

**IMPLEMENTATION OF KNOWLEDGE MANAGEMENT SYSTEMS IN
THE DEPARTMENT OF SCIENCE AND TECHNOLOGY**

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DECLARATION ON PLAGIARISM

I, Mamolatelolo Francina Motsitja, student number 585247, am a student registered for the Master of Management (Public and Development Management) in 2015.

I hereby declare the following:

I confirm that the work I will submit for all assessment for the above course is my own unaided work. I have followed the required conventions in referencing the thoughts and ideas of others. I am aware that the correct method for referencing materials and what plagiarism is are explained in the Public and Development Management style guide, and that these issues were discussed in class during orientation.

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my unaided work or that I have failed to correctly acknowledge the source of the ideas or words in my writing.

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ABSTRACT

The Department of Science and Technology (DST) is the national government department responsible for the coordination and management of science and technology policy in South Africa. The Department derives its mandate from the 1996 White Paper on Science and Technology. Its focus is to develop, coordinate and manage the National System of Innovation (NSI) that will bring about maximum human capital, sustainable economic growth and improved quality of life in the country.

According to the DST (2012:5), a national system of innovation is a “means through which a country seeks to create, acquire, diffuse and put into practice new knowledge that will help the country and its people achieve their individual and organisational goals”. The DST (2012) further mentions that the NSI should help improve South Africa’s global competitiveness by creating and applying new knowledge in production processes. The NSI should also help in disseminating new knowledge through teaching and research collaboration.

The overall purpose of this study is to investigate the effectiveness of the DST’s current knowledge management (KM) systems and factors that contribute to the successful implementation of KM (KM strategy, leadership, organisational culture and KM systems).

The study adopted a qualitative approach to find substantial feelings, behaviours and beliefs of DST employees on issues relating to the implementation of KM systems and factors that contribute to the successful implementation of KM. The study applied non-probability sampling which is also known as purposive or judgment sampling. The researcher selected the employees responsible for the development, coordination and implementation of KM initiatives.

The methodology included open-ended interviews with eight respondents. The respondents included one chief director (Programme 4), three directors (Programme 2 and Programme 4) and four deputy-directors (Programme 1, Programme 2 and Programme 4).

The study objectives included the following:

- Identify the systems that the DST developed to manage KM processes (knowledge creation, capturing, storage and sharing).
- Determine the role of KM strategy, leadership and organisational culture in the implementation of KM.
- Identify challenges regarding the implementation of KM.
- Provide practical suggestions on how to best implement KM within the DST.

The results of this study were tabled according to the following objectives:

- **Objective 1:** It was found that the DST has developed a central KM system and mechanisms to manage the process of creating, capturing, storing and sharing knowledge. The system is meant to be utilised by all employees in the Department. Currently, the system is not utilised by all employees because leadership is not enforcing its implementation. There is no clear guidance and direction if employees should route all submissions and memoranda on the system.
- **Objective 2:** The DST's KM strategy was developed and approved in 2012. The KM strategy is aligned with Department's vision and addresses all its KM challenges. The results show that not everyone in the Department is aware of the strategy. The employees who are aware of the strategy are those who coordinated its development and approval. No awareness sessions of the strategy are taking place. With regard to the role of leadership, the results show that leadership does not fully support or enforce the implementation of KM initiatives, particularly with regard to strategy and system implementation. With regard to the role of culture, the results show that respondents are positive towards the Department's culture. However, the challenges of lack of consultation and resistance to change were raised.
- **Objective 3:** The results show that the DST experiences the following challenges regarding the implementation of KM.
 - **KM strategy:** The strategy does not address the needs of stakeholders at a national level, the absence of awareness sessions or the lack of support by employees, including leadership.

- **Leadership:** Leadership does not provide clear direction and guidance on how KM initiatives should be carried out, and some leaders are resistant to change because they still insist on processing submissions and memoranda manually.
 - **Culture:** Respondents are satisfied with the culture of the DST. However, those who were not satisfied mentioned that employees are not taking KM initiatives seriously due to resistance to change.
 - **KM system:** There is a lack of integration with other departmental systems such as the Logistical Information System (LOGIS) and the Personnel and Salary Administration System (PERSAL). The KM system is not structured in such a way that the knowledge of departing employees can be captured. The system only focuses on workflow (such as submissions), and not on other information-sharing sites such as blogs and wikis. The system is also not well updated because people are still loading their information on their personal computers.
- **Objective 4:** Respondents recommended that awareness sessions on the KM strategy be held with all levels of the DST's staff structure. Respondents recommended full buy-in from leadership and encourage employees to implement KM initiatives. Respondents recommended the implementation of a change management programme to deal with the issue of resistance. Respondents recommended that leadership provides clarity regarding the implementation of the KM system, and encourage all employees to use the system.

It was concluded that factors such as the organisational KM strategy, leadership, organisational culture and KM systems contribute immensely to the effective implementation of KM. However, it was noted from the findings that the role of leadership cuts across all research themes. Leadership should ensure that the KM strategy is developed and implemented by all employees. Leadership should monitor and manage the culture of the organisation by ensuring that employees have the same understanding, beliefs and attitudes on KM issues. Leadership should ensure that the KM systems and mechanisms put in place are used by all employees.

The research recommended that the DST should consider establishing a change management programme to address the issue of resistance, lack of communication and absence of awareness sessions on KM initiatives. Since the respondents indicated that, the employees are not using the KM system and implementing the KM strategy put in place, leadership should put more energy into directing, coaching, supporting and rewarding employees using the KM system and implementing the KM effectively.

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LIST OF ACRONYMS

Acronym	Description
CD	Chief Director
CFO	Chief Financial Officer
COO	Chief Operating Officer
CSIR	Council for Scientific and Industrial Research
D	Director
DD	Deputy Director
DDG	Deputy Director-General
DG	Director-General
DPSA	Department of Public Service and Administration
DST	Department of Science and Technology
ECM	Enterprise Content Management
EXCO	Executive Committee
HSRC	Human Sciences Research Council
KM	Knowledge Management
LOGIS	Logistical Information System
NSI	National System of Innovation
NRF	National Research Foundation
OPCO	Operational Committee
PERSAL	Personnel and Salary Administration System
PIMS	Performance Information Management System
SMS	Senior Management Service

CHAPTER 1: BACKGROUND TO THE PROBLEM

1.1 Introduction

The overall purpose of this study was to investigate the effectiveness of the DST's current KM systems and factors (KM strategy, leadership, organisational culture and KM systems) that contribute to the successful implementation of KM.

1.2 Background

Service delivery is the major focus of all public sector organisations. In the service delivery process, knowledge is an important strategic resource of public sector organisations. According to Galupe (2000), knowledge has two types: tacit and explicit knowledge. Tacit knowledge is stored in people's head and is very difficult to manage, whereas explicit knowledge is stored in computers and is easy to manage.

Since knowledge plays a significant role in achieving organisational goals, KM could be defined as "the systematic process of gathering, managing and sharing employees' knowledge capital throughout the organisation" (Bhojaraju2005:3). It is concerned with the best practices and processes from one part of an organisation to another where it is needed. KM is a very important tool in organisations because the success of any organisation is measure by how well it manages its knowledge.

Mphahlele (2010) mentioned that public sector or ganisations adopted the concept of KM for a while and the results are huge. For developing countries like South Africa, the results of KM in the public sector cannot be over-emphasized. This means that public sector organisations have started to realise the significance of KM to their service delivery processes, although, it is not easy to implement (Cong and Pandya, 2003).

If public sector organisations are to deliver services to the public efficiently and effectively, it is necessary to develop and implement tools to support KM processes (knowledge creation, capturing, storage and transfer). These tools are referred to as KM systems. According to McKenna (2008:5), KM systems aim to "provide users with the explicit information required in the exact format at the right time". He further

mentions that KM systems assist organisations in creating, sharing and using knowledge.

Considering the importance of KM systems, Gallupe (2000) argues that the systems should be effective and capable of handling and securing employees' knowledge. According to Business Dictionary.com (2016:1), the term "effectiveness" means "the degree to which objectives are achieved and the extent to which targeted problems are achieved". Effective KM systems are therefore regarded as the extent to which organisational KM problems are achieved through available, adaptable and dependable systems. Mphahlele (2010) argues that the effective implementation of KM can help speed up service delivery in organisations. Young (2009) adds that the effective implementation of KM can help improve the quality of products and services in organisations.

1.3 Problem statement

Literature on KM has been addressing issues, challenges and opportunities for the private sector. Little has been discussed for the public sector (Cong & Pandya 2003; Elena 2005). Public sector organisations have started realizing significance and implementation of KM. However, according to the Department of Public Service and Administration (DPSA) (2007), it is not clear if the entire public service is implementing KM effectively, considering the pressing issues related to KM. One of the challenges that public sector organisations are facing includes the "development of new, or review and improvement of outdated systems, to achieve more integration, and a more accessible knowledge base"(Talisayon 2013:5).

The DST is one of the national government departments that has attempted to design and implement the KM systems. However, not all implementations have being successful. The systems launched are not effective in managing the flow of employees' knowledge; hence, the purpose of the study was to investigate the DST's current KM systems.

1.4 Purpose statement

The overall purpose of this research study was to investigate the effectiveness of the DST's current KM systems and factors (KM strategy, leadership, organisational culture and KM systems) that contribute to the successful implementation of KM.

1.5 Research question

- Does the DST implement KM initiatives effectively?

1.5.1 Sub questions

- What systems or processes do the DST use to capture and disseminate knowledge?
- Do the factors of KM enable the successful implementation of KM?
- How can the DST improve the current KM for science and technology service delivery improvement?

1.6 Study objectives

This study had the following objectives:

- Identify the systems that the DST developed to manage KM processes (knowledge creation, capturing, storage and sharing).
- Determine the role of KM strategy, leadership and organisational culture in the implementation of KM.
- Identify challenges regarding the implementation of KM.
- Provide practical suggestions on how to best implement KM within the DST.

1.7 Significance of the study

The aim of this study was to investigate the effectiveness of the DST's KM systems and factors that contribute to the successful implementation of KM. This study will contribute to the DST because it will:

- determine the effectiveness of the KM system;
- explore employees' experiences and perceptions on the factors that contribute to the successful implementation of KM;

- identify challenges/gaps regarding the implementation of KM; and
- help the DST's senior management and leadership, if possible, to develop/revise policies and strategies on how to best implement KM.

