

**THE PREVALENCE OF KNOWLEDGE MANAGEMENT PRACTICES IN THE
DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**

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by

N R FELTMAN

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DECLARATION

Student number: 72404973

I confirm that this research report “The Prevalence of Knowledge Management Practices in *The Department of Agriculture, Forestry and Fisheries*” to the University of South Africa’s School of Business Leadership (UNISA SBL), is my own work. All sources in this work have been referenced and appear in the comprehensive list of references.

Natalie Feltman

14 May 2012

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EXECUTIVE SUMMARY

In a knowledge economy the 'knowledge' of an organisation is its competitive advantage where it plays a role in productivity and acts as the main driver of growth, wealth creation and employment (Storey and Barnett, 2000). The knowledge of the organisation has therefore become the dominant resource for creating a 'knowledge economy' characterised by massive investments in knowledge creation and distribution efforts throughout all levels of the economy. With the new economy being global in nature, i.e., not confined to time and space, and characterised as highly dynamic, competitive, swift and ever evolving, the new economy public sector thus needs to demonstrate fast paced innovation to efficiently address increasing needs with an ever-increasing need for improvement in productivity.

The aim of the research was to investigate the prevalence of KM practices in The Department of Agriculture, Forestry and Fisheries (DAFF) (focussing specifically on the Agricultural component of DAFF) to enable its delivery on its mandate by exploring DAFF's position in relation to specific KM enablers. Survey data was collected from 42 participants within the Agricultural component of DAFF in Pretoria across five post grades (11-15). The research findings indicated that DAFF's leadership and organisational culture do not serve as enablers for KM practices. DAFF's IT infrastructure and the use and co-ordination of KM practices were found to partially meet the requirements as KM enablers.

Key words

Knowledge management, leadership, organisational culture, IT infrastructure, strategic alignment

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CHAPTER 1

1. BACKGROUND AND PROBLEM STATEMENT

1.1 INTRODUCTION

The emergence of economies based on the production, distribution and use of knowledge and information was charted by the Organisation for Economic Co-operation and Development (OECD) in their report, *The Knowledge-Based Economy* which stated:

'The knowledge-based economy places a great importance on the diffusion and use of information and knowledge as well as its creation. The determinants of success of enterprises, and of national economies as a whole, is ever more reliant upon their effectiveness in gathering and utilising knowledge. Strategic know-how and competence are being developed interactively and shared within sub-groups and networks, where know-who is significant. The economy becomes a hierarchy of networks driven by acceleration in the rate of change and the rate of learning. What is created is a network society, where the opportunity and capability to assess and join knowledge and learning intensive relations determines the socio-economic position of individuals and firms' (OECD, 1996:14).

The OECD is specifically concerned with the institutions and processes for knowledge production (the research and development of new knowledge); knowledge transmission (education, training and development of people); and knowledge transfer (the diffusion of knowledge and innovation) all of which needs to be appropriately managed.

Knowledge Management (KM), a complex discipline with many factors contributing to successful implementation, has over the years appeared in a variety of literature sources

where many authors and practitioners have presented numerous generic critical success factors to achieving its successful implementation. The creation and sharing of knowledge has subsequently been regarded as the major contributor to organisational advantage (Nahapiet and Ghoshal, 1998 cited by Storey, 2005). This implies that knowledge-based resources are now recognised as having the same importance as other resources such as capital and natural resources in the quest for competitiveness and that capabilities and competencies are now regarded as the most important strategic assets (Prahalad and Hamel, 1990; Stalk, Evans and Shulman, 1992 cited by Storey, 2005: 199). Knowledge as a resource though, has caused great confusion for economists, as it is the only resource that increases with use since unlike physical goods that are consumed as they are used, knowledge rather is seen to provide increasing returns as it is used.

More and more it is written of the benefits and the value of the organisation's knowledge and the movement toward a 'knowledge economy' where the focus is on what the organisation knows and although mainstream writing on KM is overwhelmingly optimistic, effective organisational KM is not straightforward. There are many components to integrate, a range of organisational needs to be met and complex organisational and cultural issues to address. The management of knowledge hence presents a major management challenge for many organisations because it is not '*a singular or even well-defined management or professional discipline with established norms and standards*' (Dence, 2010: 16).

Over the last few decades, although a large number of organisations have taken an interest in the idea of KM and have launched KM initiatives and programmes, many of these initiatives have failed to have any real impact or longevity in the business and in South Africa KM maturity varies between industries where growth has been shown to be

much faster in the construction, building materials and mining industries ($\pm 70\%$) than in educational institutions ($\pm 40\%$) (Kruger and Johnson, 2009). It is very rare that problems and barriers of KM initiatives are accounted for as most of the literature rather focuses on promoting its positive contribution to the organisation. Storey and Barnett (2000:234) though highlighted four main problems perceived to present difficulties in implementing KM initiatives:

- An insufficiently specific business objective. Instead companies launching knowledge management initiatives tend towards more general aspirations such as “share best practice”;
- Incomplete programme architecture that fails to build on the linked dynamics of organisational change and learning;
- An insufficient focus on one or two strategic business priorities; and lastly
- Top management sponsorship without active ongoing involvement.

KM initiatives have even been initiated in various governments across the globe which is perhaps most evident in the latest trend toward E-government programmes. In the context of government, KM tends to lie mainly in generating data and information (explicit knowledge) in abundance although, with more and more managers and supervisors being called upon to become more efficient and more effective with obligations to act in accordance with accountability criteria and the need to act responsibly, it is important that knowledge (know-how) and its management is prioritised with a shift more toward managing the people who hold the knowledge more efficiently. The benefits of proper KM then can: (1) ensure an effective public administration and implementation of the public agenda; (2) lead to a stable, just, orderly and a secure

society by preparing the public, organisations and public agencies to be effective policy partners; (3) contribute to acceptable levels of quality of life through building, maintaining and leveraging commercial and public intellectual capital; and (4) lead to the creation of a prosperous society by developing citizens to become competent knowledge workers, and public sector institutions to be competitive (Wiig, 2002). Public service managers and supervisors therefore would need proper information and the necessary 'know-how' to effect proper decision making and therefore knowledge and information has to go hand in hand as a promise for long-term gains for public sector effectiveness.

With the new economy being global in nature, i.e., not confined to time and space, and characterised as highly dynamic, competitive, swift and ever evolving, the new economy public sector thus needs to demonstrate fast paced innovation to efficiently address increasing needs with an ever-increasing need for improvement in productivity. New business models are being influenced by private sector business practices and there is increasing political pressure for government to deliver services rapidly and immediately. It is because of this that there is a call for sustainable development rather than 'old style' development practices and performance management and evaluation systems to improve officials' outputs. However, in recognising the growing importance of organisational knowledge, government departments may - just in applying KM practices - be in the position to ensure the public of improved service delivery.

