gap in the mean rank scores as well as the median values between public and private sector entities in the education and business loans industry as compared to the statistics for the health industry. Based on these statistics, the researcher makes the following decisions in terms of hypothesis 4 (knowledge-oriented HR practices) in the three research industries:

Decision rule:

i. Health industry

Due to the p-value of 0.92 recorded by the health industry, the researcher fails to reject the null hypothesis as it applies in the health industry. This implies that there is no statistically significant difference in the degree of knowledge-oriented HR practices between public and private sector entities in the health industry in Limpopo Province.

ii. Education industry

The 0.006 p-value computed for the education industry forces the researcher to reject the null hypothesis. The alternative hypothesis applies as there is a statistically significant difference in the degree of knowledge-oriented HR practices between public and private sector entities in the education industry in Limpopo Province.

iii. Business loans industry

With a p-value of 0.002 for the business loans industry, the researcher realises that there is a statistically significant difference in the degree of knowledge oriented HR practices between public and private sector entities in the business loans industry in Limpopo Province. Hence, the alternative hypothesis applies in the business loans industry as the null hypothesis is rejected.

Based on the statistical test on hypothesis 4 (degree of knowledge-oriented HR practices), the researcher observes that even though the descriptive statistics show that a majority of respondents from all the research entities were confident that HR practices were knowledge-oriented in their entities, private sector entities in the education and business loans industries could be described as statistically (in terms of the mean rank scores and median values) having more knowledge-oriented HR practices compared to their public sector counterparts.

4.6.4.4. Hypothesis 4 and knowledge-oriented leadership

The null hypothesis 4 as it relates to knowledge-oriented leadership is stated as follows:

Null hypothesis: There is no statistically significant difference in the degree of knowledge-oriented leadership between public and private sector entities in the three research industries in Limpopo Province.

The hypothesis relates to the degree of knowledge-oriented leadership practices between public and private sector entities in the three research industries. As observed by Mintzberg (1990:176), the command and control leadership style is not suitable in a knowledge-based organisation. The researcher identified four knowledge-oriented leadership practices as popularly found in knowledge-based organisations in order to determine whether these were practised by both public and private sector entities in the three research industries.

In order to assist with the analysis of the median values presented in table 4.31, the researcher observes that the research construct (knowledge-oriented leadership) was composed of four sub-constructs with a set of four items in each sub-construct. These were expected to have a total score of 64 on a four-point Likert scale questionnaire. The statistical tests for hypothesis 4 (knowledge-oriented leadership) are presented in table 4.31 as follows:

Table 4.31: Statistical tests on the degree of knowledge-oriented leadership in the three industries

Knowledge-oriented leadership	N	Mean rank (Mann-Whitney)	Median	P-value
Government Health	118	68.3	45.0	0.52
Private Sector Health	19	62.1	43.5	
Government Education	67	38.2	42.0	0.003
Private Sector Education	13	59.3	50.0	
Government Business Loans	17	20.3	34.0	0.012
Private Sector Business Loans	48	35.3	44.0	

The trend whereby the mean rank scores and median values between public and private sector entities are relatively comparable continues for the health industry. The education and the business loans industries continue to be characterised by a big gap in the mean rank scores and median values between public and private sector entities. The significance of these statistics is by now self-explanatory. Thus, the underlying aspect with these statistics is to help the researcher makes a decision on the null hypothesis.

Decision rule:

- i. Health industry

Based on the p-value of 0.52 which is greater than 0.05, the researcher fails to reject the null hypothesis as it applies in the health industry. This implies that there is no statistically significant difference in the degree of knowledge-oriented leadership practices between public and private sector entities in the health industry in Limpopo Province.

ii. Education industry

The test statistics computed for the education industry reveals a p-value of 0.003. At this p-value, the researcher rejects the null hypothesis. This means that the alternative hypothesis applies in the education industry. The alternative hypothesis states that there is a statistically significant difference in the degree of knowledge-oriented leadership between public and private sector entities in the education industry in Limpopo Province.

iii. Business loans industry

The 0.012 p-value computed for the business loans industry is lower than 0.05. The researcher rejects the null hypothesis at this low p-value and the alternative hypothesis applies. This states that there is a statistically significant difference in the degree of knowledge-oriented leadership between public and private sector entities in the business loans industry in Limpopo Province.

Though there is no huge public-private sector divide in terms of the application of ICTs and knowledge-oriented social factors in the three research industries, the researcher notes that in all the research variables comprising hypothesis 4 (organisational culture, structures, HR practices and leadership), the public sector research entities in the education and business loans industries lag behind their private sector counterparts in terms of the degree to which these variables were found to be knowledge-oriented. This has not been the case in the health industry. The test statistics show that there is no statistically significant difference in the degree of knowledge-oriented social factors between public and private sector entities in the health industry.

That organisational structures and management styles tend to pose a problem to knowledge and information sharing within government entities has also been observed by Syed-Ikhsan and Rowland (2004:250) in their investigation of the barriers to KM in the Malaysian public sector. Matzkin (2008:152) has also found out that government organisations lag behind their private sector counterparts in promoting knowledge-oriented HR practices.

The findings established in this study are in stark contrast to the situation observed in the public sector in the United States of America (Mercer *et al.*, 2005:136-137). The findings from both the survey and interviews reflect that the degree of application of ICTs and knowledge-oriented social factors is almost the same between public and private sector entities in the health industry. The extent of application of ICTs and knowledge-oriented social factors have been found to be significantly different between public and private sector entities in the education and business loans industry.

The public sector business loans entity has been found to be more advanced than the private sector entity in terms of the application of ICTs for information and knowledge sharing. Contrary to the above, the public sector business loans entity has been found lagging behind its private sector counterpart in terms of the degree of knowledge-oriented social factors.

The research data indicate that there is no significant difference in terms of tacit knowledge acquisition between public and private sector entities in the health and business loans industries. The researcher observes a worrying trend in the education industry where the public sector continues to lag behind its private sector counterpart in all the research constructs.

Since all the research entities were found to be applying KM implicitly through some form of KM aligned practices, the researcher observes that the public and private sector entities in the three research industries of Limpopo Province are not yet mature knowledge-based organisations. This is consistent with the findings made by Kruger and Johnson (2010) in urban areas of South Africa where government and education industries were found to be having the lowest KM maturity scores. As noted by Kruger and Johnson, leading KM maturity organisations have sound intellectual capital management practices as well as sufficient ICTs.

An empirical example of a mature knowledge-based entity in a developing economy context is reflected in chapter 2 in the form of Tata Consulting Services in India. As highlighted by Sharma *et al.* (2007:35), what makes TCS a mature knowledge-based entity is its knowledge-oriented organisational culture and extensive KM systems.

Since the research results demonstrate that both public and private sector entities in the three research industries are still at the elementary stage in their KM implementation, these findings are consistent with those of other studies conducted in the developing regions of the world in other continents. Matzkin (2008) and Chong *et al.* (2009) found similar levels of KM implementation and low awareness about KM in Peruvian and Malaysian entities respectively. But it should be emphasised that low KM awareness does not mean there is no KM implementation. The research findings for this study confirm that some ‘form of knowledge seeking behaviour’ (KM) were taking place in all research entities through KM related practices. Nevertheless, the findings established in this research could be used to establish a framework for improved KM implementation.

4.7. A MODEL FOR IMPROVED KM IMPLEMENTATION

Arising from the findings highlighted in this chapter, the researcher proposes a model that could be used by academics and KM practitioners to understand and improve KM implementation in public and private sector entities in rural areas of South Africa. The parameters of the model are established through empirical cases of mature knowledge-based entities as reflected in chapter 2. This stems from the fact that none of the research entities was found to have mature KM systems, but all the research entities achieved knowledge-based outcomes. It was established from literature that those organisations which implemented a holistic approach (with a focus on ICTs and knowledge-oriented social factors for information and knowledge sharing) to KM tend to achieve knowledge-based outcomes. The model suggested in this study is rooted in the impact ICTs and knowledge-oriented social factors have on the degree of achievement of knowledge-based outcomes. The model is statistically established through the multiple-regression analysis.

4.7.1 The statistical basis for the model: multi-regression analysis

The extent at which ICTs and knowledge oriented social factors determine the achievement of knowledge-based outcomes has not been conclusively established from the body of literature presented in chapter 2. The multi-regression analysis was used to estimate how well ICTs and knowledge-oriented social factors accounted for the achievement of knowledge-based outcomes.

The model summary computed using the statistical programme is presented in table 4.32 below:

Table 4.32: Multi-regression analysis – Model summary

Research entity	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
						R Square Change	F Change	df1	df2	Sig. F Change	
Health Govt	1	.709 ^a	.503	.494	2.009	.503	55.594	2	110	.000	1.818
Health Private	1	.267 ^a	.072	-.052	1.851	.072	.578	2	15	.573	2.699
Education Govt	1	.353 ^a	.124	.098	1.917	.124	4.687	2	66	.012	1.842
Education Private sector	1	.751 ^a	.564	.477	1.682	.564	6.476	2	10	.016	2.327
Business Loans Govt	1	.308 ^a	.095	-.035	2.939	.095	.731	2	14	.499	2.029
Business Loans Private sector	1	.468 ^a	.219	.186	2.153	.219	6.714	2	48	.003	1.920

Predictors: social factors and ICTs; Independent variable: achievement of knowledge-based outcomes

Using the R-square to explain the percentage of the variability in the achievement of knowledge-based outcomes that could be accounted for by ICTs and knowledge-oriented social factors, the findings observed in public and private sector entities in the three research industries are that:

In the health industry, ICTs and social factors accounted for 50.3% (R-square = 0.503) for the degree of achievement of knowledge-based outcomes in the public sector research entities. In the private sector health entities, ICTs and knowledge-oriented social factors accounted for only 7.2% (R-square = 0.072) for the degree of achievement of knowledge-based outcomes. This suggests that there are other factors which could successfully predict the achievement of knowledge-based outcomes in the private health sector. It is apparent that ICTs and knowledge-oriented social factors play a far significant role in predicting the achievement of knowledge-based outcomes in the public health sector. ICTs and knowledge-oriented social factors accounted for 12.4% (R-square = 0.124) for the degree of achievement of knowledge-based outcomes in the public education sector. In the private sector education entity, 56.4% (R-square = 0.564) of the variability in the degree of achievement of knowledge-based outcomes could be successfully predicted by ICTs and knowledge-oriented social factors.