1.8 Limitations of the research

According to Baron (2010), limitations include the shortcomings, conditions or influences that place restrictions on the methodology and conclusions, or that may affect the process of how the results are interpreted. These conditions or influences cannot be controlled by the researcher. The study was dependent on the views of a small group of individuals. The results obtained from this study were not generalised. It was assumed that the respondents fully understood all the research questions that they were asked.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In the literature review and theoretical framework, four themes have been identified: KM strategy, leadership, organisational culture and KM systems. In order to understand the contribution of these themes to the successful implementation of KM, this chapter starts by discussing the nature and processes of KM.

2.2 Nature of KM

Badimo and Buckley (2014) point out that the concept of KM is the latest component in public sector organisations to improve organisational performance on service delivery and make public sector organisations more accountable.

This view is supported by Elena (2005:5), who says that “the transition towards the information society, based on knowledge economy, is considered a necessary evolution to obtain a lasting development in the context of new economy”. As pointed out by Elena (2005), the concept of “knowledge workers” for employees to be able to use organisational knowledge to develop intangible products was introduced by Peter Durker in 1950. This means that organisations have always used KM to make better decisions during the production of goods and services, albeit in an informal way.

Cong and Pandya (2003) and Mushashi (2013) add that most public sector organisations have used the concept of KM for a long time, albeit in an informal manner. It has become a significant topic in public sector organisations. They further mention that large firms have been implementing KM strategies for a while. However, a lack of agreement in defining the concept has led to confusion in the KM field. In order to understand the concept of KM, data, information and knowledge have to be explained.

a) Data

The term “knowledge” is often used interchangeably with the terms “data” and “information”. These three terms have different meanings. Data refers to “code, signs and signals that do not necessarily have any significance as such” (Maponya 2004:3). “Data is raw facts without meaning”(Maponya 2004:3). Maponya (2004) further mentions that organisations often collect and interpret data to identify patterns and trends. “For data to be of value, it must be processed to obtain information”(Cong & Pandya 2003:26).

b) Information

Maponya (2004:3) mentions that “data becomes information when it is organised, patterned, grouped and categorized”. Through learning, information can be changed into knowledge. According to Ward (2007), information is at the center of KM, because information, combined with experiences and perceptions, leads to knowledge.

c) Knowledge

Knowledge is defined as “the combination of data and information, to which is added expert opinion, skills and experience, to result in a valuable asset that can be used to aid decision making” (Ward 2007:5). Whereas, Tiwana (2002:7) defines knowledge as “a fluid mix of framed experience, values, contextual information, expert insight and intuition that provides an environment and framework for evaluating and incorporating new experiences and information”. Knowledge originates and is applied in an individual’s mind, but it is often embedded in organisational routines and processes. According to literature such as Uriarte (2008), Galupe (2000) and Maponya (2004), there are two types of knowledge: tacit and explicit.

i) Tacit knowledge

Uriarte (2008) indicated that tacit knowledge as be personal and stored in people’s heads. He also mentions that tacit knowledge is developed when people interact. Maponya (2004) concurs with Uriarte (2008) that tacit knowledge is stored in people’s heads and is hard to formalise and manage. The DST (2012) defines tacit knowledge as knowledge held in an individual’s head, which requires the creation of relevant situations to be articulated into information that can be used by others in the organisation. Maponya (2004) argues that the process of converting tacit knowledge

into explicit knowledge is a challenging task to manage in organisations since tacit knowledge resides deep within the person who holds it. Therefore, it is necessary for organisations to develop systems, processes, practices and platforms that enable employees to share tacit knowledge. Such processes, practices and platforms make it easier to convert tacit knowledge into explicit knowledge. Once tacit knowledge is converted into explicit knowledge, it would be easier to manage. For example, the DST has developed different levels of platforms where information learning and sharing can take place.

These include the following:

- **The Executive Committee (EXCO):** Administratively, EXCO provides leadership to the organisation and discuss high-level strategic issues. EXCO meetings are attended by the Director-General (DG), Deputy Directors-General (DDGs) and the Chief Financial Officer (CFO).
- **Extended EXCO:** Meetings of the extended EXCO ensure that strategy development and implementation are synergised to ensure the alignment of the DST's projects. The extended EXCO consists of the DG, DDGs, chief directors (CDs) and directors (Ds) under the chairmanship of the DG.
- **Operational Committee (OPCO):** This committee deals with operational and alignment issues, not high-level strategic issues. It monitors the implementation of the DST's plans. Draft internal policies and Cabinet memoranda are submitted to OPCO for discussion before they are submitted to EXCO for approval. OPCO meetings are attended by the Chief Operating Officer (COO), DDGs, CFO and CDs of Science Communication, Strategy and Planning, Human Resources and Legal. Other CDs attend by invitation only, as and when they are required.
- **Programme meetings:** These meetings occur at different levels, i.e. executive, subprogramme, unit and general meeting level. They serve mainly as a feeder to OPCO (in terms of operational matters) and EXCO (for strategic decision-making purposes). These meetings are critical in facilitating planning, communication, and monitoring and evaluation. They are used to ensure quality control and the careful selection of issues to be submitted to the higher decision-making structures

(particularly EXCO and OPCO). Programme matters are taken from these meetings by senior managers and are submitted to the higher-level meetings.

- **Senior Management Service (SMS) meetings:** SMS meetings are intended for information sharing and giving feedback to EXCO, extended EXCO and OPCO meetings. They are attended by all SMS members.

ii) Explicit knowledge

According to Becerra- Fernandez and Sabherwal (2010:5) explicit knowledge is “knowledge that has been expressed in words and numbers”. “It can be shared formally and systematically in the form of data, specifications, manuals, drawings, computer programs, etc.” Becerra- Fernandez and Sabherwal (2010:5). Maponya (2004) and Uriarte (2008) mention that explicit knowledge may be found in documents, databases, journals, emails, media such as newspapers, television, the internet, etc. The DST is utilising the resource centre and technology tools such as e-mails, the intranet, enterprise content management (ECM), etc. to manage explicit knowledge.

2.3 Definition of KM

Skyrme (1997:2) views KM as “the explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organising, diffusing, using and exploiting”. Bhojaraju (2005:5) views KM as “the systematic process of gathering, managing and sharing employees’ knowledge capital throughout the organisation”. Skyrme (1997) and Bhojaraju (2005) believe that KM is about turning individual knowledge (which is tacit knowledge) into organisational knowledge (which is explicit knowledge) that can be widely used by all employees in an organisation. The DST (2012) views KM as the process that an organisation uses to generate value from its employees. It is about the techniques that are used for the collection, transfer and management of knowledge within organisations. The DST (2012) further mentions that KM is about the system that are designed to manage employees’ knowledge.

For Frost (2012:1), KM is “the systematic management of an organisation’s knowledge assets for the purpose of creating value and meeting tactical and strategic

requirements. It consists of the initiatives, processes, strategies and systems that sustain and enhance the storage, assessment, sharing, refinement and creation of knowledge". It is necessary for organisations understand the significance of designing and implementing and to come up with a definition that can be understood by all members of the organisation.

2.4 Knowledge management processes

The main purpose of KM is to influence the available knowledge that may help employees carry out their tasks successfully. KM in organisations helps employees turn tacit knowledge into explicit knowledge. Among other things, Pension, Nyasha, Sheiller and Vhuramai (2012) believe that KM, if implemented effectively, can improve organisations' operational activities and the quality of the service or product.

KM relies on four kinds of processes. According to literature such as Becerra-Fernandez and Sabherwal (2010), Donate and Guadamillas (2010) and Maponya (2004), the processes include knowledge creation, knowledge capture, knowledge storage and knowledge transfer/sharing.

2.4.1 Knowledge creation

Knowledge creation is defined as "the ability to originate novel and useful ideas and solutions" Maponya (2004:14). Maponya (2004:14) further points out that "knowledge creation is the outcome of an interactive process that involves a number of individuals who are brought together in a project team". For example, for the DST to achieve its mandate, knowledge interaction process between employees and stakeholders like government departments, universities and entities of the DST, such as the National Research Foundation (NRF) and the Council for Scientific and Industrial Research (CSIR) that will lead to the improvement of services and products is required.

2.4.2 Knowledge capture

Becerra- Fernandez and Sabherwal (2010:59) define knowledge capture as "the process of retrieving either explicit or tacit knowledge that resides within people, artefacts or organisational entities". In addition, tacit or explicit knowledge may reside outside organisational boundaries, such as with consultants, customers or suppliers.

For example, some of the DST's knowledge resides with its entities (such as the CSIR and NRF). Therefore, it is important for the DST to have integrated systems for accessing that knowledge.

2.4.3 Knowledge storage

Knowledge storage is a significant area in an organisation since it helps with the efficient management of knowledge. According to Donate and Guadamillas (2010), knowledge storage can be achieved through a number of repositories, including written documents, information in databases, systems, organisational documented procedures, such as work handbooks, and standard operating procedures.

2.4.4 Knowledge sharing

Becerra- Fernandez and Sabherwal (2010:59) view knowledge sharing as “the process through which tacit or explicit knowledge is communicated to other individuals”. They point out three important elements related to knowledge sharing. Firstly, effective knowledge sharing takes place when the knowledge recipient understand and act on it. Secondly, people share knowledge rather than recommendations based on the knowledge. Lastly, knowledge sharing may take place across individuals, groups and departments.

Since knowledge sharing is about the transfer of knowledge from one individual to another, managing this process in organisations may be difficult. However, despite its difficulty, organisations should develop the knowledge sharing processes to obtain the maximum benefits from its employees. It also enhances organisational innovativeness and performance. Therefore, the development of formal processes and systems that enable knowledge sharing is necessary. Frost (2012) developed a model that offers a realistic view of KM processes. The model is shown in Figure 1.