It therefore becomes increasingly important to ask how government will deal with the exponential increase in the amount of knowledge and increasingly complex processes and uncontrolled loss of this knowledge. Just as Storey and Barnett (2000: 223) asks the question, "in what sense can 'knowledge' really be managed?" and how can it contribute to improved performance? With ongoing changes being a certainty today, organisations, including governments, are being forced to re-assess the way in which they are being

managed. In dealing with this constant state of flux there is a need for South African government officials to be proficient with knowledge and information tools that would assist them to improve their decision making. This study will provide various KM implementation guiding principles for the Department of Agriculture, Forestry and Fisheries (herein referred to as DAFF) to consider as they move toward implementing their Knowledge and Information Management (KIM) Strategy with the aim of contributing to a more efficient government as a whole.

1.2 BACKGROUND AND PROBLEM IN CONTEXT

DAFF, a national sphere of government responsible for implementing the laws and policies decided by parliament or cabinet, derives its core mandate from section 27 (1) (b) and (2) of the South African Constitution which states: “....*take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of the....right (of everyone) to have access to sufficient food.*” It is thus with a single and much focused desire for DAFF to lead and support sustainable agriculture and promote rural development in South Africa.

DAFF, previously known as the Department of Agriculture (DoA) and before that the National Department of Agriculture (NDA) released a Knowledge and Information Management (KIM) Strategy in August 2002 in response to international trends regarding KM since it was recognized that knowledge was the business driver of increasing importance and that it could indeed support the then NDA Master System Plan (MSP) dated May 2000, in which KIM related projects, such as the development of an Electronic Document Management System (EDMS), has been given top priority. At the time it was understood that (1) KIM did not only underlie the need for a paradigm shift regarding corporate culture, but also represented a new dimension in management

culture and (2) that the Directorate: Information Systems who had been tasked with the responsibility for improving information management systems (IMS) would not produce an optimal return on investment without concurrently implementing KM. The aim of the strategy was to indicate the link between NDA organisational objectives and a KIM service as well as provide the elements of a strategic KIM plan.

Towards the end of 2002 various activities promoting knowledge and information management in the South African government were perceived to progress without an adequate measure of coordination or overall direction-setting. It was thus for this reason that in January 2003 the Government Information Technology Officers Council (GITOC) resolved to establish a Knowledge and Information Management Work Group who after some meetings and discussions developed a strategy discussion document that firstly shared the GITO Council's insights into KIM gained through its investigations and secondly recommended action aimed at arriving at a KIM strategy for the South African government. The information presented in the document at that stage was only at its infancy of the investigation and substantial follow-up research was still envisaged for 2004. Furthermore, although it was not the original intention, the focus of the document was predominantly internal to the public service and future work to address KIM involving government's clients and other stakeholders was envisaged.

To date DAFF still only has in place certain elements of Information Management (IM) rather than KM. These include (1) the collection of relevant information from a variety of sources, capturing, storing and making information available on a wealth of databases, (2) the provision of external information through a library or an information centre and (3) the presentation of information on websites along with various directorates each managing their own information through a variety of databases and filing systems bringing into being a rather fragmented and decentralised type of IMS. What this means

essentially is that the KIM strategy had not yet been implemented for reasons unknown to the researcher however, with DAFF just having recently undergone a major restructuring exercise following the latest change in the national administration in 2009 so as to integrate the Forestry and Fisheries components (previously linked to other departments) with Agriculture, there has been a renewed emphasis on the need to implement the KIM strategy.

The new organisational structure of DAFF consists of 9 branches collectively made up of 83 directorates with a tall hierarchical structure consisting of seven levels from an assistant director (ASD) to the Minister of DAFF. KM implementation therefore presents a huge task ahead where major challenges are anticipated. Nonetheless, the researcher therefore needs to understand the current KM situation in DAFF in order to arrive at relevant and meaningful KM implementation recommendations.

Many KM scholars have acknowledged the practical implementation of KM to be a huge challenge mainly due to the misunderstandings feeding over optimistic expectations. For DAFF however, the challenge of deploying the knowledge it holds to create improved performance is becoming more and more crucial since:

- the rate of innovation is rising for which knowledge must evolve and be assimilated at an even faster rate;
- competitive pressures are reducing the size of the workforce which holds a lot of the organisational memory;

- the trend for employees to retire earlier is on the increase and together with the increasing mobility of employees, the risk of losing valuable knowledge assets are increasing; and
- the fact that changes in strategic direction may result in the loss of knowledge in a specific area could prove detrimental as a subsequent reversal in policy may then lead to a renewed requirement for this knowledge, but that many of the employees with the knowledge would no longer be there.

As the researcher probes the question of the current situation it is observed that the current approach to managing information in DAFF is being met with frustration by users as it does not seem to be enhancing efficiency but instead impeding processes. This is due to the continuity in working procedures having been hampered where already the resignation of employees over time have created significant gaps in existing systems. More recently though, following the major organisational restructuring, the Information Management System (IMS) has taken time to recover to its 'normal' state, and yet there still exist problems such as inappropriately documented or outdated standard procedures that are either not available or accessible. In other instances, information is found to be stored under different keywords than what is being searched for, thereby leading to incorrect or unwanted information and time wasted as well as instances where information has been removed without removal records or return dates.

Besides processes being impeded, employees are also unable to build on prior work because information is firstly not being stored appropriately (electronically or standard filing systems) as well as not being in a universal or consistent format which ultimately results in valuable information and/or knowledge generation not being optimally shared to enhance performance. This causes an increase in operational costs through the

duplication of information and knowledge generation processes. Since there are no procedures and policies in place to ensure KIM as yet, the Department is being challenged by how it manages its information in the form of documents as well as the knowledge it holds packaged in officials' know-how and experiences. This is indicative of its challenges with how it manages its risks. Because information is not packaged in an easily accessible format and the fact that there are no prescribed technical committees, the response time to threats to the South African agricultural industry is slow and non-standardised. This consequently results in the subsequent obligation to constantly re-invent the wheel.

DAFF is not exempt from ensuring systems to manage its knowledge. As Dence (2010) suggested that by virtue of DAFF being a service oriented public institute with its outputs being mostly knowledge and information based, its management within DAFF is essential. Consequently as a government department, DAFF's main objective to deliver quality service to the public can be realised by implementing a sound KM System.