In the public sector business loans research entity, ICTs and knowledge-oriented social factors accounted for 9.5% (R-square = 0.095) for the achievement of knowledge-based outcomes. This is contrasted with 21.9% in the private sector entity (R-square = 0.219). These statistics prove that though ICTs and knowledge-oriented social factors were important predictors for the degree of achievement of knowledge-based outcomes in both public and private sector research entities, there were other significant factors which accounted for this. Arising from the interview process findings, this research established that some of these “other” factors were KM related practices in the research entities. Furthermore, in order to determine which predictor (ICTs or knowledge-oriented social factors) had the greatest impact on the achievement of knowledge-based outcomes, a regression model was determined for each of the six research entities. The regression model was developed based on the research statistics presented in table 4.33 below:

Table 4.33: Multi regression analysis - Coefficients^a

A3Indus	Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	
		B	Std. Error	Beta			
Health Government	1	(Constant)	3.076	.902		3.409	.001
		ICT Usage	.206	.087	.168	2.379	.019
		Social factors	.050	.006	.641	9.089	.000
Education Government	1	(Constant)	5.861	1.681		3.487	.001
		ICT Usage	.140	.180	.090	.778	.439
		Social factors	.030	.010	.337	2.920	.005
Business loans public sector	1	(Constant)	8.207	4.312		1.903	.078
		ICT Usage	.173	.438	.103	.395	.698
		Social factors	.023	.019	.314	1.203	.249
Health Private sector	1	(Constant)	13.995	2.421		5.781	.000
		ICT Usage	-.203	.191	-.273	-1.061	.306
		Social factors	.001	.015	.025	.097	.924
Education private sector	1	(Constant)	4.434	2.989		1.484	.169
		ICT Usage	-.048	.291	-.035	-.165	.872
		Social factors	.053	.015	.757	3.559	.005
Business Private sector	1	(Constant)	7.607	1.521		5.002	.000
		ICT Usage	.305	.155	.254	1.969	.055
		Social factors	.024	.009	.354	2.735	.009

a. Dependent Variable: achievement of knowledge-based outcomes.

The regression model applying in this study is explained through the multi-regression equation as follows:

$$Y = A + B_1.X_1 + B_2.X_2$$

Y represents the predicted score on the achievement of knowledge-based outcome (dependent variable)

A is a constant

B₁ and B₂ are the regression coefficients

X₁ and X₂ are the two independent variables (ICTs and knowledge-oriented social factors respectively).

The model is considered to be significant when P-value < 0.05.

Based on the multi-regression equation, the regression model predicting the achievement of knowledge-based outcomes is explained in the three research industries as follows:

i. Regression model for the health industry

The regression model predicting the achievement of knowledge-based outcomes in the public sector entity is represented by:

$$Y = 3.076 + 0.206X_1 + 0.050 X_2$$

Though both ICTs and knowledge-oriented social factors were found to be important predictors for the achievement of knowledge-based outcomes in the public health sector, the impact of ICTs could be described as far greater in terms of the regression model. The model is significant (P-value = 0.001). The regression model for the private sector entity demonstrates an inverse relationship between ICTs and the achievement of knowledge-based outcomes. The model is indicated in terms of the following equation:

$$Y = 13.995 + (-0,203)X_1 + 0.001X_2$$

The model demonstrates the negative impact of ICTs on the achievement of knowledge-based outcomes in the private health sector. The model is significant considering that the p-value is less than 0.05 (P-value = 0.000)

ii. Regression model for the education industry

The regression model explaining the impact of each of the two predictors on the achievement of knowledge-based outcomes for the public education sector is represented by the equation:

$$Y = 5.861 + 0.140X_1 + 0.030X_2$$

The model is significant (P-value = 0.001). This model suggests that ICTs had a far greater impact than knowledge-oriented social factors in predicting the achievement of knowledge-based outcomes in the public sector education entity. This trend is similar to the one established in the public health sector. Contrary to the above, the regression model for the private sector education entity shows an inverse relationship between ICTs and the achievement of knowledge-based outcomes as follows:

$$Y = 4.434 + (-0.048)X_1 + 0.053X_2$$

The regression model shows that the achievement of knowledge-based outcomes in the private sector education entity could be attributed to knowledge-oriented social factors. This model is not significant since P-value is greater than 0.05 (P-value = 0.169).

iii. Regression model for the business loans industry

Both ICTs and knowledge-oriented social factors could be described as having a positive impact on the achievement of knowledge-based outcomes in both sectors of the business loans industry in terms of the regression model. The model for the public sector entity is presented as:

$$Y = 8.207 + 0.173X_1 + 0.023X_2$$

The model demonstrates that ICTs were having a far greater impact than knowledge-oriented social factors in the achievement of knowledge-based outcomes in the public sector business loans entity. The statistics presented in table 4.33 show that the model is not significant (P-value = 0.078). Similarly, ICTs were found to be an important predictor for the achievement of knowledge-based outcomes in the private sector business loans entity as highlighted in the following regression model:

$$Y = 7.607 + 0.305X_1 + 0.024X_2$$

This model is significant because the p-value is less than 0.05 (P-value = 0.000).

4.7.2. The suggested model for improved KM implementation in the research entities

The multi-regression analysis established that though ICTs and knowledge-oriented social factors were important predictors for the degree of achievement of knowledge-based outcomes in the research entities, there were other factors which could account for this. During the interview process, the interviewees confirmed that though they were not implementing KM explicitly, they were implementing some form of KM related practices. KM related practices might be the other predictors for the achievement of knowledge-based outcomes. The multi-regression analysis showed that even though there was an inverse relationship between ICTs and the degree of achievement of knowledge based outcomes in the private health and education sectors, ICTs contributed to successfully predicting the achievement of knowledge-based outcomes in the other four research entities.

In terms of the multi-regression analysis, knowledge-oriented social factors could be described as positively impacting the degree of achievement of knowledge-based outcomes in all the six research entities. The suggested model is meant to operate as a framework for enhancing KM implementation by both public and private sector entities in the three research industries. The multi-regression analysis confirmed that the holistic approach to KM can be adopted by the research entities for successful KM implementation.

The suggested model is rooted in the holistic approach to KM. The model appears as follows:

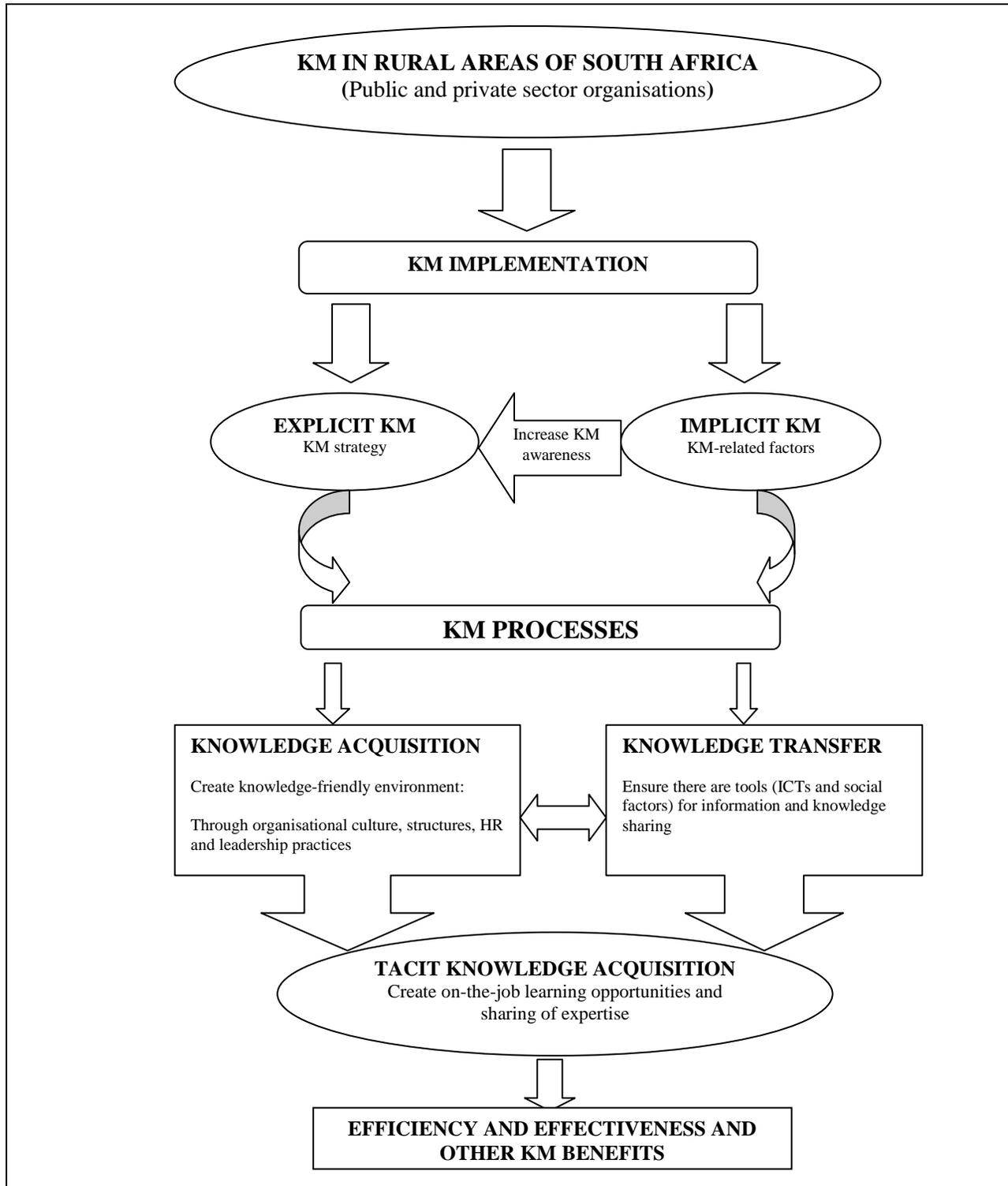


Figure 4.16: Suggested model for improved KM implementation in the research entities

The model presented above recognises the fact that KM demands a holistic approach rooted in ICTs and social factors. As established in this study and also supported in KM literature, the model is rooted in the findings that KM can be approached implicitly. The researcher argues that the implicit approach to KM should be viewed as a precursor to the explicit approach. The model recognises that knowledge acquisition and transfer are the main KM processes. In this respect, the four social variables (organisational culture, structures, HR and leadership) are considered essential in creating a knowledge-friendly environment to enhance tacit knowledge acquisition (this is also consistent with observation from KM literature as presented in chapter 2).