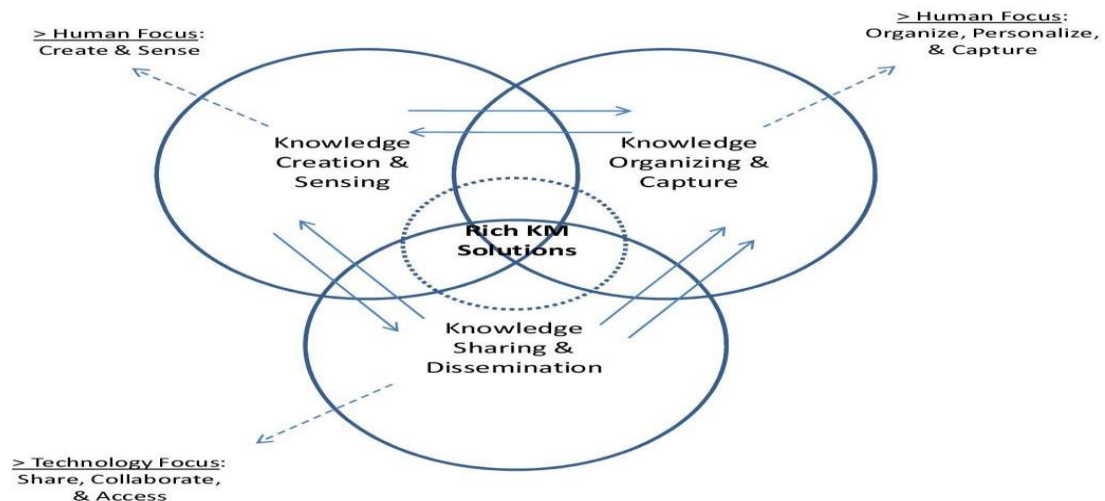


Figure1: The KM process according to Frost (2012)

This model is categorised according to three activities: knowledge creation and sensing, knowledge organising and capture, and knowledge sharing and dissemination. The model shows that the three activities interact with one another. The model also shows which of the three activities are more technology focused and which are more people oriented. This model views the creation of new knowledge in organisations as an important KM initiative. It should be largely focused on technology, whereas knowledge organising/capture and knowledge creation/sensing should be focused on people.

In addition to Frost's theory, Dalkir (2005) in his book: knowledge management in theory and practice presents an integrated KM cycle model. Dalkir approached the KM cycle according to three processes: assessment, contextualisation and update. Dalkir's theory argues that knowledge content should be assessed during the transition from knowledge capture to knowledge sharing and dissemination. Once the process of knowledge content assessment is done, the process of contextualising knowledge should take place.

Another important perception that provides the basis of KM is the systems theory. Galupe (2000:5) defines a system as "a set of elements that interact to achieve some common goal". Galupe (2000) believes that systems in organisations comprise

employees, information technologies and data. He believes that these three components should interact to achieve a common goal.

Becerra-Fernandez and Sabherwal (2010:62) view KM systems as “the integration of technologies and mechanisms that are developed to support the four KM processes”. They believe that these systems employ different KM mechanisms and technologies to support the KM process. The framework developed by Becerra-Fernandez and Sabherwal (2010) in Figure 2 shows how KM utilises and depends on KM mechanisms and technologies.

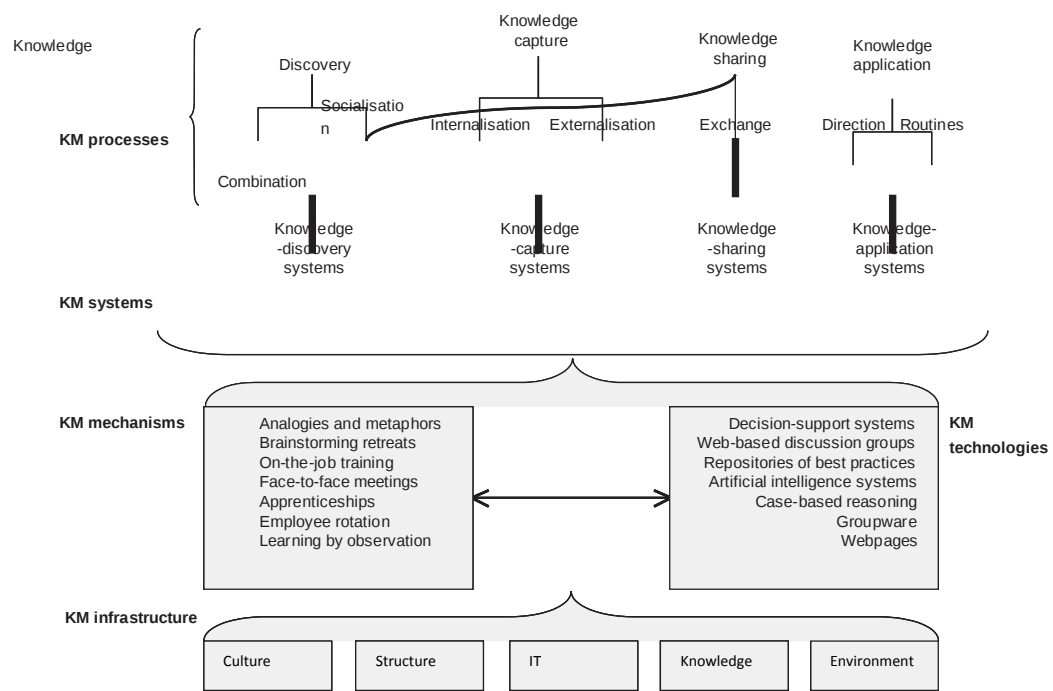


Figure2: View of KM solutions according to Becerra-Fernandez and Sabherwal (2010)

The hierarchy of this model consists of four levels. The first level of the hierarchy constitutes the processes. These are the processes through which knowledge is discovered, captured and shared. These processes are maintained by a set of seven subprocesses, including combination, socialisation, internal, external, exchange, direction and routines. The first four subprocesses focus on how knowledge is converted through the exchange of knowledge (tacit knowledge and explicit knowledge). The last three subprocesses focus on how knowledge is communicated and directed between employees.

The second level of the hierarchy constitutes the systems. These include knowledge-discovery systems, knowledge-capture systems, knowledge-sharing systems and knowledge-application systems. The model illustrates that these KM systems integrate and use the technologies and mechanisms to support the four processes mentioned above.

The third level of the hierarchy comprises mechanisms and technologies that support the KM process. According to Beccera-Fernandez and Sabherwal (2010), KM mechanisms aim to promote knowledge, whereas KM technologies aim to facilitate KM. Each of the seven KM processes depends on KM mechanisms and technologies. Therefore, the development of KM mechanisms and technologies should be done in relation to the KM processes.

The last level of the hierarchy is the KM infrastructure. According to the model, KM mechanisms and technologies rely on the KM infrastructure (such as organisational culture, organisation structure, information technology, etc). The concept behind this model is that KM initiatives are dependent on each other. The KM processes and subprocesses are dependent on KM systems, mechanisms and technologies. The same systems, mechanisms and technologies could be used to support different processes and subprocesses. Since the KM initiatives are dependent on each other, when organisations develop mechanisms and technologies, they should consider the KM processes that are appropriate for their circumstances.

2.5 Themes for the research study

According to Hirst (2010), the successful implementation of KM relies on certain organisational factors. This study has arranged these organisational factors into four categories: KM strategy, leadership, organisational culture and KM systems. These factors are interconnected and may act as enablers or barriers to the performance of KM.

In considering the evolving constructs of KM, one could firstly interrogate the KM strategy, which has some underlying constructs as its drivers, such as leadership, organisational culture and KM systems.

2.5.1 KM strategy

Hirst (2010) mentions that KM strategy is essential to the success of KM initiatives. Developing the KM strategy should be one of the early steps in the KM programme. The aim of the KM strategy is to ensure that KM implementation proceeds in a way that is aligned with the current organisational approach. Frost (2012) adds that the purpose of the KM strategy must be to manage, share and create relevant platforms that enable KM practices.

The KM strategy should also assist the organisation in organising and managing its knowledge and information resources. The KM strategy should also assist in guiding and directing the organisation to achieve its mission, vision and goals. Nieuwenhuize (2006) argues that organisations often develop good strategies, but do not manage the implementation of these strategies. He proposes that the strategy implementation process has to be translated into actions to be taken.

The DST has developed a KM strategy to assist in organising and managing the flow of employees' knowledge. According to DST (2012), the aim of the DST's KM strategy is to develop the DST as a learning and knowledge organisation, promote awareness and adoption of KM within DST's staff, ensure the establishment of a KM platform and facilitate an effective and efficient networking capability.

The strategy was approved in 2012 and is now in the implementation stage. Before the development of the KM strategy in 2012, the DST was not consciously practising KM activities. However, initiatives (brown bag sessions, conferences, meetings and

workshops, communities of practice, intranets and records management) were taking place to ensure that information and knowledge were properly stored for easy access and dissemination. The KM strategy implementation will be interrogated in a strategy process model adopted from Johnson and Scholes (1993) and Pettigrew (1988) in Figure 3.

Strategy process

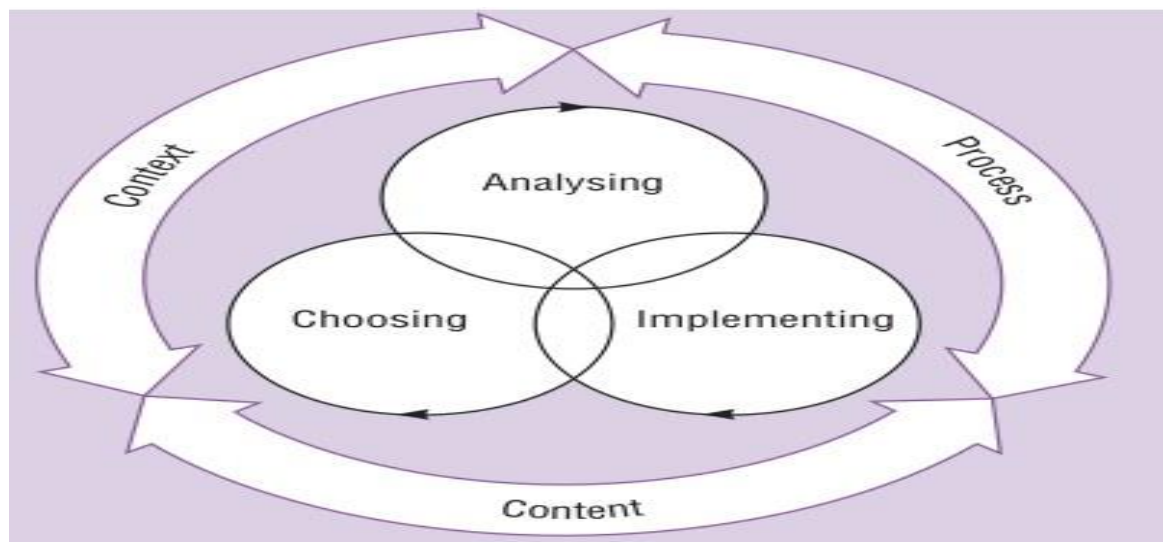


Figure 3: Analytical constructs of the strategy (Johnson and Scholes 1993; Pettigrew 1988)

The theoretical concept inherent in this framework is that the strategy process involves assessing the organisations objectively. This entails an analysis of the environment's resources and capabilities. The framework also stresses that the strategy process should include the formulation and selection of activities that maximise the organisation's chances for success in meeting its objectives. The application of this model draws attention to the strategy implementation construct underpinned by leadership support, organisational culture and the management of systems.