With service delivery at the heart of DAFF's existence, KM is essential for achieving efficient, effective, economic, equitable, ethical and excellent service delivery through its role in formulating organisational goals, strategies and processes to develop appropriate structures, a knowledge creating and sharing culture and the efficient utilisation of its assets and human resources. It also is invaluable in maximising support for the Batho Pele "*People first*" Principles (an initiative to get public servants to be service orientated, to strive for excellence in service delivery and to commit to continuous service delivery improvement) of the South African Government.

Furthermore, since in public opinion, the South African government in general appears to respond quite slowly to the needs of the public in terms of decision-making as well as

in its ability to develop creative and innovative solutions, there is a need to change this perception.

1.3 PROBLEM REVIEW

The importance of KM for organisations has been highlighted by many authors (March, 1991; Drucker, 1993 and Bollinger and Smith, 2001) in the mainstream management literature. Knowledge and the ability to create knowledge are seen as strategic assets (Senge, 1990) and because organisations are constantly learning (Nicolini and Mezner, 1995) they need to adopt systems which can generate and capture new knowledge effectively.

In DAFF, a KM System has not yet been officially implemented however; this does not negate the fact that there may currently be KM practices taking place. The issues highlighted in the previous section suggest potential problems in the following areas namely: the leadership of DAFF which may be linked to its structure, the current organisational culture, the extent of its IT infrastructure capability as well as the alignment of the business strategy to KM processes. In this section, the researcher further reviews the various problem areas to further unravel the situation.

Problem Area 1: DAFF's leadership

Since DAFF has a traditionally hierarchical and rule-bound organisational design it usually indicates that top management determines the type of organisational structure and assigns various levels of management to reinforce the corporate culture and policies. This implies a rather transactional leadership style which is considered advantageous for implementing organisational strategy. However, with the recent shift

toward a 'knowledge economy' which calls for a knowledge creating and sharing culture, a transactional leadership style may perhaps not be the most effective leadership style.

Traditional hierarchy usually causes isolation between peer groups due to procedures being highly formalised and rigid. And most often it is shown that hierarchies operate as bureaucracies that are characterised by the attempt to minimise most of the traits that characterise human beings and their interaction. Since bureaucracies ultimately destroy creativity, variation, innovation and perhaps even emotion, DAFF may be challenged with sharing and transferring innovative ideas freely. For example, in DAFF, directors (senior managers) are recognised 'specialist' managers such as economists, animal scientists, plant health specialists amongst others, who operate in very unique policy environments and as a consequence communication between directorates (horizontal communication), are rather limited. What this does is that it forces directorates to make decisions driven by internal knowledge (knowledge within the directorate) and not necessarily through consultation processes across internal boundaries (directorate boundaries) perhaps through collaborative technologies or a departmental 'knowledge' repository that could assist in the advancement of departmental goals. Furthermore, due to a lack of senior managers engagement in teamwork, DAFF is slow to finding solutions as the knowledge of comparable experiences are not being extracted and subsequently implemented. Teamwork could serve as a means to encourage directors' awareness of the operations in the entire department and thus provide directorates with more relevant tools to enhance their performance. Although bureaucracy allows for monitoring and evaluation to take place at various management levels giving immediate supervisors the ability to translate the mandate to those who have to carry out specific tasks, the disadvantage is that – due to poor horizontal and bottom-up communication – there is a tendency for silo mentality and the lack of knowledge, skills and innovation integration

which may be the current formula for retarding DAFF's ability to respond timeously to the needs of its clients.

This further highlights how KM is possibly affected by the type of organisational design which tends to dictate DAFF's leadership style to be transactional. If leadership could engage more frequently with the various levels in the Department and likewise more frequent engagements between senior management, DAFF's leadership could ensure a more open culture. This could mean that there is a need to change certain aspects of DAFF's organisational architecture which include the influence of leadership along with the organisational structure and ultimately its culture for successful KM to be realised.

Problem Area 2: Culture

As noted above, DAFF's culture is also tied in with its organisational design. It is understood that every organisation has a unique culture which stems from its beliefs and philosophy about how its affairs ought to be conducted (Storey, 2010). In DAFF, directorates tend to be rather traditionally individualistic where each employee has a role to play with formal systems and procedures for communication both horizontally and vertically. This seems to have created a tendency for employees to focus primarily on their own interests (securing their positions) as they exploit the Department to enhance their talents, abilities or concerns. DAFF also seems to have quite a closed culture which causes knowledge sharing across the various directorates to be limited and subsequent nonattendance of cross-functional teamwork has become a norm. Teamwork is often met with resistance as noted through observation by officials' unenthusiastic participation and wariness to share ideas, experiences and knowledge openly. Perhaps it could also be that there is a nature of distrust amongst senior managers or that they may be experiencing a period of teamwork fatigue or dissatisfaction with the recent

organisational re-structuring which nonetheless may have already detrimentally spread across the entire department. Most re-structuring exercises cause quite a stir in any organisation as the usual comforts of personnel is shaken. This could perhaps explain this even more evident behaviour as such drastic changes usually take time to stabilise.

On a different note but also related the DAFF rather impersonal culture and its bureaucratic management style, new ideas may not be heard from officials of lower ranks as they are not generally afforded the opportunity or encouraged to participate in more formal and relevant discussions. This may also be as a results of DAFF's tall hierarchical structure to entrench a hopelessness in any form of 'bottom-up' communication success, since with a tall hierarchical structure relevant information can get lost or ignored as it tries to find its way up the 'ladder' as a result of the abusive legitimate power at the higher levels. This essentially further embeds a notion of disregard from top management to acknowledge and value the inputs of frontline staff members. Also on the flip-side, frontline staff may not always be aware or understand certain decisions made by top management as the resultant changes may not be in line with what is happening at the front line where top managers plans have not taken into account the possible valuable contributions from lower level staff members.

Then, due to the current skills and knowledge already existing within DAFF not having been appropriately identified or given adequate recognition, employees may not be aware of the value and importance of their knowledge as a contribution toward a more efficient department. The result of this is that the opinion of KM to officials' could be that it is overrated and while its impact has not been fully revealed and therefore officials are not eager to explore and implement KM initiatives. Hence, there may be a need for an entire paradigm shift in DAFF's culture to ensure appropriate procedures to benefit from its knowledge assets.

Problem Area 3: Strategic Alignment

It has been well established that an organisation's strategy cannot be detached from information and communication technology (ICT). These have to be linked to ensure that strategies have business value and technological relevance (Erasmus, 2000). However, this is not the only link necessary for successful KM as KM goes beyond just ICT. To manage knowledge an organisation has to also understand its culture and would need various KM-specific competencies (Jones, 2000). In DAFF, the link between DAFF's organisational strategy and the current situation regarding how its knowledge is being managed is not clearly articulated. The only way KM will be possible in DAFF is through a clear understanding of its strategy and an appropriate KM strategy that will design its future based on using its knowledge.