ICTs and knowledge-oriented social factors are viewed as enablers (tools) in the process of knowledge transfer in order to enhance tacit knowledge acquisition (this has also been fully reflected in KM literature as discussed in chapter 2 and elsewhere in this chapter). The researcher agrees with KM scholars that tacit knowledge is acquired directly on a person-to-person basis. In line with the definition of KM as highlighted in chapter 1, the model shows that the main goal of KM is to increase efficiency and effectiveness within an organisation. This has also been reflected as one of the benefits of KM as illustrated in empirical cases cited in chapter 2.

Though the model does not deviate much from established KM frameworks, it is pioneering because it recognises the role played by KM related practices such as talent management, performance emphasis and good people management practices in building the momentum for a fully explicit KM approach. Furthermore, the model recognises both ICTs and knowledge-oriented social factors as tools which could be used to enhance knowledge sharing. This is also a new development in the field of KM. Most KM scholars associate knowledge-oriented social factors with the creation of a knowledge friendly environment (Bishop *et al.*, 2008:23-24, Aramburu & Saénz, 2007:72-73 and Goh & Hooper, 2009:29-30).

The researcher argues that the model needs to be improved with further empirical investigations in various industries in the rural areas of South Africa.

4.8. SUMMARY

In line with objective 1 of this study, the researcher has managed to understand the extent of application of ICTs and knowledge-oriented social factors for information and knowledge sharing in the research industries. Having provided an extensive analysis of the research data arising from both the survey questionnaires and the interviews, the researcher has also managed to arrive at an empirically sound understanding of the extent of KM implementation in both public and private sector entities operating in Limpopo Province. This has been the driving force behind research objective 2.

The findings emanating from this study have culminated in a model for improved KM implementation for the research entities and similar organisations. This is in line with research objective 3. The model recognises the fact that in all the research entities KM implementation has been rather implicit than explicit. This has been confirmed through the interviews. As highlighted through the model (figure 4.16), the researcher has managed to understand the extent of KM implementation in both public and private sector entities in the three research industries. The research data confirm that all the research entities in the three industries of Limpopo Province are still in the elementary level of KM adoption. There is no research entity that displayed deeply entrenched KM practices.

This chapter has finally led to the achievement of the three research objectives as well as providing the answers to the main research questions. The next chapter presents the conclusions drawn from the study as well as its practical implications. The chapter also highlights the contributions of the study to KM theory and practice.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1. INTRODUCTION

This chapter provides a comprehensive summary to the research conducted. The research questions and objectives have been explicitly stated in chapter 1. The theoretical framework of the study and empirical studies on KM throughout the various regions of the world are discussed in chapter 2. The data collection and analysis methods, including the reasons for the adoption of the mixed research design approach are highlighted in chapter 3. The empirical results of the investigation have been discussed in chapter 4. These included the testing of the four research hypotheses and the statistical basis for the suggested model for improved KM implementation in the research entities.

This chapter presents an overview of the research conducted as well as highlighting the contribution this study makes to both the theory and practice of KM in public and private sector organisations operating in rural areas of South Africa. The chapter begins with a review of the research objectives and proceeds to highlight the summary of the research results with an aim of providing the basis for demonstrating the implications and contributions of the study. The limitations of the study are also observed in order to guide future studies in the same field.

5.2. RESTATING THE RESEARCH OBJECTIVES

This research was motivated by the realisation that there is “growing recognition in the business community about the importance of knowledge as a critical resource for organisations” (Metaxiotis *et al.*, 2005:6) and that effective KM demands a holistic approach with a socio-technical emphasis (Pan & Scarbrough, 1999:64). The aim of this study was to provide empirical evidence to demonstrate that by following a holistic approach to KM, both public and private sector entities operating in rural areas of South Africa could successfully achieve knowledge-based outcomes despite the resource constraints in these areas. Such an approach should be rooted in ICTs and knowledge-oriented social factors as enablers for KM. The research objectives are restated as follows:

Objective 1: To evaluate the extent of application of ICTs and social factors for information and knowledge sharing between public and private sector entities in three research industries in rural areas of South Africa (Limpopo Province)

Objective 2: To investigate the nature of KM implementation in three research industries of Limpopo Province by observing the degree of achievement of knowledge-based outcomes as well as tacit knowledge acquisition between public and private sector entities

Objective 3: To present a comparison of KM practices between public and private sector entities in three research industries of Limpopo Province aimed at suggesting a model for enhancing KM implementation in these entities.

Arising from the literature presented in chapter 2, these objectives led to the four research hypotheses. While the basis for establishing the four hypotheses emanated from the reviewed literature, the research objectives could not be substantially achieved through the literature presented. The four research hypotheses are restated as follows:

H1. The extent of ICT application for information and knowledge sharing does not significantly differ between public and private sector entities in the three research industries.

H2. The degree of achievement of knowledge-based outcomes does not significantly differ between public and private sector entities in the three research industries.

H3. The degree of tacit knowledge acquisition does not significantly differ between public and private sector entities in the three industries.

H4. The degree of knowledge-oriented social variables (organisational culture, structures, HR practices and leadership) does not significantly differ between public and private sector entities in the three research industries.

As highlighted in empirical investigations of various organisations presented in chapter 2, it was found that the diffusion and use of information and knowledge in modern entities is facilitated through a combination of ICTs and knowledge-oriented social factors. The researcher was keen to investigate the extent of application of ICTs and social factors for information and knowledge sharing between public and private sector entities in the three research industries in Limpopo Province.

The investigation was directed through a holistic approach to KM which is extensively discussed in chapter 2 of this report. In line with the holistic approach and research objective 1, five factors which are considered by KM scholars (Mertins *et al.*, 2001:39; Heisig, 2009:14; Liebowitz, 1999:4 and Harman & Brelade, 2000:7) as pre-requisites for successful KM implementation were adopted as research variables. These factors include ICTs, knowledge-oriented organisational culture, organisational structures, HR and leadership.

As guided by research hypotheses 1 and 4, the researcher investigated the degree to which both public and private sector entities in three research industries of Limpopo Province apply the five factors in their KM implementation. The extent of KM implementation between public and private sector entities in the three research industries was investigated in line with research objective 2 as guided by hypotheses 2 and 3 (H2 and H3).

The main assumption in the study was a view that public sector entities in the rural areas of South Africa did not effectively implement KM as it was done in private sector entities. For effective KM implementation the researcher considered the degree of achievement of knowledge-based outcomes (H2) and tacit knowledge acquisition (H3). Based on the analysis and presentation of the research results emanating from both the survey questionnaires and interviews, an overview of the summary of the research findings is reflected in the next section.

5.3. SUMMARY OF THE RESEARCH FINDINGS

This section aims to present an overview of the findings emanating from the analysis and presentation of the research results presented in chapter 4 of this research report.

5.3.1. Empirical findings

The empirical findings emanating from the research investigation are presented in line with each of the research constructs as follows:

i. Findings on ICT application for KM

Having observed the role of technological infrastructure tools in KM in various empirical studies, the researcher wanted to understand the extent of ICT application for information and knowledge sharing in public and private sector entities in the three research industries. The extent of ICT application in both public and private sector entities in the three research industries was measured based on a list of nine (9) ICT tools as captured in the research questionnaire. In order to confirm the findings from the survey study, during the interviews management were also asked to mention at least four ICTs used in their entities for information and knowledge sharing.

Based on the descriptive statistics, the interviews and the statistical tests on hypothesis 1, the researcher observes the following findings in terms of ICT application for information and knowledge sharing in the public and private sector entities in the three research industries:

- Considering that the researcher failed to reject the null hypothesis 1 in the health industry, the extent of ICT application for information and knowledge sharing could be described as almost the same between the public and private sector entities in the health industry
- Considering the median values of 2.0 and 6.0 recorded by the public and private sector education entities respectively, and aligned with the fact that the researcher rejected the null hypothesis 1, the application of ICTs for information and knowledge sharing was found to be extensive in the private sector entity than in the public sector
- Having recorded a median value of 6.0, the public sector entity in the business loans industry could be described as applying more ICTs for information and knowledge sharing than its private sector counterpart (median value of 2.0).

In all the three industries, the interview data confirmed the findings from the survey questionnaires. The researcher observed a very interesting scenario in the private sector business loans research entity where it was found that the targeted respondents (developmental financiers) were allocated cellphones for information and knowledge sharing instead of sophisticated ICTs due to the nature of their job.

As explained by the interviewed private sector business loans manager, the DFs were field workers who operated as loan consultants so they did not need ICTs like internet, intranet and other sophisticated ICTs for their work. To prove this, the private sector business loans manager was able to show the researcher the various sophisticated ICTs used by their office-based personnel. The low application of ICTs by the private sector business loans entity was justified during the interview process. The private sector business loans manager interviewed confirmed that ICTs were extensively used in the entity for information and knowledge sharing but the strategy was to link ICT usage with the nature of the employees' job. The strategy within the private sector business loans entity was that the work of the developmental officers (respondents in the study) did not require the use of sophisticated ICTs as telephones and cellphones would suffice. This has also been argued by Rizzi *et al.* (2009:76).

ii. Findings on KM awareness

Aligned to the findings on the extent of ICT application in the public and private sector entities of the three research industries, the researcher was interested in determining the level of awareness about Knowledge Management in organisations of the rural areas of South Africa. These findings arise from both the research survey and interview process results as follows:

- KM awareness was found to be low in both public and private sector health entities. In the public sector health entities, KM was associated with the Information and Records Department while in the private sector entities, it was associated with skills development initiatives
- In the education industry, KM awareness was found to be very low in the public sector while higher in the private sector entity. In the private sector entity KM was associated with skills development while in the public sector entities employee training workshops were the dominant process for knowledge sharing
- In the business loans industry, KM awareness was found to be higher in the private business loans sector than in the public sector entity. The private sector entity associated KM with employee training initiatives as the entity boasted a fully fledged in-house training unit.