2.5.2 Leadership

Literature, such as Brevis, Vrba and DeKlerk (1997) and Hirst (2012), mentions that employees are the most important resource in organisations, and management initiatives that focus only on technology often fail because it is people who give life to the organisation. Brevis *et al.* (1997) further argue that people are unpredictable and different. Directing or leading this complex resource of the organisation requires a

complicated management activity, which is leadership (Mokgolo, Mokgolo and Modiba, 2012).

Leadership is defined as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (Yukl 2006:5). The above definition has several elements. Some of them are discussed below (Yukl, 2006:5).

(a) Leadership as a process

Leaders may affect and be affected by their followers either positively or negatively. This means that the leadership process involves interaction between leaders and followers. In the context of KM, both leaders and followers influence the processes of the development and implementation of KM initiatives. This process requires the interaction, commitment and strong human relationship of both leaders and employees.

(b) Leadership involves influencing and engaging others

This is about the ability of a leader to influence and engage people (subordinates, peers and supervisors) who are engaged in a common goal. For KM to be implemented effectively across the organisation, leaders must communicate with their followers about the vision of KM and its importance in an organisation. Communicating the KM vision will make the followers at lower levels initiate actions without fear and own the process.

In understanding the relationship between leaders and subordinates, two types of leadership are discussed below.

i Situational leadership

Hersey and Blanchard (1980) developed the situational leadership model to understand the relationship between the leader and the follower. The theory behind situational leadership is that leaders should adopt a leadership style based on the situation they are experiencing and the maturity level of the people they are leading.

The situational leadership styles discussed by Hersey and Blanchard (1980) are as follows:

- **Directing:** In this leadership style, the subordinates have a low willingness and a low ability to perform the tasks. Directing requires leadership to define the roles and tasks of their subordinates, and to provide direct supervision. If the leadership is focused more on the relationship, the followers may become confused about what must be done.
- **Coaching:** In this leadership style, the subordinates are willing to work but lack abilities and skills to perform the tasks. This leadership style requires the leaders to allocate and explain the roles and responsibilities of the subordinates. Leaders should still seek ideas and suggestions from the subordinates. Subordinates who requires coaching also require direction and supervision because they lack abilities and skills to perform the tasks.
- **Supporting:** In this leadership style, subordinates can do the job, but are refusing to show commitment. In this case, the leaders should be concerned with finding out why the followers are refusing to do the work and should persuade them to cooperate. The key to this leadership style is motivating and building confidence in followers.
- **Delegating:** In this leadership style, Leaders delegate most of their responsibilities to their followers and motivate them. This leadership style encourages leaders to be involved in decision making processes and problem solving, although followers are the ones executing the tasks. Because the follower is in control, he is responsible for communicating information to the leader. Followers at this level have less need for support, although occasional recognition is always encouraged.

ii Transformational leadership

Odumeru and Ifeanyi (2013:5) mention that "a transformational leader is a person who stimulates and inspires followers to achieve extraordinary outcomes". These leaders motivate and develop the followers based on their lack of skills. The transformational leadership model of Burns (1978) states transformational leaders create positive

change in their followers by taking care of their interests. According to this model, transformational leaders motivate their followers through a variety of mechanisms, such as being a role model by inspiring subordinates, challenging subordinates to take ownership of their work

2.5.3 Organisational culture

The concept of organisational culture is difficult to define since many aspects of it are intangible. Despite its difficulty, authors like Hirst (2012), Spencer-Oatey (2012) and Schraeder, Tears and Jordan (2004) believe that organisational culture is essential to the functioning of an organisation. Hirst (2012:10) defines organisational culture as “a pattern of basic assumptions invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration”. Whereas, Spencer-Oatey (2008:3), defines organisational culture as “a set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member’s behaviour and his or her interpretations of the ‘meaning’ of other people’s behavior”.

Donate and Guadamillas (2010) mention that the aspect that affects the ability of organisations to manage knowledge is organisational culture. Given the importance of culture in organisations, leaders are expected to monitor and effectively manage the culture of their respective organisations.

Public sector organisations usually consist of divisions and agencies that carry out the mandate of the organisation. This usually leads to a silo mentality due to little communication between employees and external stakeholders. The key activities of KM initiatives in public sector organisations includes knowledge creation and sharing between these silos. Contravening these silos becomes a key KM challenge in the public sector.

Hirst (2012) argues that many public sector organisations have attempted to develop and implement KM initiatives, but did not succeed due to a lack of initiatives related to culture. Pension *et al.* (2012) add that one of the key challenges of KM is failure to form and develop a culture that embraces learning, sharing and improving knowledge in an organisation. This is because some managers in the organisation do not

encourage the culture of knowledge sharing as they believe that time is lost through socialisation. In order for leaders to understand the importance of organisational culture on KM initiatives, Deal and Kennedy (1982) identify two dimensions associated with the organisation's key activities. These are indicated in Figure 4 below.



Figure 4: Organisational culture according to Deal and Kennedy (1982)

The first dimension is the degree of risk associated with the organisation's key activities, and the speed at which employees get associated with the organisation's activities. The second dimension is feedback on whether strategies are successful. Deal and Kennedy (1982) use the term "feedback" to refer to knowledge of results in the sense that there are organisations that get instant feedback on their performance and there are those that get feedback after a long time. They present these two dimensions in Figure 4 above. These four culture types include the following:

- **Tough guy-macho culture:** This type of culture comprises individuals who enjoy risk and who get quick feedback on their decisions. In this culture, teamwork is not highly valued because successful employees are the ones who enjoy excitement and work very hard to be stars.
- **Work hard/play hard culture:** In this culture, the employees take few risks. However, the feedback on how well they are performing is almost immediate. Employees have to maintain high levels of energy and stay upbeat. This culture encourages teamwork in the sense that one person alone cannot make an organisation.

- **Bet-your-company culture:** This is a type of culture where decisions are high risk and employees may wait years before they know whether their strategies were successful.
- **Process culture:** This is a type of culture where feedback is slow and the risks are low. In this culture, organisations take years to find out whether a decision was good or bad. Since there is lack of immediate feedback, individuals find it very difficult to measure what they do, so they focus instead on how they do things.

The mandate of the DST involves development, coordination and management of science and technology policies (such as NSI) in South Africa. This mandate requires big decisions for which it may take years to see the results. For this reason, it can be argued that the bet-your-company culture is associated with the DST culture. Looking at the model in Figure 4, this culture is associated with slow feedback and some elements of high risk.

2.5.4 KM systems

McKenna (2008:2) defines KM systems as the “systems that provide users with the explicit information required in the exact format and at the right time”. He argues that KM systems are regarded as the information management tools that are required to turn information into knowledge. For Galupe (2000:5), KM systems are regarded as “systems designed and developed to give decision makers and users in organisations the knowledge they need to make their decisions and perform their tasks”.

KM systems are concerned with how knowledge is managed in the organisation. According to Galupe (2000), KM systems comprise people, tools and technologies that act together for the provision of knowledge to people who need it. This view is supported by Becerra-Fernandez and Sabherwal (2010), who say that KM systems are the integration of mechanisms and systems that support KM processes.

KM systems are required in organisations to support the implementation of KM initiatives (for example, to support communities of practice, and connect expert directories and people involved in discussion forums).

Becerra-Fernandez and Sabherwal (2010) classify KM systems into four types: knowledge-application systems, knowledge-capture systems, knowledge-sharing systems and knowledge-discovery systems.

a) Knowledge-application systems

These are systems possessed by other individuals without acquiring or learning knowledge. These systems involve technologies and mechanisms that facilitate practices and direction. Examples of mechanisms supporting KM practices include organisational policies, work practices and organisational standard operating procedures. Examples of mechanisms facilitating direction include help desks and call centres.

b) Knowledge-discovery systems

These systems support the process of developing new tacit or explicit knowledge. They also support subprocesses associated with knowledge discovery by enabling the discovery of new explicit (combination) and tacit knowledge (socialisation). Examples of mechanisms that facilitate combination include problem-solving sessions and joint decision making (which involves external stakeholders). Examples of mechanisms that facilitate socialisation include the rotation of employees across sections or areas, brainstorming sessions and cooperative projects across departments.

c) Knowledge-capture systems

Mphahlele (2010) defines these as systems intended to help extract and store organisational and individual knowledge –both tacit and explicit. According to Becerra-Fernandez and Sabherwal (2010), these systems support the process of recovering knowledge that resides within individuals and organisations. They can also help to capture knowledge that resides within or outside organisational boundaries, such as in consultants and customers. These systems also rely on mechanisms and technologies that support internalisation (the conversion of explicit knowledge into tacit form) and externalisation (the conversion of tacit knowledge into explicit form) as mentioned by Becerra-Fernandez and Sabherwal (2010). Examples of the mechanisms that facilitate externalisation include communities of practice and lessons learnt on projects. Examples of the

mechanisms that facilitate internalisation include one-on-one meetings and learning by observation.

d) Knowledge-sharing systems

According to Mphahlele (2010), these systems organise and share knowledge in organisations. Becerra-Fernandez and Sabherwal (2010) mention that these systems are created to support the process through which knowledge is shared throughout the organisation. These systems utilise mechanisms and technologies that facilitate the exchange of knowledge (sharing of explicit knowledge and tacit knowledge).

Awad and Ghaziri (2010:5) and Gallupe (2000:57) outline the important computer-based systems that enable the successful implementation of KM:

- Installing intranet and email is the first step that allows an organisation's employees to access information and knowledge anywhere at any time to perform their duties.
- Installing video conferencing system makes it easy for employees to conduct face-to-face discussion over a telecommunication network.
- Designing and implementing an effective document management system enables employees to share, capture and use useful information and documents such as policies, strategies, operational plans, reports and contracts.
- Developing databases for employees to share best practices and personal interactions.
- Installing an information retrieval program which could be utilised as a tool to search organisational knowledge or databases.

Since KM systems are regarded as tools designed to manage organisational knowledge, measuring the effectiveness of KM systems based on the literature review is imperative. According to Business Dictionary.com (2016:1), the term "effectiveness" means "the degree to which objectives are achieved and the extent to which targeted problems are achieved". Effective KM systems are regarded as the extent to which organisational KM problems are achieved through available, adaptable and dependable systems.