Strategic alignment between external and internal domains which incorporates the classic open-system view of the organisation and strategy is essential for business success. As a government department, DAFF's main objective is to deliver quality service to the public and hence knowledge and Information Systems also need to be aligned accordingly. Currently the integration of all the outward facing (client-serving) processes of DAFF are not effective because it is only certain directorates that consistently catalogue and profile their client base and even though this is done for various reasons by these directorates, the information is not shared and hence not readily accessible to officials who could require this type of information. Different directorates therefore go about generating the same information in different formats which cause delays in the Department's ability to rapidly achieve its objectives. With the current administration's focus on performance, DAFF could achieve more than what it is currently through proper investigation into the existing systems and what they could achieve simultaneously to strengthen the Department's response to its mandate.

Problem Area 4: IT infrastructure

An appropriate IT infrastructure for KM should form an integral part of the KM strategy as it affects the ability to share knowledge and to communicate and support the participation of managers and employees in the organisation. In a modern organisational setting the core of any KM system is its IT infrastructure consisting of hardware, software, administrators and users configured into networks of varying complexity. Thus, the value of IT lies in the information carried by the technology and not in the technology itself. Enhancing technology should never be the goal; the goal should still be the organisational strategies and objectives. The technology should therefore only serve as a tool to help achieve the objectives. Shortcomings in any of these elements can result in sub-optimal system performance and incorrect matching of system components with each other or with the overall organisational strategy will further amplify the system deficiencies. It is therefore important that DAFF know the type of IT infrastructure that would be appropriate for their strategic contexts.

As it is DAFF appears to take on a utility view for its investments and resulting capabilities in IT which implies that expenditure on IT has primarily been a way to reduce costs through economies of scale and sharing. IT thus is a utility which provides an essential service that incurs administrative expenses where management prefers to minimise the expense of the service and maximise the return on assets. Because DAFF serves the public, it would appear that this view is acceptable since it is spending tax payer's money however, on the other hand it would be more appropriate if DAFF were to change its view from utility to dependant where infrastructure investment primarily responds to specific current strategies to allow for knowledge creation, innovation and transfer. This could possibly allow DAFF to ensure investments are derived from

business plans that specify or imply knowledge and IT needs where the outcome would be to balance cost and flexibility.

1.4 RESEARCH STATEMENT

Since KM is enabled by a combination of technical and social factors such as leadership, organisational culture, strategic alignment and IT infrastructure, amongst others (Du plessis, 2007), this dissertation aims to investigate the prevalence of KM practices in The Department of Agriculture, Forestry and Fisheries (DAFF) (focussing specifically on the Agricultural component of DAFF) to enable its delivery on its mandate by exploring DAFF's position in relation to these specific KM enablers.

1.5 RESEARCH OBJECTIVES

To determine DAFF's position in relation to KM enablers, this study is based on the following research objectives:

Objective 1:

- To determine leadership's support in driving KM processes.

Objective 2:

- To review the current organisational culture as an enabler to implementing KM.

Objective 3:

- To determine the extent of use and co-ordination of KM practices.

Objective 4:

- To review the KM infrastructure.

1.6 ASSUMPTIONS OF THE STUDY

The researcher assumes:

- That respondents understand the value of KM;
- That respondents are aware of DAFF's KIM strategy; and
- That the lag in the implementation of DAFF's KIM strategy would affect the willingness of respondents to participate in the study.

1.7 IMPORTANCE OF STUDY

There are numerous benefits that can be realised through proper KM in DAFF, however the benefits of this research within the above context would be:

- An understanding of the role of DAFF's leadership and culture that either limits or enhances the way in which knowledge is being managed.
- An account of KM utilisation within and between directorates which will highlight the preferred channels of information flow through the organisation.
- An understanding of the capability (or lack thereof) of the current KM infrastructure to collect, categorise, store and disseminate the various types of information and knowledge (in explicit form) that will drive infrastructural investment decisions.
- The overall result of the listed benefits would be a clearer understanding of where the opportunities and threats for KM in DAFF are for improved service delivery as it is fed into its strategy.

1.8 DELIMITATION OF STUDY

This study is delimited to:

- Participation of: (1) middle and senior management of the Agricultural component of the National Department of Agriculture, Forestry and Fisheries (2) those who have access to the e-mail facility (3) those located in Pretoria which includes offices in Arcadia as well as satellite offices in Silverton and Roodeplaat.
- Respondents perceptions of the leadership, culture, IT infrastructure as well as the use and co-ordination of KM in DAFF.
- Perceptions measured on a five-point Likert-type scale using a questionnaire designed specifically for the proposed study.

1.9 LIMITATIONS

Within a business or organisational context there are always constraints impacting on research efforts. In this study the following limitations had a marked influence on the outcome of the study.

- Both the researcher and the respondents had limited time to allocate to their respective roles within this study. The former was pressed to complete the research study amidst academic, personal and career time demands while the latter traded off completion of the questionnaire against career related deliverables.
- As this is not a sponsored initiative, the costs have been limited to the individual researcher's budget. The hosting organisation covered the cost of the personnel time and network utilisation.

- Due to the bulk of the respondents being employed in chief directorates outside of the researcher's immediate sphere of influence, access to them has been limited to electronic means.
- Response rates were expected to be typical for self-administered questionnaires. The researcher was not in a position to influence the relative priority attached to the completion of the questionnaire. Short of personal appeals and well-timed reminders there has not been much else that the researcher could have done to ensure that the issued questionnaires were completed to the required quality and returned within the required timeframe.
- The study specifically excluded respondents without access to electronic resources such as the intranet and email. This was intended to save on the cost required to either personally hand-over the questionnaire or sending it via post. Furthermore, a significant portion of the IMS is operated on DAFF's IT infrastructure and hence taking this approach is deemed to yield more representative data.

1.10 OUTLINE OF REPORT

The study is presented in six chapters. Chapter 1 includes the introduction to the study of which the following items were briefly deliberated on: the background of the problem, a review of the problem under the four themes, i.e., leadership, culture, strategic alignment and IT infrastructure, followed by the research statement with objectives as well as the assumptions, the importance, delimitations and limitations of the study,

In Chapter 2 an in depth analysis of the issues related to the study are provided by means of management theories and models appropriate for gaining clarity on the research problem;

In Chapter 3 the relevant literature relating to successful KM initiative implementation is reviewed;

In Chapter 4 the research approach is elaborated on;

Chapter 5 deals with the analysis and findings of the research based on the data and research objectives and

Chapter 6 provides conclusions on the captured interactions, with recommendations for further work.