The researcher found during the interviews that the low awareness about KM in the public sector business loans entity was ascribed to the fact that the entity was in the process of restructuring and most business processes were not yet fully functional.

The findings presented above attest to the fact that in all the three research industries, there was no single entity that approached KM explicitly. What happened in most of these entities were some forms of KM aligned practices. As noted by Martzkin (2008:150) these entities were doing some Knowledge Management empirically (implicit Knowledge Management) without labeling their practices as Knowledge Management.

iii. Findings on the degree of achievement of knowledge-based outcomes

The findings in terms of the achievement of knowledge-based outcomes or the benefits of KM produced very surprising findings considering that even those entities which recorded low awareness about KM were found to have at least achieved in all the four listed knowledge-based outcomes. The interviews also confirmed that all the research entities were reaping the benefits of KM through their KM-aligned practices. Though all the research entities registered a greater proportion of their respondents who were confident that knowledge-based outcomes were achieved even without a KM strategy, the researcher noted the following scenario in the three industries:

- Both public and private sector entities in the health industry were characterised by high achievement of knowledge-based outcomes (no statistically significant difference between the two)
- Though the public education sector recorded a higher degree of achievement of knowledge-based outcomes, it was found to lag far behind its private sector counterpart in terms of achievement of knowledge-based outcomes
- In the business loans industry, both sectors recorded a high degree of achievement of knowledge-based outcomes (no statistically significant difference between the two sectors).

These findings are consistent with those of the CRF study which led to the listing of the best employers for 2009/10 among South African organisations (Dicey, 2009). As highlighted in the CRF study, the key issue in achieving knowledge-based outcomes is rooted in the ability of an entity to “address issues with intelligence”. Based on these findings, the researcher realised that all entities achieved knowledge-based outcomes (KM benefits) from their KM related practices. The issue of KM related practices was found during the interviews to be more widespread in both sectors of the health industry, private sector education entity and private sector business loans entity.

The researcher realised that in these entities the quest was to meet certain prescribed quality standards and KM related practices like employee training initiatives, performance emphasis, good people management practices (positive HR) and quality assurance were viewed as endeavours towards ensuring that employees provide quality service. A notable case of the pre-occupation with quality service was noted during the interviews in both sectors of the health industry. Management of both public and private sector health entities confirmed that there was “no room for mistakes” as “mistakes mean death” in the health industry.

The researcher realises that the quest for KM related practices as observed in the health industry could be considered key in saving human lives. The situation in the education industry was found to be quite different since there was no urgency observed in the public education sector. Due to the need to meet donor-funding requirements, the private sector education entity was found during the interviews to be pre-occupied with meeting certain performance standards.

Lack of urgency might explain why the public sector education entity lags behind its private sector counterpart in all the research constructs. It was also realised during the interview process that even the public sector education middle manager interviewed was also not satisfied with the situation that prevailed in the sector. The researcher was left to speculate that this might be due to the emerging political culture in the country. The conflict between politics and knowledge workers has been identified by Ondari-Okemwa (2004:364) who wrote that the political leaders in Africa tend to marginalise knowledgeable citizens.

It is, therefore, not surprising why all the research entities show significant achievement of knowledge-based outcomes considering that in almost all the entities, it was found during the interviews that they approached KM in the form of related practices.

iv. Findings on the degree of tacit knowledge acquisition

In line with the view that knowledge is primarily tacit (Nonaka & Takeuchi, 1995:8), and arising from the research data, the researcher was able to determine the degree of tacit knowledge acquisition in both public and private sector entities in the three research industries as follows:

- In the health industry, both sectors were found to be characterised by a high degree of tacit knowledge acquisition
- Though the public sector education entity recorded a high tacit knowledge score, it was found to be lagging far behind its private sector counterpart in terms of the degree of tacit knowledge acquisition
- Both sectors of the business loans entity were found to have a high degree of tacit knowledge acquisition.

The researcher observes that though most entities could be described as low technologically in terms of ICT application, they were able to rely on their skills development initiatives like employee training workshops and meetings to ensure their employees shared information and knowledge on a person-to-person basis. Since the various variables in the holistic approach to KM affect one another, Pretorius and Steyn (2005:48) observed from their investigation of KM in the project environment of a South African commercial bank that the mechanisms for tacit knowledge acquisition were negatively affected in the “project environment” because of low levels of human interaction “between project managers”. As a result, Pretorius and Steyn argued that less human interaction in an organisation hinders the building of trust resulting in a negative culture. The researcher argues that by fostering human interaction through employee training sessions, the research entities were creating a climate conducive for tacit knowledge acquisition. This is not surprising considering that Chong (2006:232) also noted employee training as one of the eleven (11) prerequisites for successful KM implementation.

v. Findings on the degree of knowledge-oriented social factors

Based on the descriptive statistics as well as the statistical tests on hypothesis 4, the degree of knowledge-oriented social variables is explained in the three research industries in terms of the following four social variables (research sub-constructs):

- Knowledge-oriented organisational culture
- Knowledge-oriented organisational structures
- Knowledge-oriented HR practices
- Knowledge-oriented leadership.

The descriptive statistics as presented earlier in chapter 4 reveal that both public and private sector entities in all the three industries recorded a greater proportion of respondents who believed that the above were achieved in their entities. Based on the Mann-Whitney tests, the researcher was able to observe the following findings in terms of the degree of knowledge-oriented social factors in the three research industries:

- The degree of knowledge-oriented social factors between public and private sector entities in the healthy industry was found to be almost the same in all the sub-constructs
- In the education industry, the public sector entity was found lagging behind its private sector counterpart in terms of the degree of knowledge-oriented social factors in all the four sub-constructs
- In the business loans industry, it was also found that the public sector entity was lagging behind its private sector counterpart in terms of the degree of knowledge-oriented social factors in all the four research sub-constructs.

The importance of social factors in KM has also been observed by Kalkan (2008:394-395) and Liebowitz (1999:4). They insisted that people and cultural factors should constitute a major part of a KM initiative because these tend to be conducive to tacit knowledge acquisition.

Having registered a greater application of ICTs than its private sector counterpart, but lagging in terms of the degree of knowledge-oriented social variables, the public sector business loans entity was found (during interviews) to be in a rigorous business process re-engineering campaign. The interviewed public sector business loans manager believed that “recent restructuring would bring a lot of changes”.

5.3.2. Theoretical findings

The research contributes to theoretical understanding in the field of KM in a number of ways.

Firstly, the findings demonstrate that low application of ICTs is not necessarily a constraint to KM implementation. Since ICTs act as enablers in KM, some of the research entities achieved knowledge-based outcomes despite low levels of ICT application. The multi-regression analysis also revealed instances where there was an inverse relationship between application of ICTs and the achievement of knowledge-based outcomes. The regression models for the private sector health and education research entities (as presented in table 4.33 in chapter 4) reflect the negative impact of ICTs on the achievement of knowledge-based outcomes. The models are recaptured below as follows:

$$Y = 13.995 + (-0.203)X_1 + 0.001X_2 \text{ (private health sector)}$$

$$Y = 4.434 + (-0.048)X_1 + 0.053X_2 \text{ (private education sector)}$$

Secondly, low awareness about KM in an organisation does not imply absence of KM implementation. The findings demonstrate that KM was practised implicitly in all the research entities. What this indicates is that KM theory has to recognise that KM related practices such as those observed in the research entities have the capacity to lead to similar outcomes as those experienced during explicit KM implementation. These findings suggest that in entities where performance standards were targeted, KM related practices were enhanced. Zack *et al.* (2009:396-397) established the link between KM practices and intermediate measures of organisational performance in a study conducted among 88 executives of firms from Canada, USA and Australia.

Finally, social modes of information and knowledge sharing such as employee training workshops and meetings have been found to be entrenched in all the research entities. Since employee training workshops and meetings enhance human interaction, they provide a platform for tacit knowledge acquisition (Pretorius & Steyn, 2005:48). These findings are in line with recent trends in KM theory towards social platforms for information and knowledge sharing.

The researcher realises that these findings have practical implications for KM implementation in the rural areas of South Africa (Limpopo Province).

5.3.3. Practical findings

This research has provided the necessary framework to enhance the practical implementation of KM in rural areas of South Africa as highlighted in figure 4.16. It has dispelled the misconceptions regarding KM implementation in rural areas of South Africa in the following ways:

- i. Low levels of ICT application do not necessarily prevent an entity from initiating and implementing KM: the private sector business loans entity achieved higher levels of knowledge-based outcomes despite low levels of ICT application by the loan officers.
- ii. Low levels of KM awareness and absence of KM strategy does not imply absence of KM: Knowledge Management can be implemented implicitly.

Those entities which were preoccupied with achieving set performance standards had deeply entrenched KM related practices. These entities achieved higher levels of knowledge-based outcomes even though they recorded low levels of KM awareness and lacked a KM strategy. In the CRF 2009 Survey which listed the best employers in South Africa for 2009/2010, Dicey (2009) described how KM related practices such as a transformative and empowering organisational culture, positive HR practices, employee training and development initiatives led to successful organisations. Some of the organisations in the CRF study which have been consistent performers in their categories are the National Development Agency (NDA), Edward Nathan Sonneberg (ENS) and Ernst & Young South Africa.