The DST launched the KM system (Alfresco) for the effective management of employees' knowledge, workflow and records. In order to assess the effectiveness of

the DST's KM system, the study will adopt the KM system success model developed by Jennex and Olfman (2004). The model assess success as an improvement in organisational effectiveness. The assessment is based on the use and impacts of KM systems. The elements of the model that comprise KM effectiveness are as follows:

- a) **System quality:** This element defines how well the KM system execute the functions of knowledge creation, transfer, storage and application. This element is also been assessed on how much of the organisational knowledge is arranged and managed. This element requires the KM system to be supported by all employees and infrastructure such as organisational structure and culture.
- b) **Knowledge/information quality:** This element requires the right knowledge and information to be captured in the KM system and be made available to the right users at the right time.
- c) **User satisfaction:** This element indicates the level of satisfaction of the KM system users. This is considered a good complementary measure because effectiveness depends on whether the use of a KM system is required. Effectiveness also depends on whether KM system users are satisfied with the KM system.
- d) **Perceived benefit:** This element measures perceptions of the benefits and impacts of the KM system users. This helps in predicting continued KM system use, since effectiveness of KM system use depends on meeting current and future user needs.
- e) **Net impact:** This element combines individual and organizational impacts into a single construct. This element argues that the use of knowledge may have good or bad benefits and allow for feedback to drive the organisation.

2.6 Conceptual framework

The focus of this research study is on the implementation of KM systems. The study adopted the view of KM as presented by Becerra-Fernandez and Sabherwal (2010). They argue that KM initiatives are dependent on each other and also on organisational tasks and the context in which knowledge is being used. Becerra-Fernandez and Sabherwal (2010) further argue that the process of developing KM mechanisms and systems require the involvement of leadership, a long-term KM strategy and an effective organisational culture. According to Mphahlele (2010), the South African

public service uses different ways of approaching and implementing KM. Therefore, organisations may adopt a solution that is best for their circumstances. The theory of Becerra-Fernandez and Sabherwal (2010) is suitable for this study since it covers all elements of KM such as KM processes and KM systems.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The research methodology adopted by this research study is explained in this chapter. It also discusses the research design theories that underpin the study, and applies all relevant theories to ensure that the objectives of this study are achieved.

3.2 Research paradigm

According to Bryman (2010), there are three research paradigms: qualitative, quantitative and mixed methods. Qualitative research is "the research strategy that usually emphasises words rather than quantification in the collection and analysis of data"(Bryman 2010:223). According to Mack *et al.* (2005), qualitative research provides complex textual descriptions of how people experience a given research issue. It also provides information on people's behaviour, beliefs, opinions and emotions.

Quantitative research, on the other hand, is a research method characterised by the collection of information that can be analysed in numbers and the, results are usually presented using statistics, tables and graphs (Mack *et al.*, 2005). The quantitative research method addresses the questions of how many and how much (Acaps, 2012). Mixed methods research is a combination of both the qualitative and quantitative methods in one or different stages of the research, and includes sampling methods, data collection and analysis, the synthesis of findings, and integration and reporting (Tashakkori & Teddlie, 1998).

Earlier studies that were conducted on KM issues in the public service employed the quantitative and mixed methods approaches. These include the implementation of KM practices in the South African public sector by Mphahlele (2010) and the state of KM and retention of institutional knowledge by Mkhithika (2013). This research study employed a qualitative research method to investigate the effectiveness of KM systems and to gain insight into DST employees' perceptions and experiences on factors of KM. Furthermore, this research study was of an exploratory nature, in that it described the situation using a case study. According to Terreblanche, Durrheim and Painter (2006), exploratory research is undertaken when the researcher requires insight into an issue and there are few or no earlier studies that can be referred to.

The qualitative research strategy was flexible as it allowed respondents to interact with the researcher during interviews. Where the respondents did not understand the questions or needed further information, standardised probes were employed. This assisted the researcher in getting sufficient complete answers (Bryman, 2010). An interview schedule was designed with eight questions related to the research questions and objectives. The length of the interviews was 45 minutes. The

respondents gave the researcher permission to use a tape recorder during the interviews.

3.3 Population and sampling

Diamantopoulos and Schlegelmilch (2000:22) define population as “the totality of entities in which we have an interest, i.e. the collection of individuals, objects or events about which we want to make inferences”. Whereas, Parahoo (1997:55) defines population as “the total number of units from which data can be collected”. “The act, process or technique of selecting a suitable sample or a representative part of a population for the purpose of determining parameters or characteristics of the whole population is called sampling”(Mugo 2002:1).

Sampling methods is categorised by two methods: probability and non-probability sampling. Probability sampling utilises some form of random selection whereby each individual in the population has an equal chance of being selected as a subject for the research (Parahoo, 1997). Non-probability sampling, allows the researcher to deliberately select the samples instead of using the techniques of random sampling. This process is also known as purposive or judgment sampling (Parahoo, 1997).

The type of non-probability sampling that was applied in this research is purposive sampling. The researcher deliberately selected the employees responsible for the development, coordination and implementation of KM initiatives.

The sample of the study consisted of eight employees responsible for the development, coordination and implementation of KM initiatives. These included one chief director in Programme 4, three directors in Programme 2 and Programme 4, and four deputy-directors in Programme 1, Programme 2 and Programme 4.

Preliminary interviews were conducted to ensure that the participants were suitable for the study. The selected participants were briefed about the background of the research and a formal letter of request to undertake the interviews was written to the participants (Appendix B).

3.4 Data types

According to Leedy and Ormord (2010), data can be categorised as primary or secondary. Both primary and secondary data can be either qualitative or quantitative.

Primary data refers to “information gathered from the information source and which has not undergone analysis before being included in the needs assessment” (Acaps 2012:3). Acaps (2012) further states that primary data is most often collected through face-to-face interviews or discussions with members of the affected community. Primary data may also be collected through telephone interviews, radio communication, email exchange and direct observation.

Secondary data, on the other hand, refers to “information which has been collected by researchers not involved in the current assessment and has undergone at least one layer of analysis prior to inclusion in the needs assessment” Acaps (2012:3). Examples of secondary data may include published research reports, internet materials, media reports and data that has been collected and interpreted for a purpose other than needs assessment, such as academic research (Acaps, 2012). This research study collected both primary and secondary data.

3.4.1 Interviews

Mack *et al.* (2005:5) define the in-depth interview as a "technique designed to obtain a brilliant picture of the participant's perspective on the research topic". They mention that this technique is best for accumulating data on people's histories, perspectives and experiences. The researcher used in-depth interviews to investigate the effectiveness of the KM systems and to gain information on the experiences and perceptions of DST employees on factors that contribute to the successful implementation of KM. The researcher first interacted with everyone in Programme 1, 2 and 4 until suitable participants were identified. Semi-structured interviews were conducted with this group (Appendix A).

Bryman (2010:224) defines semi-structured interviews as "a context in which the interviewer has a series of questions in the form of an interview schedule". Semi-structured interviews assist the interviewer to ask further questions on the significant replies. They also assist the interviewer to get constructive answers since the interviewees would have had a chance to think about the questions prior to the interviews. The interviews were conducted in boardrooms without distractions.

3.4.2 Collection of artefacts

The following key documents were reviewed: The DST's KM strategy, quarterly reports and annual report.

3.5 Data analysis

Coldwell and Herbst (2004) mention that data analysis produces relevant meaning from the raw data that is collected from the survey and the structured interviews during the study. The collected data was analysed using a data analysis approach developed by Connor and Gibson (2003). The data analysis approach of Connor and Gibson (2003) emphasises transcribing, organising and coding, and categorising ideas within data. They emphasise organising, describing and interpreting various aspects of the research topic.

3.5.1 Transcribing the data

The researcher used a tape recorder to record the interviews, which was then transcribed. According to Coldwell and Herbst (2004), the tape recorded interview is an inappropriate method because the researcher may include the sections that are relevant or interesting to him or her. Based on the view of Coldwell and Herbst (2004), the issue of bias was considered by ensuring that the data was presented as per the respondents' views. For confidentiality purposes, the data was deleted from the tape recorder after the completion of the study.

3.5.2 Organising the data

The accumulated data was organised on the script and chart, which included the research questions and themes that were used in the interview schedule. The accumulated data was summarised and analysed based on the original research questions and themes. Once the research questions were answered, the researcher looked at other themes (such as change management) that emerged from the data and related them to the research questions and themes. The emerging ideas/themes were recommended for future research.

3.5.3 Coding and categorising ideas and concepts

During this stage, the researcher identified words/ideas that were used frequently. These words/ideas were categorised based on the responses.

3.6 Data validity and reliability

3.6.1 Validity

“Validity is the extent to which research findings accurately represent what is really happening in the situation. It is concerned with the fact that the research design must fully address the research questions and objectives” (Bryman 2010:15). For Denscombe (2002:26), validity is "the accurateness of questions asked, data collected and explanations offered by the respondents". To ensure that this research was valid, the researcher probed the respondents in depth to ensure that sufficient data was obtained. The researcher also asked the respondents follow-up questions to confirm the findings. The respondents were asked to provide practical examples to support their statements.

3.6.1 Reliability

According to Bryman (2010:225), reliability is "the consistency of the measuring instrument in that respondents will offer the same responses when interviewed again". He mentions that reliability is concerned with whether the results of the study are repeatable. The researcher ensured reliability by referring to the previous studies, emerging themes and concepts from the data.

3.7 Ethical considerations

Newton (2010) states that semi-structured interviews allow the research participants to disclose their private thoughts and feelings. For semi-structured interviews to be successful, the researcher should establish a good relationship with the participants. Aurelius (2013) adds that according to the principle of autonomy in qualitative research, research participants have a reasonable expectation that privacy will be guaranteed. Therefore, the participants' identification was not revealed in the writing or other sources of communication. The researcher used Respondent 1, 2, 3, etc. to differentiate the respondents, instead of revealing their names.

In order to deal with the issue of privacy and anonymity, the respondents were informed about the purpose and confidentiality of the interviews and organisational records, and they decided to be part of the study. Before the interviews, the researcher requested the participants' consent (Appendix B). The participants were given all the

necessary information regarding the interviews, which gave them an opportunity to assent without undue coercion.

3.8 Summary

This chapter discussed the research methodology that the study employed including the population, sample, data collection instruments and strategies. The instruments used to ensure the ethical standards, reliability and validity of the study were also discussed.

CHAPTER 4: RESULTS AND DISCUSSIONS

4.1 Introduction

This research study used the data analysis approach developed by Coldwell and Herbst (2004) to produce relevant meaning from the raw data collected during the interviews. As mentioned above, the data analysis approach of Coldwell and Herbst (2004) emphasise transcribing, organising and coding, and categorising ideas within data. Coldwell and Herbst (2004) also emphasise organising, describing and interpreting various aspects of the research topic. The researcher used a tape recorder to record the data, which was then transcribed, organised and categorised.