1.11 SUMMARY

This Chapter introduced the study by highlighting the research problem, the context upon which the investigation would be conducted on as well as the objectives of the study. It further drew attention to the assumptions and importance of the study as well as its limitations and delimitations. A brief outline of the study is also provided.

The next chapter presents further analysis of the research problem through the use of various management theories and models to further unravel the research problem to be investigated.

CHAPTER 2

2. PROBLEM ANALYSIS

2.1 INTRODUCTION

In the previous chapter a brief background of the issues relating to KM in DAFF was presented which included issues relating to leadership, culture, strategic alignment and IT infrastructure. This Chapter will investigate further these issues through the use of management theories and models appropriate for gaining clarity on the research problem. This chapter will start with a look at the leadership in DAFF followed by its organisational culture, the alignment of its KM strategy to business strategy and finally analyse DAFF's IT infrastructure as enablers for KM implementation.

2.2 AN ANALYSIS OF THE LEADERSHIP IN DAFF

The leader of an organisation plays a determining role in the way it manages knowledge. Over the years there have been many definitions, theories and interpretations of leadership but in the context of this study it would be the ability of top management to influence KM champions and sponsors to act as evangelists and role models to achieve the agreed KM programme (Du Plessis, 2007). This would require that leaders share a vision of KM and provide the necessary programmes with ongoing support.

The most often heard of leadership theories on transformational leadership were strongly influenced by James McGregor Burns in 1978. Burns contrasted transforming leadership with transacting leadership by highlighting the different ways in which it appeals to followers. Transacting leadership motivates followers by appealing to their self-interests, whereas transforming leadership '*appeals to the moral values of followers*

in an attempt to raise their consciousness about ethical issues and to mobilise their energy and resources to reform institutions' (Yukl, 2002:241). He also described a third form of leadership influence based on legitimate authority where there is emphasis on respect for rules and tradition which is commonly identified with governments' bureaucratic nature and likewise fits the leadership influence description of DAFF.

Nonetheless, the leadership style of DAFF will be analysed using Bass and Avolio's (1994 cited by Amos, 2006) leadership theory which describes seven leadership styles as presented in their *Full Range Development Theory* shown in Figure 2.1 below. They illustrated leadership styles as either transactional or transformational and showed the extent to which each were passive, active, effective or ineffective.

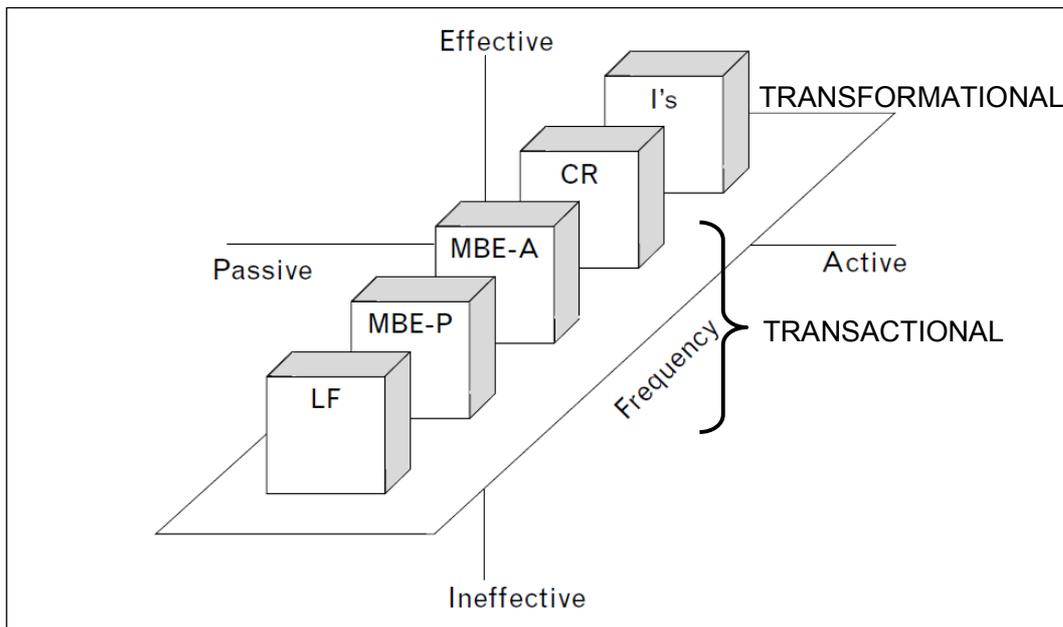


Figure 2.1 Full Range Leadership Development Theory (adapted from Bass and Avolio, 1994:5 cited by Amos, 2006:363).

Briefly, transformational leadership involves idealised influence, inspirational motivation, individualised consideration and intellectual stimulation (also referred to as the four I's). Here followers identify with the charismatic leaders' aspirations and want to emulate their leaders. If the leadership is indeed transformational, its charisma or idealised influence is envisioning, confident, and sets high standards for emulation. Its inspirational motivation provides followers with challenges and meaning for engaging in shared goals and undertakings. Its intellectual stimulation helps followers to question assumptions and to generate more creative solutions to problems and its individualised consideration treats each follower as an individual and provides coaching, mentoring and growth opportunities (Bass, 1990).

Transactional leadership on the other hand involves contingent reward (CR) and management-by-exception (MBE). CR is an active and effective component of leadership where leaders compensate or reward followers appropriately for meeting agreed-upon objectives. MBE-P (passive) occurs where the leader intervenes in the work of followers only once mistakes have occurred and when the standards have not been met whereas MBE-A (active) involves the leader actively monitoring and seeking out deviations and mistakes in the work of followers in an attempt to avoid mistakes.

Bass and Avolio also highlight the laissez faire (LF) style of leadership which is the utmost form of democratic guidance. This leader functions as a member of the group rather than the leader and hence one could question if any leadership style does indeed exist here at all.

With the overview of the leadership styles presented above it is certain that with DAFF being a government department, it is fitting to identify its leadership style as

transactional. Thus officials are motivated by leaderships' promises, praises and rewards and on the flip side corrected by negative feedback, reproof, threats or disciplinary action, i.e. leaders react to whether their subordinates carry out what they have 'transacted' to do.

By its self-serving nature transactional leadership may stifle creativity, lateral thinking and initiative – all critical elements of knowledge creation. Thus because the assumption underlying the study of leadership is that leaders affect organisational actions, the transactional leadership influence is encouraged throughout the Department.