These research findings have clearly demonstrated that apart from ICTs and knowledge-oriented social factors there were other factors which might account for the degree of achievement of knowledge-based outcomes. In terms of the multi-regression analysis provided in table 4.32 in chapter 4, ICTs and knowledge-oriented social factors could successfully predict the achievement of knowledge based outcomes up to 50.3% in the public health sector, 7.2% in the private health sector, 12.4% in the public education sector, 56.4% in the private education sector, 9.5% in the public business loans sector and 21.9% in the private business loans sector. Though the interview findings pointed out the issue of KM related practices as another important variable in KM, the study did not provide an empirical basis on the comprehensive list of variables which could successfully predict the achievement of knowledge-based outcomes.

5.4. THE VALIDITY AND RELIABILITY OF THE FINDINGS

The findings presented in this research report are valid and reliable. Validity concerns the extent to which the test tests what it is supposed to test (Cohen *et al.*, 2000:334). The main mode of validity achieved in this study is “concurrent validity”, where the results of the test (survey questionnaire) concur with the results on other tests/instruments (interviews) testing the same construct (Cohen *et al.*, 2000:132). The use of survey questionnaires and interviews ensured the validity of the research findings in this study. The triangulation of the data collected through the survey questionnaires and the interviews ensured that the findings of the study are valid.

Reliability concerns the degree of confidence that can be placed in the results and the data (Cohen *et al.*, 2000:334). The reliability of these findings was enhanced by the use of a range of statistical techniques such as the Mann-Whitney test and the multi-regression analysis. The four research hypotheses were tested using the Mann-Whitney test while the multi-regression analysis was used to identify the strength of the research variables in explaining successful KM implementation. Both tests provided similar findings. There were no contradictions in the findings established through these statistical techniques.

5.5. IMPLICATIONS ARISING FROM THE FINDINGS

A number of practical implications emanated from the research results as follows:

5.5.1. Implications for KM related practices as a foundation for an explicit KM approach

Realising that all the research entities registered a greater proportion of respondents in terms of the achievement of knowledge-based outcomes score, the researcher was interested in identifying the ‘real’ source of these outcomes. Therefore, the multi-regression analysis was conducted. ICTs and social factors were entered simultaneously as the predictors for the degree of achievement of knowledge-based outcomes. The regression model showed that though ICTs and social factors had an impact on the achievement of knowledge-based outcomes, there were other variables which might possibly explain for the percentage of variability in the degree of achievement of knowledge-based outcomes.

The researcher used the interview transcripts to trace those “other variables” which could account for the achievement of knowledge-based outcomes in the research entities. Based on the question asking the interviewees to confirm whether they were having any KM strategy in place in their entities, the researcher realised that in all the research entities there was no KM strategy in place. But the interviewees were able to reflect the tools and various practices used in their entities for ensuring the acquisition and transfer of information and knowledge in order to improve efficiency in their organisations.

The researcher came to the conclusion that all the research entities had some KM related practices in place even though management was not consciously aware that this was KM. To demonstrate that indeed the entities had some KM related practices in place, all interviewed managers were able to cite the benefits of managing knowledge in their entities. The researcher realised that the source of these KM benefits (knowledge-based outcomes) was the KM related practices which were considered by most managers as ways of ensuring that improved and quality service was provided by their entities.

Though KM was not explicit in all the research entities, the existence of implicit Knowledge Management in the research entities should not be underestimated (Matzkin, 2008:150). Arising from the interview data, the following KM related practices were observed in the research entities:

- Information management initiatives: private and public sector health, public sector business loans and private sector education
- Human Resources Development practices: public sector hospitals
- In-house training unit: private sector education and private sector business loans
- Employee training workshops: public sector education
- Performance improvement plans: in all research entities
- Human capital development: public sector business loans
- Induction and mentoring programmes: private sector business loans
- The quality improvement cycle: private sector health
- Best practice sharing: private sector health
- Linking performance monitoring with quality improvement: private sector health.

Having conducted an extensive literature survey on KM, the researcher realised that the issue of implicit KM is consistent with findings from organisations in the initial stages of KM implementation (Berjerse, 2000:175; Salojärvi *et al.*, 2005:113, and Matzkin, 2008:157). These scholars agree that those organisations in their initial stages of KM implementation tend to approach KM as a series of business improvement related practices without labeling them Knowledge Management.

Though KM should not be confused with individual related practices, various scholars have observed that initiatives towards IM (Kruger & Johnson, 2010:58), workplace learning and employee training (Aghazadeh, 2007:746), positive HR practices (Jaw & Liu, 2004:230) and quality improvement (Berman, 1998:9) lead to some benefits similar to those of KM. By investing in these KM related practices, the research entities were sure of reaping the benefits of KM.

While agreeing with other KM scholars that a formal KM strategy is beneficial to an organisation as a whole, because it allows individuals to be conscious of their roles in knowledge generation and sharing (Syed-Ikhsan & Rowland, 2004:243), the researcher noted that the research results emanating from this study confirm the finding that a sustainable KM strategy has deep roots in implicit KM (Sieloff, 1999:48).

The research results have serious implication for the role of KM related practices in laying the foundation of a sustainable formalised KM implementation. What the research results imply is that in most of the research entities (both sectors of health, private education sector and private business loans sector) the roots of KM are there and in some research entities the roots need to be deepened (public education sector and public business loans sector). What is imperative is to make “explicit the implicit” (Matzkin, 2008:156).

While resting on the foundations of established models in KM theory, this study is not the first to recognise that KM can be approached implicitly, but its findings are ground-breaking in the sense that these practices are considered as the roots of a formalised KM approach in organisations that appear not aware of the existence of the concept KM. The study recognises that the normal everyday knowledge-oriented business practices could be turned into a formalised KM strategy.

5.5.2. Implications for the role of ICTs in KM implementation in the research entities

The multi-regression analysis revealed that in some research entities (private health and private education sectors), there was an inverse relationship between the application of ICTs and the degree of achievement of knowledge-based outcomes. This implied that ICTs were not a necessary pre-requisite for KM implementation in these sectors. This does not mean that ICTs did not enable KM in the research entities. It should be noted that the multi-regression analysis (as captured in table 4.33 in chapter 4) provided ample evidence that ICTs had a far greater impact than knowledge-oriented social factors in explaining the degree of achievement of knowledge-based outcomes in the public health, public education, public business loans and private business loans research entities.

This suggests that ICTs should be evaluated in terms of the requirements of the sector. Bishop *et al.* (2008:22) argued that for a KMS initiative to be successful, it should address an organisation's objectives and type of work performed in the organisation.

Having elaborated on the 'real' status of ICTs in the three research industries, the researcher observed that the research entities could not be considered as lacking ICTs in the same level like that observed by Ondari-Okemwa (as reflected in chapter 2 of this report) in sub-Saharan African countries. Notably, the extent of application of personal cellphones for information and knowledge sharing has been found to be higher in all research entities. This is consistent with the findings of a community survey conducted in Limpopo Province (Statistics South Africa, Community Survey, 2007).

It is, therefore, evident from the findings that in some entities it was not lack of ICT tools that really hindered effective KM implementation but a strategic option (the private sector business loans entity) or inadequate technical support to the IT implementation project (the public sector education entities). These findings suggest that the public health sector, public education sector, public business loans and private business loans sectors could enhance their KM implementation initiatives by putting more emphasis on the information communication technologies.

The findings of this study demonstrate that the research organisations have enough capacity to initiate and implement KM. This capacity is rooted mainly in their everyday business improvement practices. These business improvement practices could be able to provide similar outcomes to those of explicit KM implementation. Though ICTs and knowledge-oriented factors had an impact towards the achievement of knowledge-based outcomes (a key indicator of successful KM implementation) in the research entities, there were other factors which might possibly account for this.

5.6. RECOMMENDATIONS

Arising from the implications of the research findings as highlighted above, the researcher makes the following recommendations for effective KM implementation in organisations operating in rural areas of South Africa:

i. KM related practices should be considered as the roots for an explicit KM implementation

While the researcher noted the low levels of KM awareness in most of the research entities (except in private education and private business loans entities), this did not suggest that there was no KM implementation in the research entities. Though there was no entity which appeared to implement KM explicitly, some KM related practices have been observed in all the entities. The question then arises: Does lack of a KM strategy mean no KM implementation? The answer is in the negative. It has already been highlighted in chapter 2 of this report that it is typical of organisations with immature KM systems to implement KM implicitly.

As observed by Berjerse (2000), these organisations have a series of business improvement related practices which generally yield similar outcomes to those of KM. It is, therefore, apparent that organisations which are serious about efficiency and effectiveness tend to generally have 'normal' everyday practices rooted in knowledge as a key element in business improvement.

Aligned to this, Bishop *et al.* (2008:23) indicated that KM successfulness is enhanced when KM is integrated with everyday activities rather than with processes and procedures. KM related practices by their nature are part of the daily activities in an organisation. For example, most KM related practices tend to be linked to employee training and development initiatives which are practised by almost all entities which are concerned about the impact of a productive labour force in improving organisational efficiency and effectiveness. The researcher therefore, recommends that in order to ensure a strong foundation for a formalised KM initiative in organisations facing similar challenges to those in this research, everyday knowledge-oriented activities need to be enhanced.

Approaching KM implicitly appears not solely restricted to organisations from the developing countries. Sieloff (1999) pointed out that KM related practices such as good people management strategies have been credited with being the precursor to a formalised KM strategy at Hewlett Packard in the USA. This confirms that KM related practices could be considered as the roots for a formalised KM approach in the research entities.

ii. ICT application should be linked to the jobs of the employees

This recommendation is based on the fact that knowledge sharing involves exchange of knowledge at individual level (Liyanage, Elhag, Ballal & Li, 2009:122). For employees to share information and knowledge as they perform their duties, the nature of their jobs determines the type of ICTs they should utilise. This is what Rizzi *et al.* (2009:76) call the technical functionality of the KM applications.

Due to the nature of their work, the health sector professional nurses need to have access to telephones, desktop computers, e-mail and the internet as the basic ICT tools for information and knowledge sharing. They need these tools to share information and knowledge with their colleagues from other wards within the hospital or even with professional nurses from other hospitals. As observed in chapter 4, telephones, company laptops, desktop computers, e-mails and the internet top the list of the ICT tools most respondents (in both the public and private sector) in the health industry prefer using. In line with the requirements of the respondents' jobs, the researcher argues that ICT application for information and knowledge sharing in the health industry could be enhanced if these five ICT tools were given due consideration.