After going through the respondents' views, the following themes related to research topic emerged: KM strategy, leadership, organisational culture and KM systems. These themes form part of the research objectives introduced in Chapter 1. For ease of reference, the research objectives are as follows:

- Identify the systems that the DST developed to manage KM processes (knowledge creation, capturing, storage and sharing).
- Determine the role of KM strategy, leadership and organisational culture in the implementation of KM.
- Identify challenges regarding the implementation of KM.
- Provide practical suggestions on how to best implement KM within the DST.

4.2 Demographic profile of respondents

	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent7	Respondent 8
Years in the DST	10	9	13	9	10	12	10	12
Role	Implementer	Implementer	Implementer	Implementer	Coordinator	Coordinator	Implementer	Implementer
Rank	CD	D	D	DD	DD	DD	DD	D
Programme	4	4	4	4	1	1	2	2

Objective1: KM systems in the DST

Since the research study focused on the implementation of KM systems in the DST, an identification of the KM systems that the DST is currently using is imperative. KM systems are required in organisations to manage the knowledge of their employees. According to the respondents, the DST has designed and developed its KM systems and mechanisms to manage the workflow and sharing of

information. The KM system identified to manage the workflow in the DST is Alfresco. The Alfresco system was developed and launched in March 2011 to enable the DST to deliver on its mandate and ensure easy flow and access of information in the Department. The Alfresco system is the central information system that should be used by all employees in the DST.

The respondents indicated that there are other KM systems in the Department that are used by different programmes depending on their functions. Some of these systems include the following:

- Mlib is used by the Library Unit to issue books.
- Performance Information Management System (PIMS) is used by the Monitoring and Evaluation Unit to coordinate the Department's quarterly and annual reports.
- LOGIS is used by the Finance section to control movable assets.
- PERSAL is used by the Human Resources Unit to manage the payroll of the Department's employees.

In terms of the effectiveness of the current central KM system, all respondents except respondents 4 and 6 indicated that the central KM system that the Department is currently using to capture, store and retrieve the knowledge of its employees is not stable or reliable. This results in employees not using the system. The system is on and off, and employees are unable to upload the updated versions of documents.

The respondents indicated that the Department has developed other mechanisms to enable the practice of information sharing. The mechanisms that were identified include brown bag sessions with external stakeholders, communities of practice, workshops (external and internal), conferences and meetings.

Discussion

In identifying the KM systems used to manage KM processes, the detailed analysis of the results revealed that the DST has developed good KM systems and mechanisms to manage KM processes. However, the central KM system (Alfresco) and mechanisms are not as effective as they should be due to a lack of support by employees, including leadership. Out of eight respondents, six employees indicated

that the central KM system used to manage KM processes is not stable or reliable. They pointed out that the KM system is not working well because it is not being utilised by everyone in the Department.

They pointed out the following examples to support their statement: “Some leaders still insist on processing submissions and memoranda manually instead of electronically.” “Employees still save the information on their personal machines rather than on the KM system.”

If the KM system is not working well, it means it is not achieving what is meant to achieve. Jennex and Olfman (2004) developed the KM system success model to measure how well the system is able to perform the functions of knowledge creation, storage, transfer and application. Some of the elements include system quality and user satisfaction. Under system quality, they argued that the KM system should be able to perform the function of knowledge creation, storage, transfer and application. Under user satisfaction, they argued that the users of the KM system must be satisfied with its design. If the users are not satisfied, the chances of them not using the system are high.

Objective 2: The roles of KM strategy, leadership and organisational culture in the implementation of KM

KM strategy

According to Respondent 1, the work of the DST is around the knowledge economy. The DST promotes the production, storage and maintenance of knowledge. However, it is not the custodian of knowledge produced. Its entities, such as the NRF and the Human Sciences Research Council (HSRC), are responsible for the storage of knowledge produced, such as research theses. Respondent 1 indicated that the role of the KM strategy must not be to focus on records management only, but must also cover other activities, such as maintaining the data of the Department in case of emergency. Respondent 1 further indicated that the KM strategy is aligned with the DST’s strategy and is well implemented in the Department, because KM activities are taking place, such as meetings, communities of practice, brownbag sessions, etc.

According to Respondent 2, the role of the KM strategy is to develop the DST as a learning and knowledge organisation and to promote the awareness of KM

initiatives. The DST developed its KM strategy in 2012, and much has changed since then. The KM strategy needs to be revised to be aligned with the revised vision of the DST. The KM strategy is not well implemented because there are employees who are not aware of the strategy.

Respondent 3 concurred with Respondent 2 that the role of the KM strategy involves developing the DST as a learning and knowledge organisation. It was mentioned that the KM strategy is aligned with the DST's vision of becoming a leading knowledge-driven organisation. Respondent 3 concurred with Respondent 1 that the KM strategy is well implemented because KM initiatives are taking place in the DST such as workshops, brown bag sessions, conferences, knowledge-sharing meetings, etc.

Respondent 4 believed that the KM strategy should give direction and guidance on KM issues. The KM strategy is aligned with the Department's strategy. However, it is not implemented effectively due to resistance to change. The management echelon does not provide leadership on the application of the KM strategy. For example, the KM system was introduced in the Department, but there are senior managers that still insist on receiving and processing submissions and memoranda manually.

According to Respondent 5, the KM strategy sets goals on how to increase awareness and understand KM practices. The Department developed and approved the KM strategy in 2012, but leadership is not providing direction and guidance on how the KM strategy should be implemented. The KM strategy is aligned with the Department's vision. However, is not as well implemented as it should be. The reasons include lack of commitment by employees, including leadership.

Respondent 6 concurred with Respondent 5 that the KM strategy should set goals and make employees understand and adopt KM initiatives. The goal of the KM strategy is to introduce systems and platforms to manage and share employees' knowledge. The Department developed the KM strategy and it is aligned with the DST's vision. Respondent 6 concurred with respondents 1 and 2 that the KM strategy is well implemented because there are communities of practice, brown bag sessions, conferences and workshops on lessons learnt.

Respondent 7 mentioned that the KM strategy is meant to fast-track decision making in the Department. The KM strategy should also create easy access to information. The KM strategy is aligned with the Department's vision. However, the challenge is a lack of effective implementation. The KM strategy introduced the electronic tools to manage the workflow in the Department. However, employees are not using those tools. For example, employees still save documents on their personal computers' hard drives, instead of saving them on the system.

According to Respondent8, the KM strategy should sensitise employees about KM activities (such as brown bag sessions and information-sharing sessions) that should take place. It was indicated that the KM strategy is not well implemented because effective implementation of the KM strategy is dependent on employees' commitment to implement the strategy. If employees do what the strategy recommends, then it would be effective.

Leadership

Respondent 1 indicated that leadership should provide support and lead by example on KM issues. It was indicated that the DST's leadership supports KM activities because it invested funds to develop the Alfresco system. It also participates in KM activities, such as information-sharing sessions.

Respondent 2 indicated that the role of leadership is to put forward KM initiatives and encourage members to participate in these activities. The DST's leadership has put forward information-sharing platforms, such as EXCO, programme meetings, extended EXCO and SMS meetings. This is an indication that it supports the KM initiatives.

According to Respondent 3, the role of leadership is to provide direction to employees in terms of KM activities. Respondent 3 is satisfied with the caliber of the DST's leaders because they support KM initiatives by encouraging initiatives driven through the KM strategy, such as training, workshops, brown bag sessions and conferences. It was mentioned that the DST's leadership supports KM initiatives by giving the go-ahead and participating in some of the KM initiatives.

Respondent 4 indicated that the DST's leadership should adopt a team-orientated strategy of leadership by involving employees to provide it with certain strategic

directions to decision making. It was mentioned that leadership does not prioritise KM initiatives as it must. For example, there are no compulsory KM workshops within the Department.

Respondent 5 indicated that leadership should provide direction on KM issues. It was indicated that the Department's leadership is not satisfactory because it is not ensuring that KM activities are successfully implemented within the Department. There are employees responsible for KM initiatives, but the leadership does not provide direction and guidance on those initiatives. When the responsible employees schedule KM sessions, some leaders only send their subordinates. It was indicated that the Department is succeeding with records management because there is an Act with which the Department must abide. The challenge with KM is that there is no Act at a national level that binds the Department's leadership to ensure its successful implementation.

Respondent 6 indicated that leadership should support KM initiatives at all times. The Department's leadership does not fully support KM initiatives. It should not only be responsible for approving the strategy, but should also enforce implementation of the strategy and be part of KM initiatives that are taking place in the Department.

Respondent 7 concurred with respondents 1, 3, 5 and 6 that leadership is expected to provide support and direction on KM initiatives. It was indicated that the Department's leadership does not support KM initiatives because it still approves documents (submissions) manually instead of approving them electronically.

Respondent 8 was of the opinion that leadership must give direction and clarity regarding the KM strategy in terms of sign-off procedures for documents in the system. Respondent 8 viewed leadership as not being supportive because of a lack of effective implementation of the strategy. It was indicated that leadership must compel employees to implement what has been outlined in the KM strategy.

Organisational culture

According to Respondent 1, the organisational culture should encourage employees to participate in KM activities. The organisational culture in the DST encourages the practice of information sharing and dissemination.

Respondent 2 mentioned that organisational culture in KM initiatives should promote information sharing among employees. The DST has open-plan office spaces that encourage the sharing and dissemination of information among employees. The practice is done informally and no one is responsible for capturing and storing information.

Respondent 3 concurred with Respondent 2 that the organisational culture should promote knowledge sharing in organisations. The DST has included knowledge sharing as one of its values. This shows that the DST's culture supports KM initiatives. Knowledge sharing is practised in SMS meetings, workshops and brown bag sessions. Information that is captured is distributed through the DST's newsletters, emails and the intranet. Respondent 3 indicated that employees need full consultation before implementing any KM initiative.

Respondent 4 indicated that the role of organisational culture on KM issues is to provide common workstyles in the Department. The Department's culture is resistant to change and learning. When employees fail to learn new things, they become resistant to change. It was mentioned that there are very limited knowledge-sharing platforms. For example, various divisions apply their own way of sharing information, and there is no sharing of DST work at lower levels.