Transactional leadership is most prevalent in the lower levels in DAFF where employees are generally motivated by lower order needs (physiological & security needs) according to Maslow's Hierarchy of Needs (Figure 2.2) (Carrell, Jennings and Heavrin, 1997). At the higher level where individuals generally have higher education levels, there is a greater propensity toward the higher order needs such as those for self-esteem and self-actualisation. However, DAFF's organisational structure and processes literally force managers and employees at all levels to operate in a transactional fashion. Not only can this hamper the growth of KM but it could lead to personal tension within individuals who have the capacity and need to self-actualise. Often other outlets are sought for satisfying their motivational needs. Hence not only is the potential for tapping this energy lost but overall performance might decline due to the resultant distraction.

This study sought to determine the extent of transactional leadership in DAFF by probing officials with statements of leadership closer related to that of a transformational leader in an attempt to gain an understanding of the extent to which KM is possible under the current leadership.

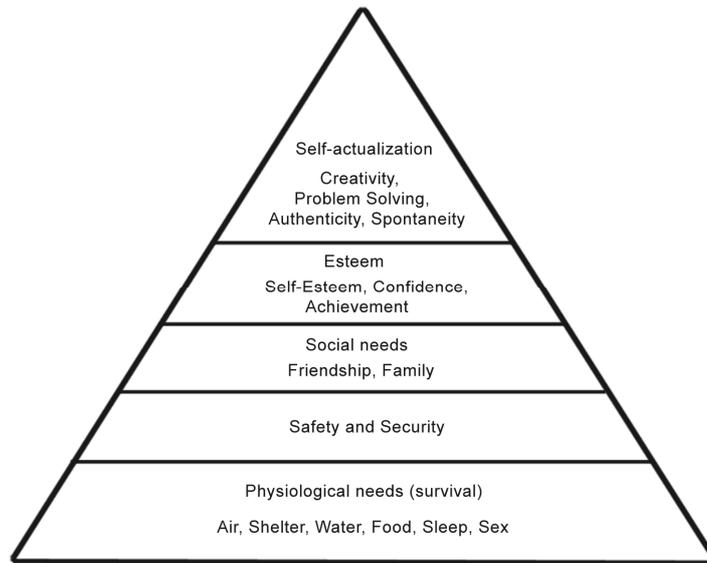


Figure 2.2. Maslow's Hierarchy of needs (Carrell, 1997).

2.3 AN ANALYSIS OF DAFF'S CULTURE

Every company has a unique organisational culture which stems from its beliefs and philosophy about how its affairs ought to be conducted (Storey, 2010). From the literature it is clear that KM is not just information management and organisations are not merely information processing machines but an entity that creates knowledge through action and interaction (Nonaka, Toyama & Konno, 2000). Nonaka and Takeuchi (1995 cited by Ray, 2010: 23) proposed a model of knowledge creation that consists of three elements, i.e. SECI, *ba* and knowledge assets, which have to interact with each other to form the knowledge spiral that creates and transforms knowledge (Nonaka, *et al.*, 2000) as depicted in Figure 2.3 below.

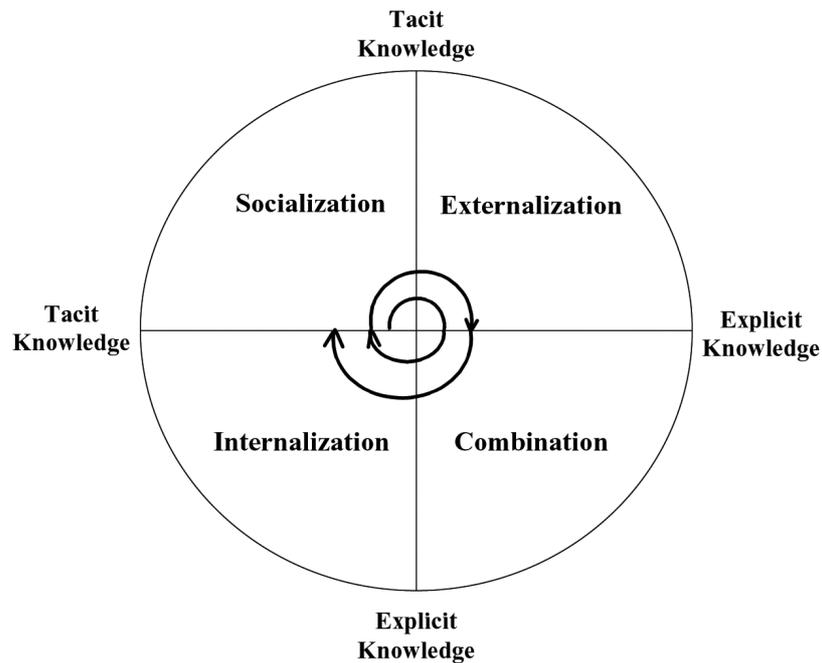


Figure 2.3 Knowledge creation framework (Nonaka and Takeuchi, 1995:72).

SECI is a spiral process that starts with the creative individual and spirals out to enroll a wider community of interaction (Nonaka and Takeuchi, 1995:72). Fundamental to the way Japanese companies manage knowledge is their company-as-family workplace *ba* culture where the autonomy of individual thoughts and actions is influenced by obligation to the collective. In this way new ideas can be captured directly from one person to another involving the four modes of knowledge conversion. The organisation is thus viewed as an entity that creates knowledge continuously through interaction with the environment as well as organisational member interaction with each other (Nonaka, *et al.*, 2000). Each of the four modes of knowledge creation can be described as follows:

Socialisation is the process of acquiring knowledge on shared experiences, i.e. by spending time with someone (same environment), knowledge is distributed from one person to another. This is usually as a result of mentorship relationships, communities of practice and networking among employees within the organisation or with clients or

contractors or consultants (service providers). In DAFF the socialisation processes are limited to networking with clients, contractors or consultants. Mentoring relationships are not positively encouraged.

Externalisation is the process of expressing tacit knowledge, making it explicit, which thus allows it to be shared further forming a basis for new knowledge. Nonaka, *et al.*, (2000) uses concept creation in new product development as an example of this conversion process and suggests the sequential use of metaphor, analogy and model. Many employees in DAFF do not document their know-how and hence presents a threat due to the potential loss of this tacit knowing when the officials resigns or retires.

Combination is the process of producing more complex and systematic sets of explicit knowledge from the already explicit knowledge such that it is then distributed among members of the organisation in a manner that it can be understood, i.e. large-scale databases that facilitate information flow, which is then used to develop new knowledge collated from many sources. DAFF's intranet only holds documents to support officials in administrative activities and holds no technical repository for core knowledge creation and sharing.