The extent of ICT application in the education industry has been found to be significantly different between public and private sector entities. ICT application was found to be concentrated in three main tools in the public education sector as follows:

- Telephones: 91.2 % respondents
- Personal cellphones: 85.3% respondents
- Office desktop computers: 41.1% respondents.

While ICT application in the private sector education entity was found to be concentrated on six ICT tools as follows:

- Telephones: 92.3% respondents
- Personal cellphones: 92.3% respondents
- Internet: 92.3% respondents
- Desktop computers: 84.6% respondents
- E-mail: 84.6% respondents
- Company laptops: 61.5% respondents.

In line with their jobs, both public and private sector respondents in the education industry would obviously be forced to share information and knowledge with their colleagues. While ICT application has been found to be extensive and ‘satisfactory’ in the private sector entity, a lot of improvements are necessary in the application of ICTs in the public education sector.

It was noted during the interviews that since public sector education respondents monitor and advise schools on effective implementation of the National Curriculum Statement (NCS), they spend most of their times traveling to schools. They could not depend on telephones and desktop computers to share information and knowledge. Their jobs also require them to share information and knowledge with their colleagues in the same or other education districts. Therefore, cellphones, internet, e-mail and laptops are imperative.

ICT application in the public sector of the business loans industry has been found to be a highly extensive form of information and knowledge sharing. Arising from the interview with the Corporate Services Manager of the private sector business loans entity, the researcher observed the linking of ICT application to the nature of the respondents’ jobs. It was revealed that since the DFs were field workers who were responsible for recruiting the entity’s clients, they would use two main ICT tools (company sponsored cellphones and landline telephones located in each branch office) for information and knowledge sharing. It should be taken into consideration in all the research entities that technology should be viewed as “added help that can complement” efforts of staff (Lamproulis, 2007:39).

iii. IT implementation should be used to complement tacit knowledge acquisition

ICTs should be viewed as tools, systems and automated solutions that enhance the development, application and distribution of organisational knowledge (Chin Wei *et al.*, 2009:72). It applies that due to their utilitarian value, ICTs are meant to foster and enhance tacit knowledge acquisition. It has also been established in literature that since ICTs play an enabling role in KM, the focus on IT investments should be aimed at enhancing the capacity of organisational members to create tacit knowledge.

KM scholars agree that tacit knowledge is best acquired in person through direct contact but that it is possible to spread the expertise throughout the organisation by converting tacit knowledge into explicit knowledge through ICTs or in manual documents (Nonaka & Takeuchi, 1995:122, and Lamproulis, 2007:40). The research findings have demonstrated high tacit knowledge scores for all the entities in the three research industries.

These findings clearly show that some forms of tacit knowledge acquisition were promoted in public and private sector entities in the three research industries. The researcher wanted to understand whether the research entities used ICTs to share best practices generated through tacit knowledge acquisition. This was probed during the interviews. It was established through the interviews that ICTs were used for different roles in those entities with 'reasonable' levels of ICT application as could be reflected below:

- The private sector health entities relied on their extensive IT infrastructure to promote sharing of best practices amongst the 50 plus hospital groups
- In the public sector health entities, the available ICT infrastructure was used to access hospital statistics while best practices were shared through the Nurses Procedures Manual (A hand-book that captured best practices in patient care)
- The use of ICT tools in the public sector business loans entity was mainly for reporting and monitoring purposes.

It is apparent that it was only in the private health sector entities where ICTs were used to complement tacit knowledge acquisition (through sharing of best practices). It should be noted that in terms of KM, ICTs should be viewed as tools for capturing and searching of ideas (best practices) developed by the organisation's people (Lamproulis, 2007:40). However, those entities with limited IT implementation (public education sector and private sector business loans) were found to be lacking ICTs for capturing and sharing people's ideas (best practices). Does this mean there was no sharing of best practices in these entities?

It was revealed during the interviews that best practices were captured in the Loans Guidelines Document in the private sector business loans entity. Each DF (private sector business loans respondents) was relying on the Loans Guidelines Document for all aspects that related to how the organisations' clients would apply for a loan, how it could be approved and all forms that they needed to complete.

The sharing of best practices in the public education sector was found to be mainly through employee training workshops where curriculum advisors meet together and assist each other to interpret national policy documents and come up with 'best' forms of implementing national policy. One respondent remarked in the survey questionnaire that "We use word of mouth to transfer information and knowledge in this organisation".

While the above deeply entrench tacit knowledge acquisition, they are not geared towards speeding up the sharing of people's ideas (best practices) the same way as technology does. Technology makes quicker and easier retrieval of knowledge (Lamproulis, 2007:39). This then suggests that a KM application system is imperative to complement tacit knowledge acquisition by improving the capacity for sharing of best practices in organisations operating in rural areas of South Africa. To those organisations with extensive IT implementation, the KM application could be technological (ICT based) but to those with limited IT implementation it could be a manual KM system (best practices printed and distributed on paper).

5.7. CONTRIBUTION OF THIS RESEARCH

Having suggested how this study could contribute to improvements in KM implementation in organisations operating in similar conditions to the research entities, the researcher observes that the study is an important milestone in the field of KM. Based on the three research objectives as reflected in chapter 1, this investigation has led to uncovering the ‘real’ nature of KM implementation in public and private sector organisations in Limpopo Province. The researcher believes the study has contributed immeasurably to KM theory and practice, considering that its findings could be used as the basis for suggesting improvements in KM implementation in both public and private sector entities operating in the three research industries. This is fully reflected in the model (figure 4.16) for improved KM implementation.

The key contributions of the study arise from what has already been established in KM literature in terms of the link between KM and organisational performance and how both public and private sector entities could benefit from KM implementation. These could be briefly summarised as follows:

- There is empirical evidence of a direct link between KM and organisational performance (Zack *et al.*, 2008:232). This is evident in all mature knowledge-based entities such as Buckman Laboratories, IDOM and Tata Consulting Services (as elaborated in chapter 2)
- KM has been found to strengthen public service effectiveness the same way it improves organisational performance in private sector entities (Wiig, 2002:225). The case of the US Department of Energy’s Office of Environmental Management (DOE/EM) is also reflected fully in chapter 2.

In line with the theoretical basis presented above, it is imperative to prove that both public and private sector entities in the rural areas of South Africa could adopt KM to become as effective and efficient as their counterparts from those countries where KM is highly prized. It has also been highlighted in chapter 2 that other developing countries such as China, India, Malaysia and Brazil have realised that they could not continue to remain isolated from the knowledge economy. This study is ground-breaking in a number of ways:

Firstly, by comparing KM implementation in public and private sector entities, the study establishes the foundation for the benchmarking of KM practices between these sectors.

Secondly, having recognised the role of KM related practices in KM implementation in the research entities, the study affirms the view that KM can be approached implicitly through everyday business improvement practices.

Finally, the study provided evidence to prove that the value of ICTs for information and knowledge sharing is sector dependent. ICTs should be adopted for KM only if they would increase the achievement of knowledge-based outcomes. Furthermore, the empirical evidence suggest that contrary to assumptions associated with rural areas in South Africa, there is no serious lack of ICTs in the three research industries that could negatively impact on information and knowledge sharing.

The research results have clearly demonstrated that there is no public and private sector divide in terms of the degree of KM implementation in the health industry as compared to the education and business loans industries. Apart from providing the South African rural areas perspective in KM theory, the findings emanating from this study would help KM practitioners and management in both public and private sector entities in Limpopo Province towards improved KM implementation. The study, therefore, contributes both to KM theory and KM practice.

5.7.1. Contribution to KM theory

The main concepts used in this study are already fully established in KM theory. The key aspect that this study has unmasked relates to KM related practices as the roots of sustainable KM implementation. The researcher argues that KM related practices in the form of business improvement practices are the roots of a formalised KM strategy. This is the main contribution of this study to KM theory. This is not the first study to have recognised the existence of implicit KM implementation.

Various scholars such as Salojärvi *et al.* (2005); Matzkin (2008), and Berjerse (2000) recognised that organisations approach KM as a series of business improvement practices without labeling these KM. The findings emanating from this study prove that the research entities achieved KM benefits similar to those achieved in entities with an explicit approach to KM (as observed in chapter 2). The researcher believes that KM related practices are more important for the introduction of a formalised KM strategy since they are part of everyday business improvement practices. Bishop *et al.* (2008) provided evidence demonstrating that one of the key factors in the success of a KM initiative was to link the KM initiative with everyday practices in an organisation.

5.7.2. Contribution to practice

It has already been highlighted through the proposed model for improving KM implementation in the research entities that this study has led to a realisation of the ‘real’ nature of KM implementation in the research entities so as to suggest the necessary interventions. Having already realised that all research entities have immature KM systems, the researcher believes that the proposed model offers a framework for deepening KM implementation in public and private sector entities in the three research industries. This is the key contribution of the study to the practice of KM implementation in organisations of the rural areas of South Africa (Limpopo Province).

Another important contribution of this study to the practice of KM implementation relates to the observation that those entities which have been found with heightened KM related practices were those in the health industry (public and private sector entities). This is rather interesting considering that the researcher failed to reject the four null hypotheses in the health industry. Even though it could be argued, based on the research results, that the private health entities were relatively advanced in their KM related practices than the public sector health entities, the interviews revealed that there was more ‘urgency’ towards business improvement practices in the public health entities than in the public business loans and public education sector. The rationale behind this has been the fact that health entities “deal with life”, therefore, they could not afford any unnecessary mishaps.

The interviews also confirmed that the private sector entities in all the three research industries displayed more ‘urgency’ in terms of business improvement practices (KM related practices) than their public sector counterparts. The researcher argues that all public sector entities should be given the same ‘urgency’ in terms of KM related practices as observed in the public health entities. The public and private sector entities in the three research industries could rely on the findings of this study, as discussed in the proposed model, to enhance their capacity to implement KM. Based on its practical implications, this study could contribute towards ensuring that there is a better understanding and implementation of KM amongst entities operating in rural areas of South Africa.