Respondent 5 concurred with respondents 1, 2 and 3 that the role of organisational culture on KM issues is to promote information sharing and encourage employees to participate in KM sessions. One of the activities of KM is information sharing. The Department has open-plan office spaces that enable the flow of information among employees. Information is only shared in formal structures, such as EXCO and SMS meetings. There are no informal structures to share knowledge.

Respondent 6 concurred with respondents 1, 2, 3 and 5 that the organisational culture should promote information sharing and encourage employees to participate in KM sessions. The culture of information sharing is promoted in the DST because KM initiatives, such as brown bag sessions and programme meetings, are taking place. The only challenge with organisational culture in the DST is the structure. The structure of the DST is hierarchical and does not encourage employees at higher levels to participate in KM initiatives. Employees

who are at a higher level of the structure always delegate employees at the lower levels to participate in KM initiatives.

Respondent 7 indicated that organisational culture should enable and encourage employees to save documents electronically so that they can be accessed by employees who need them. The Department is still sticking to a culture of managing documents manually, and employees still save information on their personal computers. Leadership does not enforce the culture of saving information on the system.

Respondent 8 was of the opinion that the organisational culture of the Department should encourage employees to share information. The Department has open-plan office spaces that encourage employees to interact at all times. Employees are willing to share information. However, it is unclear how to access the information shared.

Discussion

Role of KM strategy

With regard to the role of KM strategy, the detailed analysis of the results revealed that the Department has developed a KM strategy that was approved by the Department's leadership in 2012. The respondents revealed a degree of agreement that the KM strategy is aligned with the Department's vision and addresses all the KM challenges in the Department. Overall, the respondents believed that the KM strategy should help develop the DST as a learning and knowledge organisation, and should increase awareness and adoption of KM initiatives. Out of eight respondents, five respondents indicated that the KM strategy is not doing what it is supposed to do because leadership is not ensuring that KM initiatives are carried out effectively and no awareness sessions are being held on the KM strategy.

According to McKenna (2008), one of the strategic components of the KM strategy is to strengthen knowledge sharing and learning processes, and to provide knowledge sharing and a learning culture. Yang, Guohui and Eppler (2008) mention that formulating an organisational strategy is a difficult task for the management and leadership team. Implementing it throughout the organisation would be more difficult. They outline factors that affect strategy implementation. These factors are divided into soft, hard and mixed factors. Soft factors are those that include

executors of the strategy and communication activities. Hard factors are those that include the organisational structure and systems. The way in which the strategy is developed and articulated (strategy formulation) contains hard and soft factors, and is thus considered a mixed factor.

Strategy formulation

It is clear that poor strategy formulation can limit strategy implementation. The way in which strategy was developed and formulated may influence implementation.

In order for the DST to successfully implement its KM strategy, good planning is needed during the strategy formulation process. Good planning during strategy formulation requires a good relationship and constant communication between the different programmes in the Department. The DST is divided into five programmes with different roles and functions. Cross-programme working relations would have played a significant role in the successful implementation of the KM strategy. Communication with relevant employees during formulation process is important. It will ensure that the developers and executors of the strategy are involved throughout the strategy process.

Strategy implementation

Based on the DST's structure in Appendix D, the implementers of the KM strategy include top management (DG, DDGs, CDs and Ds), middle management (DDs) and support staff.

Yang *et al.* (2008) outline other factors that play a significant role in the successful implementation of a strategy, such as senior management support, joint rewards and informal integration. The effective implementation of the KM strategy is influenced by the quality of the employees involved in the process. In this case, quality refers to the skills, attitudes, capabilities and experiences of the employees. For strategy to succeed, it is important to engage employees at all levels in the process of formulation. This will enable them to apply their skills, capabilities and experiences, even during the implementation process.

Since most respondents indicated that the KM strategy is not well implemented due to lack of support by employees and the absence of awareness campaigns, it can be argued that the KM strategy was not well communicated at all levels of the

organisational structure. It can also be argued that the strategy was only communicated with employees at higher levels in the structure because they were the ones approving the strategy.

Role of leadership

With regard to leadership, respondents indicated that the overall role of leadership is to provide guidance, support and direction or clarity regarding KM initiatives. Three respondents agreed that the DST's leadership enables the implementation of KM systems, whereas five respondents agreed that the DST's leadership does not enable the implementation of KM initiatives. The respondents who agree that the DST's leadership enables the implementation of KM initiatives focused on information-sharing platforms, while the respondents who agreed that the DST's leadership does not enable the implementation of KM initiatives concentrated on the KM strategy and the KM system.

The results show that respondents are not satisfied with the Department's leadership because they do not ensure that the activities outlined in the KM strategy are carried out and they do not support and prioritise KM initiatives. The respondents also indicated that some of the DST's leaders are resistant to change because they still insist on processing submissions manually instead of electronically.

As discussed in Chapter 2, Blanchard and Hersey (1980) developed a situational leadership model that argues that leaders must apply the leadership style that is more suitable for their circumstances.

- **Directing:** This leadership style requires leadership to allocate roles and responsibilities of the subordinates, and provide direct supervision. In terms of KM strategy, the respondents indicated that the leadership does not maintain a directive position to ensure that the activities outlined in the KM strategy are completed. In terms of the KM system, the respondents indicated that the process of handling submissions and memoranda is a two-way process; electronic and manual. There are leaders who require submissions to be processed manually and there are those who require submissions to be processed electronically.

For the DST to have a successful KM strategy, the leadership must play its role of providing guidance and direction to employees responsible for coordinating the KM strategy. The leadership must also provide direction regarding the functioning of the KM system.

- **Coaching:** Since the DST employees do not utilise the central KM system in place and implement the KM strategy effectively, it is important for the leadership to provide more support, recognise and reward employees implementing the KM activities effectively to build their self-esteem and build their commitment. This leadership style requires leadership to listen, advise and help KM coordinators to gain the necessary skills to do the tasks by themselves.
- **Supporting:** This leadership style is appropriate when the employees can do the job, but are refusing to show commitment. Since results reveal that employees are not using the KM system, the DST leadership should be concerned with finding out why employees are not using the KM system and persuade them to cooperate.
- **Delegating:** If leadership put more energy on directing, coaching and supporting their subordinates, they would be able to delegate most of their responsibilities to their followers. This leadership style requires subordinates to have a high willingness and a high ability on their job.

Role of organisational culture

With regard to organisational culture, respondents are positive about the extent to which the culture of the DST enables the implementation of KM initiatives. Many respondents indicated that the DST has open-plan office spaces that enable the culture of information sharing. The open-plan office spaces also enable employees to share new knowledge and learning experiences between themselves. The respondents who are not satisfied with the DST's organisational culture indicated the challenge of a lack of consultation on KM issues and resistance to change.

Managing knowledge requires both the leadership and employees to change their mindsets. Organisations often experience the KM challenges because a culture of

learning, sharing and improving knowledge is not practiced. (Pension et al., 2012). Kotter (1995) identified eight steps to assist organisations to manage change:

- **Step 1: Create urgency:** Kotter (1995:16) suggests that “for change to be successful, 75% of the organisation’s management needs to support the KM initiatives and buy in to the change”. It would be easier for KM strategy and KM system to be successful, if the whole DST buy in to the change.
- **Step 2: Form a powerful coalition:** It is important for organisations to establish a change coalition to influence employees about the need for change. This process will require strong leadership, commitment and support by all employees.
- **Step 3: Create a vision:** The task team established, needs to motivate employees about the reasons why they should act and consider change as a matter of urgency.
- **Step 4: Communicate the vision:** The vision has to be communicated across various communication channels until it is heard.
- **Step 5: Empower action:** This step requires leadership to discover why employees are resistant to change. Employees employing the right behaviour must be recognised.
- **Step 6: Create quick wins:** This step involves recognising and rewarding the change management team early in the change process in order to build up and support momentum.
- **Step 7: Build on change:** Kotter (1995) suggests that victory should not be declared early because this may undo achievements made. If change is not rooted in the culture, it is easy for the organisation to go back to its old behaviour.
- **Step 8: Make it part of the organisational culture:** Since culture is concerned with the way things are done in organisations, it is necessary to make change part of organisational behaviour. In order to make change part of the organisational culture, the leadership must live the values and vision of the organisation.

Objective 3: Challenges regarding the implementation of KM

The respondents outlined the challenges experienced when implementing KM initiatives. The challenges are discussed per theme.

KM strategy

- The KM strategy covers the needs of the DST internally, not nationally.
- There are not enough awareness campaigns on KM strategy.
- There is a lack of support by employees, including leadership.

Leadership

- There are no champions of KM activities.
- There is no full buy-in by employees (including leadership) on KM initiatives.
- There is resistance to change.
- There is a lack of participation.
- Leadership does not give direction and guidance on KM issues.

Organisational culture

- There is no full buy-in of KM initiatives by employees.
- There is resistance to change.

KM system

- There is a lack of integration with other departmental systems, such as LOGIS and PERSAL.
- The system does not address the needs of external stakeholders.
- The design of the system is not user friendly (there is no common classification of documents in the system).
- The system is not structured in a way that the knowledge of departing employees can be captured.
- The system only focuses on workflow (such as submissions and memoranda), and not on other information-sharing sites such as blogs and wikis.
- The system is not updated well because people are still loading their information on their personal computers.

Discussion

The purpose of objective 3 was to identify challenges regarding the implementation of KM. A detailed analysis of the results revealed that the DST experiences the challenge of an absence of KM strategy awareness sessions, a lack of support by leadership on KM initiatives, and resistance to change on KM issues. Cong and Pandya (2003) mention that the key element of KM initiatives is raising awareness campaigns, not only with leadership, but also with everyone in the organisation. They argue that the concept of KM needs to be discussed and understood by all employees in the organisation.

It has been noted that the DST's strategy was approved in 2012 and that it is now in the implementation stage. Before the development of the KM strategy in 2012, the DST was not consciously practising KM activities. However, there were initiatives (brown bag sessions, conferences, meetings, workshops, communities of practice, the intranet and records management) that were taking place to ensure that information and knowledge was properly stored for easy access and dissemination. Literature, such as Mphahlele (2010) and Cong and Pandya (2003), argue that the concept of KM is not new to the public service. The problem is when employees are not aware of its existence. According to Cong and Pandya (2003), the challenge of a lack of awareness may hinder the effective implementation of KM initiatives. Cong and Pandya (2003) further believe that organisations that implement the KM initiatives without knowledge and awareness will not see the good results.

Talisayon (2013) stressed that the successful implementation of KM initiatives requires employees to change their behaviour, attitude and mindset. He believes that KM takes time to be effectively implemented. Therefore, the success of a KM journey depends on whether employees are convinced and encouraged to adapt this new behaviour, which benefits both themselves and the organisation.