Internalisation is the process of absorbing that knowledge which has been made explicit and converting it into tacit knowledge within the individual, i.e. enriching their tacit knowledge base. This can happen in the form of simulations or experiments or even through reading and reflecting on organisational documents. Access to documents are not made readily available and hence is up to each official to search for documents to assist toward effective performance which may not be appropriately validated.

Furthermore, in a more diverse and self-serving setting such as DAFF, the type of philosophy suggested for *ba* to contribute toward the management of knowledge may not work.

It is only when a culture is observable that its usefulness can be realised. Hence in diagnosing effectively and understanding the schema of culture types in DAFF, otherwise unexplained behaviour patterns could be explained. The main forces that drive organisational culture can be depicted as a cultural web shown in figure 2.4 below (Johnson, 1992).

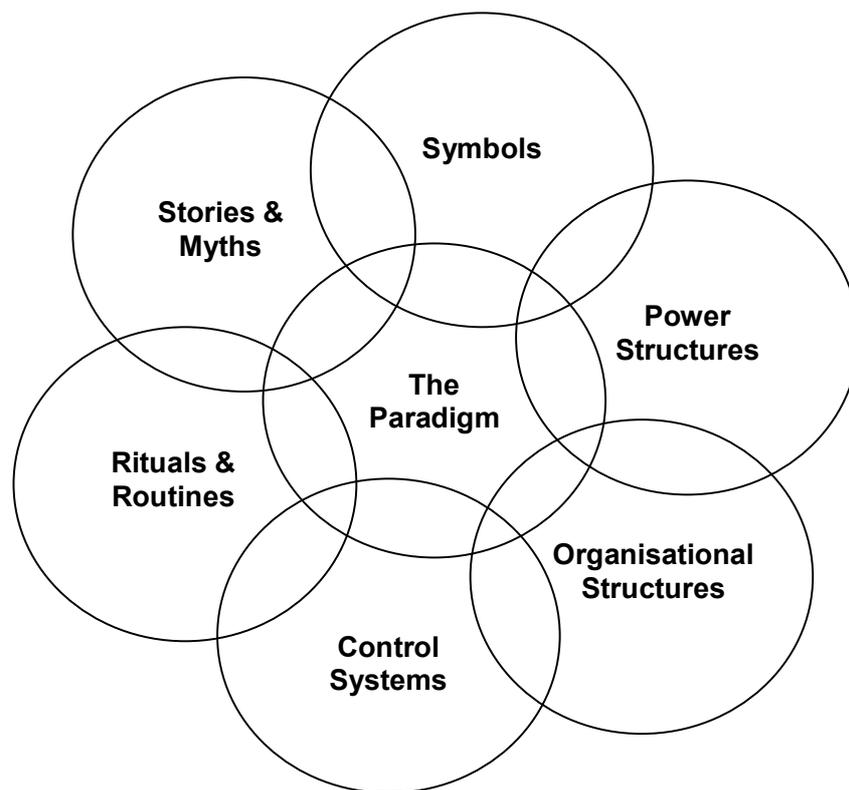


Figure 2.4 The cultural web (Johnson, 1992).

Within DAFF the structural and control aspects are dominant which leads to the transactional leadership style and its consequent impact on KM as described in section 2.2 above. The diverse nature of the organisation also gives rise to diverse rituals and routines which are not conducive to a unifying culture such as the Japanese *ba* in which KM can thrive. Powerful symbols such as the portraits of the current administration adorn office walls and serve as constant reminders of who is in power and what their priorities are – again not fertile ground for an empowering culture which allows unconstrained growth of knowledge through innovation. Then rumours of the rift between the minister and her deputy keep surfacing within the organisational grapevine and occasionally in the press. Their opposing political ideology and the controversial issues (agricultural land ownership, restitution, empowerment, GMO's, etc.) within DAFF's arena give credence to these myths and stories. These could have a divisive effect on the employee body along political and racial lines. Initiatives emanating from the minister's office are frequently regarded with scepticism and mistrust by either camp as the true motive for these are often linked to the rumoured rivalry. The net effect of all the above factors on the organisational culture is a decline in conditions conducive to KM.

Therefore in order to understand and diagnose DAFF's culture, Cameron and Quinn's (2006 cited by Suppiah and Sandhu, 2011) Competing Values Framework (CVF) will be used. The fundamental premise of CVF is that organisations can typically be diagnosed as having any one or a combination of four culture types: clan, adhocracy, market and hierarchy. There is sufficient literature (Suppiah and Sandhu, 2011) to allow the researcher to suggest that clan and adhocracy cultures facilitate whereas market and hierarchy cultures impede knowledge sharing behaviour. A brief description of these culture types are as follows:

Clan culture: describes a usually friendly place to work where people share a lot about themselves. The culture is expressed in teamwork, employee involvement programmes, high employee commitment to the organisation and co-workers, and high corporate commitment to employees;

Adhocracy culture: describes a dynamic, entrepreneurial and creative workplace where employees are empowered. Risk taking is encouraged and effective leadership is visionary, innovative and risk-orientated.

Market culture: describes organisations that have a major focus to conduct transactions with other stakeholders to create competitive advantage. Competitiveness and productivity basically forms the foundation of market culture driven organisations where winning is everything. Here knowledge becomes a proxy for power and this destabilises knowledge sharing.

Hierarchy culture: describes an organisation characterised by formalised and multiple hierarchical structures where standardised procedures govern people's actions and there is minimal or no discretionary powers vested in employees. Emphasis is on rule reinforcement and the long-term concerns of the organisation are stability and predictability. The hierarchy culture nurtures the use of standard operating procedures and best practices, and has multiple layers of vertical and horizontal silos operating relatively in isolation.

Furthermore, as a more hierarchically and vertically designed body, there is a tendency for top managers' need for control over the information flow, and the desire to restrict access to critical information by lower-level employees.

The researcher thus identified DAFF's culture to be strongly related to that of hierarchy. This is a major limiting factor to driving successful KM in DAFF. The structures and power relationships act as barriers to knowledge sharing. It was therefore sought to determine the factors that could enable a knowledge culture in DAFF by investigating the various cultural aspects that influence knowledge management such as whether information is currently being shared openly and trustingly. The researcher would also seek to uncover whether any measures have been developed to create and develop a knowledge culture.

2.4 THE LINK BETWEEN DAFF'S KIM STRATEGY AND ITS BUSINESS STRATEGY

An organisation's strategy drives and is driven by its Information Technology (IT) strategy according to the strategic alignment model contained in Figure 2.5 below as proposed by Henderson and Venkatraman (1989). For the purposes of this study the IT strategy is regarded as a significant component of KM strategy.