5.8. LIMITATIONS

In line with research objective 3, the researcher has managed to develop a framework (figure 4.16 in chapter 4) upon which the systemic handling of knowledge can be approached by organisations operating in rural areas of South Africa. This does not mean that the research process has been flawless. It should also be noted that the research results and findings presented in this report might only apply to those entities which have participated in the study, in particular during the period when the research was undertaken. The researcher argues that before the findings of this study could be generalised to the wider rural areas of South Africa, the following limitations should be considered:

- i. The sample sizes for the private sector health and education entities have been smaller than their public sector counterparts. This was due to the nature of the economic setup in Limpopo Province. There is a huge public sector compared to a very small private sector in the province
- ii. There was some reluctance by both the commercial and government sector business loans entities to participate in the study. This limited the scope of the study
- iii. Though an examination of the factors facilitating effective KM was imperative in this study due to the fact that there were no other studies conducted in the rural areas of South Africa with the same objectives, the researcher also realised that an intensive action research strategy might have yielded a much solid empirical base for KM implementation in rural areas of South Africa.

These limitations do not impair the actual findings arising from this study. However, the researcher decided on non-parametric statistics such as the Mann-Whitney test in testing the four hypotheses in order to prevent the negative implications of these limitations on the research results. The Mann-Whitney test is more powerful in comparing unequal samples (Bryman & Cramer, 2009:168). Though some public or private sector entities had a higher sample size than their counterparts, the comparison arising from testing the four hypotheses was statistically sound due to the reliance on the mean rank scores than the mean.

5.9. SUGGESTION FOR FURTHER RESEARCH

The proposed KM model arising from this research demonstrates that isolated efforts for the improvement of knowledge handling addressing only one KM critical factor are considered insufficient (Heisig, 2009:16). Thus, future studies on KM in rural areas need to test the practical application of this model so as to address other features inherent in such a framework. It is too early for the researcher to lay claim into a fully-fledged KM model for organisations operating in rural areas of South Africa.

Future research should explore the broadening of the empirical perspective by investigating KM in other industries in order to clearly understand Knowledge Management in organisations operating in the rural areas of South Africa. The link between KM related practices and KM benefits needs further investigations. While most managers claimed (during the interviews conducted as part of this research) they were implementing some ‘form’ of KM within their entities, it was apparent that there was a serious lack of understanding of what KM actually entailed. This necessitates a thorough action research strategy in order to broaden KM implementation in organisations operating in rural areas of South Africa.

Since the multi-regression analysis revealed that ICTs and knowledge-oriented social factors were not the only variables accounting for the achievement of knowledge-based outcomes in the research entities, future research should examine the whole range of factors which might impact on the achievement of knowledge-based outcomes in organisations operating in the rural areas of South Africa.

This study would have contributed quite immensely into the KM debate should its findings lead to the awakening of KM awareness in organisations operating in rural areas of South Africa. KM academics and practitioners in South Africa and elsewhere are called upon to deepen KM understanding and awareness in rural areas of South Africa.

5.10. CONCLUSIONS

In line with the main research questions driving the research investigation, this study has managed to demonstrate the extent to which public and private sector entities operating in rural areas of South Africa (Limpopo Province) apply ICTs and social factors in their KM implementation. In investigating KM implementation in both public and private sector entities in the three research industries, the researcher has observed and noted the degree of tacit knowledge acquisition between public and private sector research entities. The quest to understand the degree of tacit knowledge acquisition in the research entities arose from the view adopted from literature that knowledge is primarily tacit. The study has led to an understanding of the real nature of KM implementation in both public and private sector entities in the three research industries.

In line with the three research objectives highlighted in chapter 1, the testing of the four research hypotheses in chapter 4 has led to the realisation of the purpose of the study. Various empirical studies have been reviewed in chapter 2 in order to understand how KM is implemented in various regions of the world. Based on the empirical cases, the researcher has realised that KM implementation deserves a holistic approach. It is upon this basis that the study focused on ICTs and social factors as a way of understanding the degree of KM implementation in public and private sector entities in three research industries in Limpopo Province.

As guided by the four research hypotheses, the researcher has managed to understand how entities in the rural areas of South Africa (Limpopo Province) implement KM.

Based on the research constructs, the findings revealed no statistically significant differences in KM implementation between public and private sector health entities. The findings revealed that public sector entities in the education industry were lagging behind their private sector counterpart in all the research constructs. The situation in the business loans industry was rather interesting in that the private sector business loans entity was found to lag behind its public sector counterpart in terms of the extent of application of ICTs for information and knowledge sharing, with the public sector business loans entity lagging behind in terms of the degree of knowledge-oriented social factors.

The researcher notes that the same 'urgency' given to the public sector health entities should be given to the public sector education and business loans entities. This can improve the effectiveness and efficiency of business practices in these entities. Arising from the research results, the researcher observed that all the research entities approached KM implicitly in the form of some business improvement practices. The research results suggested low awareness about KM in the majority of the research entities except in the private sector education and private sector business loans entities. That KM related practices as observed in this study could lead towards the achievement of KM benefits has been the key contribution of this study to KM theory. Apart from its contribution to KM theory, the research has provided a framework for improved KM implementation for the public and private sector entities in the three research industries. The study has attempted to lay the foundations for a KM model in rural areas of South Africa.

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APPENDIX A: DBL STRUCTURED QUESTIONNAIRE

Dear participant

This questionnaire is aimed at investigating the Knowledge Management practices of your organisation/company. In responding to this questionnaire be assured that your identity will remain anonymous. None of the questions is aimed at identifying you as a person. In addition, all information supplied by you will be treated as confidential at all times. Information provided by you will be reported in collated format (summary format) only. Your participation in this survey is of utmost importance to this study. Please answer the questions honestly.

In **completing the questionnaire**, please make a **CROSS** along the **number(s)** representing your **option(s)**. For queries regarding this questionnaire contact the researcher **Mr Mbhalati OJ at 083 626 6237** or e-mail **oliverj@webmail.co.za**.

A. BIOGRAPHICAL INFORMATION: The questions in this section will be used for comparative purposes only, namely to compare groups of respondents in terms of their answers:

1. To which **age category** do you belong?

Younger than 30 years	1
30 to 39 years	2
40 to 49 year	3
50 years or older	4

2. How many **completed years** of work experience do you have in the sector you are currently working?

Four (4) years or less	1
Between 5 and 10 years	2
Between 11 and 15 years	3
16 years and more	4

3. In what **industry** are you currently working?

Health (Government/public sector)	1
Education (Government)	2
Business Loans (Government business)	3
Health (Private sector)	4
Education (Private sector)	5
Business Loans (Private sector)	6

4. What is your **highest academic** qualification?

Lower than Grade 12	1
Grade 12	2
Post school diploma or certificate	3
Undergraduate degree	4
Post graduate degree	5

5. What is your **gender**?

Male	1
Female	2

B. THE INFORMATION TECHNOLOGY KM APPROACH

For the purposes of this questionnaire, the abbreviation **KM** refers to **Knowledge Management** which is defined in terms of **initiatives (implicit and/or explicit)** that systematically leverage a company/organisation's **ICT/IT infrastructure and expertise (human capabilities)** to provide innovation, responsiveness, competency and efficiency.

ICT/IT refers to electronic tools that facilitate communication and information flow within your organisation (such as telephones, cell-phones, internet, video conferencing).

1. Which of the following ICT tools are you **currently** using in your organisation/company to transfer information/knowledge? Please **mark ALL** applicable options.

ICT tool	Yes	No
Telephones	1	2
Company cell-phones	1	2
Personal cell-phones	1	2
Office desk-top computers	1	2
Company Laptops	1	2
E-mail	1	2
The Intranet	1	2
The Internet	1	2
Video conferencing	1	2
Others (Please specify) _____ _____	1	2

2. Which of the following ICT tools do you believe **should** be used by your organisation to transfer information/knowledge? Please **mark ALL** applicable options.

ICT tool	Yes	No
Telephones	1	2
Company cell-phones	1	2
Personal cell-phones	1	2
Office desk-top computers	1	2
Company laptops	1	2
E-mail	1	2
The Intranet	1	2
The Internet	1	2
Video conferencing	1	2
Others (Please specify) _____ _____	1	2

3. Have you ever heard about the concept Knowledge Management in your organisation? **Cross ONLY** the applicable option:

YES	NO
1	2

4. If **YES**, which of the following elements are associated with KM initiatives within your organisation? Please **Mark ALL** applicable options:

KM ELEMENT	YES	NO
IT connectivity systems	1	2
Programmes designed to develop the skills of employees	1	2

C. ACHIEVEMENT OF KNOWLEDGE-BASED OUTCOMES

This section is meant to determine how far your organisation is able to achieve knowledge-based outcomes through KM initiatives.

1. To what extent do you **agree/ disagree** with each of the following statements? Use **the scale** provided to describe the extent to which the statement applies to you in your organisation.

MAKE CROSS NEXT TO THE NUMBER

STATEMENT	Strongly Disagree	Disagree	Agree	Strongly Agree
My job offers an opportunity for the development of my skills and expertise	1	2	3	4
In my organisation, my ability to create and share knowledge is realised	1	2	3	4
My organisation increases efficiency by using knowledge to improve organisational processes	1	2	3	4
In my organisation, I am encouraged to learn and teach others better ways of performing job tasks	1	2	3	4

D. TACIT KNOWLEDGE AND IT IMPLEMENTATION

1. Please rate the following statements according to the situation as it applies in your organisation. Please indicate your answer by **using the scale** provided. Make a **CROSS** in the applicable option:

STATEMENT	Strongly Disagree	Disagree	Agree	Strongly Agree
In my organisation, I am regularly engaged in face-to-face knowledge sharing sessions	1	2	3	4
In my organisation, I use various IT tools for knowledge sharing (information exchange) as I do my work	1	2	3	4
In my organisation, my job experience is regarded as valuable	1	2	3	4
In my organisation, I am regularly given support so that I perform my job better	1	2	3	4

2. Which of the following **practices** are **currently** applied in your organisation? Please **mark ALL** applicable options.