Objective 4: Practical suggestions on how to best implement KM

KM strategy

- Incorporate business activities into an integrated KM system.
- Launch continuous awareness campaigns.
- Maintain effective communication.

- Conduct compulsory workshops on KM initiatives.
- Ensure that the KM strategy indicates who is responsible for information sharing, capturing, storage and retrieval.
- Ensure that the strategy indicates common classification of information when saving documents in the system.

Leadership

- Revise policies around KM initiatives so that employees can access social media such as Facebook, Twitter, etc.
- Introduce a bottom-up structure.
- Obtain full buy-in and participation on all KM initiatives.
- Encourage employees to implement KM initiatives effectively.
- Get employees to prioritise KM initiatives.
- KM is to be included in managers' core management competencies so that it can be taken seriously.

Organisational culture

- Improve communication with staff on KM issues.
- Conduct more awareness campaigns to change the mindset of employees.
- Involve everyone in KM initiatives by informing them of such initiatives in advance.
- Launch change management programmes so that employees can understand the importance of KM initiatives.
- Increase support on KM initiatives.

KM systems

- Integrate the central KM system (Alfresco) with other departmental systems, such as LOGIS and PERSAL.
- Revise Alfresco to address the needs of the DST's stakeholders at a national level (including its entities).
- Revise Alfresco to cover the classification of documents and routing processes.
- Conduct increased awareness campaigns on Alfresco.

- Ensure that Alfresco records the information of experts who are leaving the Department.
- Invest in change management programmes and enforce compulsory attendance (this process will need a KM champion).
- Ensure that Alfresco enables employees to make inputs on documents for meetings they missed.
- Encourage constant communication with users about the KM systems.
- Ensure that leadership provides clarity regarding the implementation of the KM system (the DG's submissions are routed in the system whereas the Minister's submissions are routed manually).
- Identify a task team responsible for gathering information and making it available to everybody.
- Have leadership support.

Discussion

The purpose of objective 4 was to provide practical suggestions regarding the implementation of KM initiatives. The respondents outlined the recommendations per theme. Under KM strategy, the respondents recommended that awareness sessions of the KM strategy should be held with all levels of the structure. With regard to leadership, the overall recommendation is full buy-in of KM initiatives and encouraging employees to implement KM initiatives. With regard to organisational culture, they recommended a change management programme to deal with the issue of resistance to change. With regard to KM system, they recommended that leadership should encourage all employees to use the system.

4.3 Summary

To investigate the effectiveness of the DST's current KM systems, and explore the effectiveness of factors (KM strategy, leadership, organisational culture and KM systems) that contribute to the successful implementation of KM, the results were presented and discussed according to the research objectives.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises the results of the study that were discussed in chapter 4. Based on the results, this chapter provides recommendations on how to best implement KM initiatives within the DST. The recommendations are discussed per research theme.

5.2 Conclusions

The study discussed the conclusions based on the research findings. The major findings of the research indicate that factors such as KM strategy, leadership, organisational culture and KM systems contribute immensely to the effective implementation of KM initiatives. It has been noted from the findings that the role of leadership cuts across all the research themes. Leadership should ensure that the KM strategy is developed and implemented by all employees. Given the fact that organisational culture is crucial to KM effectiveness, leadership should monitor and manage the culture of the organisation. Leadership should also ensure that employees have the same understanding, beliefs and attitudes on KM issues.

It has also been noted that the structure of the DST is hierarchical. This type of structure does not encourage the active involvement of employees in the development and implementation of KM initiatives. Employees who are consulted are those at a higher level in the structure. The respondents raised the issue of not being involved during the formulation of the KM strategy. It can be argued that leaders were involved because their approval of the KM strategy was needed. Employees at lower levels were only required to implement the strategy without being consulted during the formulation process.

Many respondents appreciated the efforts of the DST's leadership for introducing the KM system (Alfresco) and mechanisms (such as brown bag sessions and meetings). However, the effective implementation of the KM system remains a challenge. The results are supported by Alavi and Tiwana (2003) who indicate that government departments have started to realise the importance of KM practices, although it is not easy to implement them.

5.3 Recommendations

Based on the conclusions reached above, the study made the following recommendations to improve implementation of KM initiatives. Recommendations are made according to the research themes.

- **KM strategy:** Employees at all levels need to be involved so that they can ensure implementation of all activities in the strategy. This will need a KM champion who will ensure that the activities are carried out as planned and that employees at all levels are consulted on the strategy.
- **Leadership:** Since the employees are not using the central KM system in place and implementing the KM strategy effectively, leadership will have to put more energy into directing, coaching, supporting and rewarding the employee's using the KM system and implementing KM strategy effectively.
- **Organisational culture:** It is suggested that leaders support KM initiatives by enforcing the implementation and encouraging all employees to take them seriously. It is also suggested that the DST should conduct change management programmes to address the issue of resistance to change and lack of commitment by employees.
- **KM systems:** Leadership should provide clarity on whether employees should process submissions manually or electronically. This is due to the fact that some submissions are routed on Alfresco and some are routed manually.

5.4 Summary

Since the concept of KM is relatively new, especially in the public sector, it was relevant for the study to gain the insights of public sector employees regarding the effectiveness of KM systems and the factors that contribute to the successful implementation of KM. The study was able to address the study objectives and discussed factors that enable the effective implementation of KM initiatives.

The study could be used as a baseline to understand the effectiveness of KM systems in the DST and how KM strategy, leadership and organisational culture could enable the effective implementation of KM initiatives. A deeper and broader understanding of the relationship between change management and KM initiatives

is required through interviews. This will assist employees to understand the importance of change in respect of KM issues. By understanding the importance of change, employees will be able to easily adapt to the organisational culture of the DST.

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APPENDICES

APPENDIX A

The semi-structured interview questions

11.1 Knowledge Management (KM) Strategy

- How well do you think the KM strategy is being implemented in the Department?

Probe:

- In your view, do you think the KM strategy is aligned with the Department's vision?
- To what extent does the KM strategy address the challenges of knowledge management?
- How can the Department improve the KM strategy?

11.2 Leadership

- How satisfied are you with the Department's leadership?

Probe:

- To what extent does the Department's leadership support KM initiatives?
- What challenges on leadership have you experienced when implementing KM initiatives?
- How can the Department's leadership improve in order to set a good direction to the employees?

11.3 Organisational culture

- How do you view the culture of the Department in implementing KM initiatives?

Probe

- To what extent does the Department promote a culture of information sharing?

- In your view, does the Department experience some challenges of culture when enforcing the implementation of KM initiatives?
- How can the Department improve the culture of implanting the KM initiatives?

11.4 KM systems

- How do you view the KM systems that are currently in place?

Probe

- Based on your experiences, do you think the Department has good systems in place to capture and store knowledge that can be easily accessible and transferred to other employees?
- In your view, what challenges are being experienced by the Department when implementing the current KM systems?
- What kind of new mechanisms/systems can the Department employ?

APPENDIX B

REQUEST LETTER TO UNDERTAKE THE RESEARCH STUDY

Dear

RE: INVITATION TO PARTICIPATE IN A STUDY: IMPLEMENTATION OF KNOWLEDGE MANAGEMENT SYSTEMS IN THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

My name is Mamolatelolo Motsitja, I am completing a Master's degree in Public and Development Management with the University of the Witwatersrand. As part of my studies, I am undertaking a study on the implementation of knowledge management (KM) systems in the Department of Science and Technology (DST). The purpose of this research is to investigate the effectiveness of the KM systems in the DST and further explore the effectiveness of factors (KM strategy, leadership, organisational culture and KM systems) that contribute to the successful implementation of KM.

You have been identified as a key participant to assist me in gathering the information required for my studies. I will therefore like to have a face-to-face interview with you.

Please note that your participation is voluntary and anonymous. Your inputs and the DST's records will be treated with a high degree of confidentiality, and identification of your information will not be revealed in writing or other communication source. The final report will only be used for academic purposes. For more information, please contact Mamolatelolo Motsitja at 079 7527 123 or beverleymotsitja@gmail.com.

Kind regards,

M. Motsitja

APPENDIX C

PERMISSION LETTER

THE CHIEF DIRECTOR: HUMAN RESOURCES

REQUEST FOR PERMISSION TO CONDUCT FIELD WORK

INTRODUCTION

1. Mamolatelolo Motsitja, Administrative Officer: Department of Science and Technology (DST), is a registered Master's student for Public and Development Management (PDM) at the University of the Witwatersrand. To date, she has completed the course work portion of her master's degree. However, she still needs to conduct research work to fulfill the requirements for graduation.
2. The purpose of this submission is to request the Chief Director: Human Resources to grant permission for Ms Motsitja to conduct research interviews with selected staff members within the DST. The research interviews are planned to be conducted during the months of November and December 2015 and January 2016.

DISCUSSION

3. The aim of the PDM is to build multiple competencies for public servants. The course enables Ms Motsitja to expand her competencies, knowledge, skills and abilities on administration and management areas for better service delivery in the DST. The course also enables Ms Motsitja to test and explore new ideas on administration and management areas and to understand the role of information technology, including knowledge management (KM) systems within the public sector.
4. The topic of Ms Motsitja's research work is "Implementation of KM systems in the DST". The research study will assist the DST:
 - 4.1 To determine the effectiveness of KM systems;
 - 4.2 To determine the effectiveness of factors that contribute towards the successful implementation of KM;
 - 4.3 To identify challenges/gaps regarding the implementation of KM; and

4.4 To develop/revise policies and strategies on how to best implement KM for better service delivery

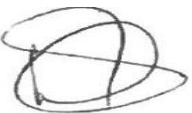
5. Ms Motsitja has chosen the DST as her research area and she plans to conduct a case study. The reasons for this is that the DST is one of the national government departments responsible for science and technology policies in South Africa. Its focus is to develop, coordinate and manage a national system of innovation that will bring about maximum human capital, sustainable economic growth and improved quality of life in the country.
6. For the DST to accomplish its mandate effectively and efficiently, it has launched KM initiatives (such as Alfresco) to manage documents, workflow and records for easy access by the employees and the public.

RECOMMENDATION

7. It is recommended that the Chief Director: Human Resources grants permission for Ms Motsitja to conduct research interviews with the selected staff members within the DST during the months of November and December 2015 and January 2016.

DECISION

Recommendation in Paragraph 7 approved/not approved.


CHIEF DIRECTOR: HUMAN RESOURCES
DATE: 24/11/15

APPENDIX D

DSTSTRUCTURE