PRACTICE	YES	NO
Electronic communication sessions	1	2
Computer-based training/E-learning programmes	1	2
Employee training workshops	1	2
Knowledge sharing meetings	1	2

E. SOCIAL VARIABLES, IT AND KNOWLEDGE-BASED OUTCOMES

The following section looks at the configuration of social variables (organisational culture, structure, HR practices and management) within your organisation.

1. To what extent do you **agree/disagree** with each of the following statements. **Use the scale** provided to **describe the below-mentioned elements as currently structured** in your organisation. **MAKE A CROSS IN THE APPLICABLE BOX:**

Strongly disagree (SD), disagree (D), agree (A), strongly agree (SA)

1. ORGANISATIONAL CULTURE:				
The organisational culture in my organisation/company can be described in terms of the indicators mentioned below:				
1.1. The philosophy and vision of the organisation	SD	D	A	SA
My organisation values and encourages knowledge creation and sharing	1	2	3	4
In my organisation, there is tolerance for making learning mistakes	1	2	3	4
In my organisation, I am allowed to come up with new ideas to improve my performance	1	2	3	4
In my organisation, there is a spirit of cooperation	1	2	3	4
1.2. The management style	SD	D	A	SA
My organisation emphasises responsibilities and assignments more than titles and positions	1	2	3	4
In my organisation, management is consultative	1	2	3	4
In my organisation, management has a sense of trust in us	1	2	3	4
In my organisation, staff members are consulted when important decisions are made	1	2	3	4
1.3. Physical structures	SD	D	A	SA
In my organisation, our offices are client-friendly	1	2	3	4
In my organisation, management and employees share the use of basic facilities	1	2	3	4
In my organisation, offices create an inviting and communicative atmosphere	1	2	3	4
In my organisation, the office of our supervisor is accessible.	1	2	3	4

2. ORGANISATIONAL STRUCTURES: The organisational structure/organogram of my organisation can be described in terms of the underlying indicators as:				
2.1. Hierarchies	SD	D	A	SA
In my organisation, the decision-making process is less complicated	1	2	3	4
In my organisation, management is accessible	1	2	3	4
In my organisation, coordination within departments/divisions is promoted	1	2	3	4
In my organisation, my supervisor makes important decisions and provides me with enough operational guidance as I work	1	2	3	4
2.2. Work design structures	SD	D	A	SA
In my organisation, working with others in groups/teams is encouraged	1	2	3	4
In my organisation, various divisions engage in joint projects	1	2	3	4
In my organisation, various divisions come together for planning purposes	1	2	3	4
In my organisation, collective learning involving supervisors and their subordinates is promoted	1	2	3	4
2.3. Information flow	SD	D	A	SA
In my organisation, there is increased communication and relationship between supervisors and their subordinates	1	2	3	4
In my organisation, information flow takes place throughout all levels of the organisation	1	2	3	4
In my organisation, there is continuous information sharing	1	2	3	4
In my organisation, employees meet to share best practices	1	2	3	4

3. HUMAN RESOURCE PRACTICES:				
The HR practices in my organisation can best be described in terms of the variables mentioned below:				
3.1. Empowerment	SD	D	A	SA
I am allowed to make/give inputs into how to perform my job tasks better	1	2	3	4
My job allows the full use of my capabilities (skills and expertise)	1	2	3	4
My job is characterised by some form of independence and freedom	1	2	3	4
I feel I am an important part of my organisation	1	2	3	4
3.2. Performance emphasis	SD	D	A	SA
I am positively pressured to achieve performance goals in my organisation	1	2	3	4
In my organisation, deadlines are strictly adhered to	1	2	3	4
In my organisation, there are incentives for meeting and exceeding performance goals	1	2	3	4
In my organisation, performance objectives are clearly spelt out to each employee	1	2	3	4
3.3. Supporting benefits programme	SD	D	A	SA
My organisation provides me with enough support when I need it	1	2	3	4
My organisation encourages employee social clubs	1	2	3	4
My organisation promotes employee trips and various competitions	1	2	3	4
My organisation offers me attractive benefits	1	2	3	4

3.4. Comprehensive training	SD	D	A	SA
In my organisation, further education and training programmes are promoted	1	2	3	4
In my organisation, educational qualifications are an important deciding factor when coming to promotional posts	1	2	3	4
My organisation provides a variety of training programmes	1	2	3	4
The training programmes I attend are beneficial	1	2	3	4
3.5. Encouraging commitment	SD	D	A	SA
I feel confident that I would not be overlooked for promotion in my organisation	1	2	3	4
I feel a sense of belonging to this organisation	1	2	3	4
I have a sense of pride for working for this organisation	1	2	3	4
I feel personally committed to this organisation	1	2	3	4
4. MANAGEMENT/LEADERSHIP STYLES:				
In my organisation management can best be described in terms of the following roles:				
4.1. Motivation for knowledge-based outcomes	SD	D	A	SA
Management/my supervisor sets me difficult but achievable performance targets	1	2	3	4
Management supports me in work-related learning	1	2	3	4
Management mentors/coaches me to perform better	1	2	3	4
Management encourages me to infuse new ideas into my work	1	2	3	4
4.2. Creation of atmosphere of safety within organisation	SD	D	A	SA
In my organisation, management/my supervisor ensures that a relationship of trust is maintained among all members of our organisation	1	2	3	4
Management clearly communicates tasks and trusts me to perform these	1	2	3	4
Management allows me some form of independent decision making	1	2	3	4
Management ensures that an atmosphere of caring exists in our organisation	1	2	3	4

4.3. Provision of the information and knowledge requirements of the organisation	SD	D	A	SA
Management is aware of the skills each employee possesses	1	2	3	4
Management understands the resources needed to make our organisation effective	1	2	3	4
Management deploys each employee in work areas according to his/her competence	1	2	3	4
Management enhances promotion prospects for competent employees	1	2	3	4
4.4. Creation of a knowledge enterprising organisation	SD	D	A	SA
In my organisation, management does not penalise ideas that did not work	1	2	3	4
Management implements systems to reward skills and expertise	1	2	3	4
Management is a role model for learning and knowledge sharing	1	2	3	4
Management encourages acceptance of differing employee opinions	1	2	3	4

2. Which of the following **elements** do you believe **should** receive more emphasis to make your organisation a **knowledge power-house**? Use scale provided and **CROSS** applicable option. For the purpose of this questionnaire a **knowledge power-house** is an organisation characterised by continuous learning, information sharing and the development of new ideas.

ELEMENT	Strongly Disagree	Disagree	Agree	Strongly Agree
Investment on information technology tools	1	2	3	4
Changing the culture of the organisation	1	2	3	4
Redesigning the organisational structures	1	2	3	4
Restructuring of human resource practices	1	2	3	4
Training of the management team	1	2	3	4

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX B: DBL INTERVIEW GUIDE

1. How would you describe your organisation in terms of its vision statement?

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2. Does your organisation implement any Knowledge Management strategy? And how is it implemented?

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3. Who is responsible for Knowledge Management initiatives in your organisation?

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4. Could you mention any **FOUR ICT/IT** tools that are used in your organisation to transfer information/knowledge?

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5. Do you believe that your organisation has the appropriate IT tools for effective information/knowledge transfer?

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6. In what way can you classify your organisation as a knowledge powerhouse?

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7. How do you capture and share best practices in your organisation? And how do you transfer these to new staff?

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8. How would you describe each of the following elements in your organisation in terms of their capacity to make your organisation a knowledge powerhouse?

- Information technology tools

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- Organisational culture

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- Organisational structure

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- Human resource management practices

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- Management style

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9. How do you ensure that you always recruit the best candidates for positions advertised in your organisation?

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10. Do you experience any problems in recruiting experienced and competent personnel (namely education specialists, professional nurses, home loan consultants) in your organisation? And how do you go about solving such a problem?

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11. How do you make sure that employees in this organisation are always better performing?

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12. Do you believe that Knowledge Management offers benefits to your organisation? And which specific benefits can you mention which are currently realised in your organisation due to KM initiatives?

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APPENDIX D: LIST OF COUNTRIES OF SUB-SAHARAN AFRICA

1. Angola
2. Benin
3. Botswana
4. Burkina Faso
5. Burundi
6. Cameroon
7. Cape Verde
8. Central African Republic
9. Chad
10. Comoros
11. Congo
12. Côte d’Ivoire
13. Democratic Republic of Congo
14. Djibouti
15. Equatorial Guinea
16. Eritrea
17. Ethiopia
18. Gabon
19. Gambia
20. Ghana
21. Guinea
22. Guinea-Bissau
23. Kenya
24. Lesotho
25. Liberia
26. Madagascar
27. Malawi
28. Mali
29. Mauritania

30. Mauritius
31. Mayotte
32. Mozambique
33. Namibia
34. Niger
35. Nigeria
36. Réunion
37. Rwanda
38. Saint Helena
39. São Tomé and Príncipe
40. Senegal
41. Seychelles
42. Sierra Leone
43. Somalia
44. South Africa
45. Sudan
46. Swaziland
47. Togo
48. Uganda
49. United Republic of Tanzania
50. Zambia
51. Zimbabwe

Source: UN World Urbanisation Prospects, the 2009 Revision Population Database.

**APPENDIX E: PERCENTAGE DISTRIBUTION OF THE POPULATION BY GROUP
AND PROVINCE IN SOUTH AFRICA**

Province	Black African	Coloured	Indian or Asian	White
Eastern Cape	87.6	7.5	0.3	4.7
Free State	87.1	3.0	0.2	9.6
Gauteng	75.2	3.7	2.7	18.4
KwaZulu-Natal	86.0	1.4	8.1	4.4
Limpopo	97.5	0.2	0.2	2.2
Mpumalanga	92.0	0.8	0.4	6.8
Northern Cape	39.8	50.0	0.2	10.0
North West	90.8	1.6	0.4	7.2
Western Cape	30.1	50.2	1.3	18.4
Total	79.0	9.0	2.6	9.5

Source: Statistics South Africa, Community Survey 2007.