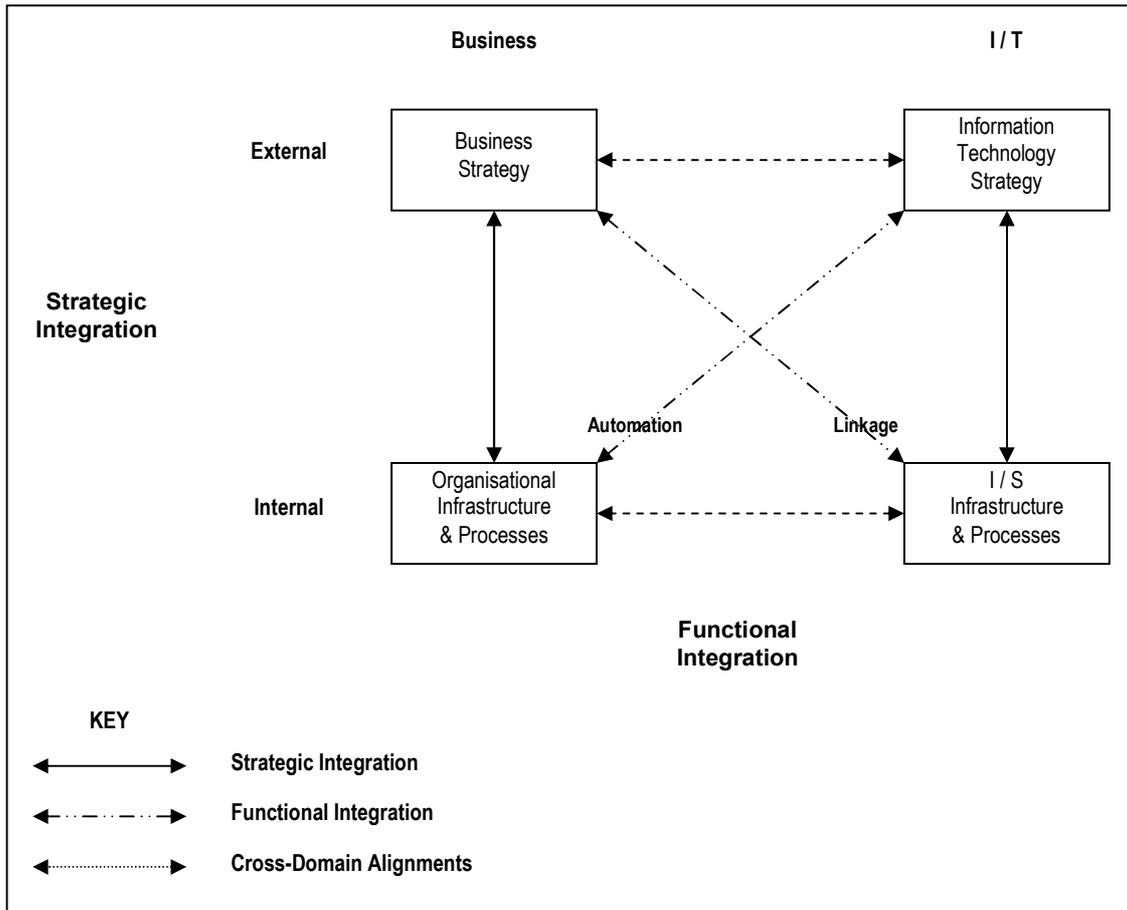


Figure 2.5. Strategic Alignment Model (Henderson and Venkatraman (1989)).

The business strategy is in addition strongly influenced by the organisational culture (paradigm) as postulated by Johnson (1992) in figure 2.6 below. As can be seen the paradigm within an organisation acts as a filter or lens through which a strategy is developed and ultimately realised.

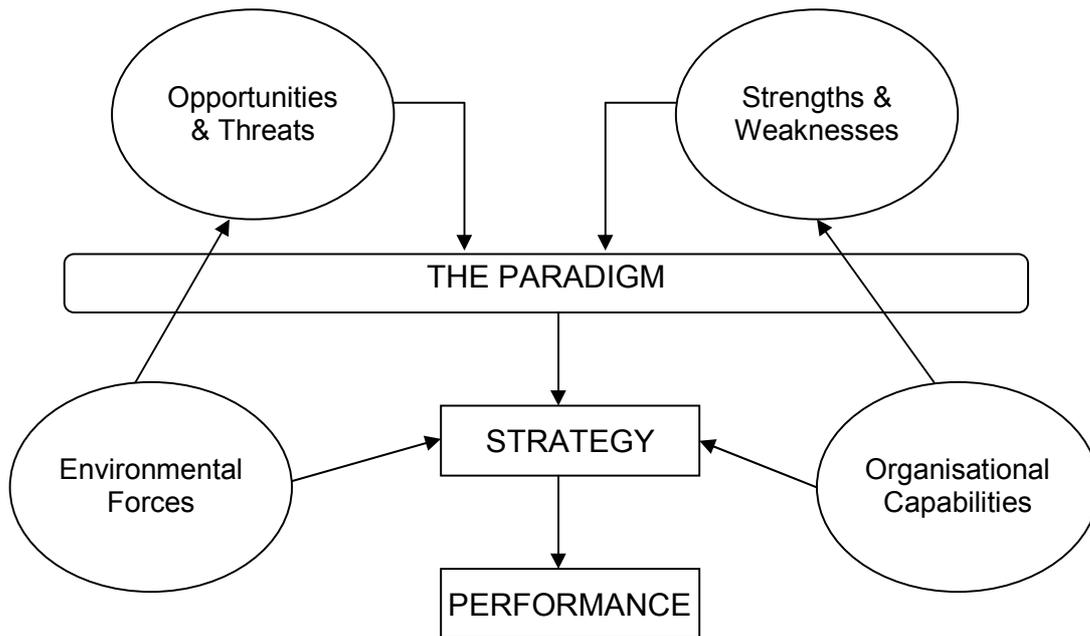


Figure 2.6. Strategy development – a cultural perspective (Johnson, 1992).

By implication the nature of the filter can either enhance or impede the success of the strategy.

DAFF's culture as described in section 2.3 above may not encompass all the elements to complement complete KM. As a consequence the resultant business strategy will reflect this and ultimately impact on the quality of the IT strategy which is a significant component of the KM strategy. Pictorially this interplay can be presented in figure 2.7 which is an adaptation of the 3 models discussed in Chapter 2.

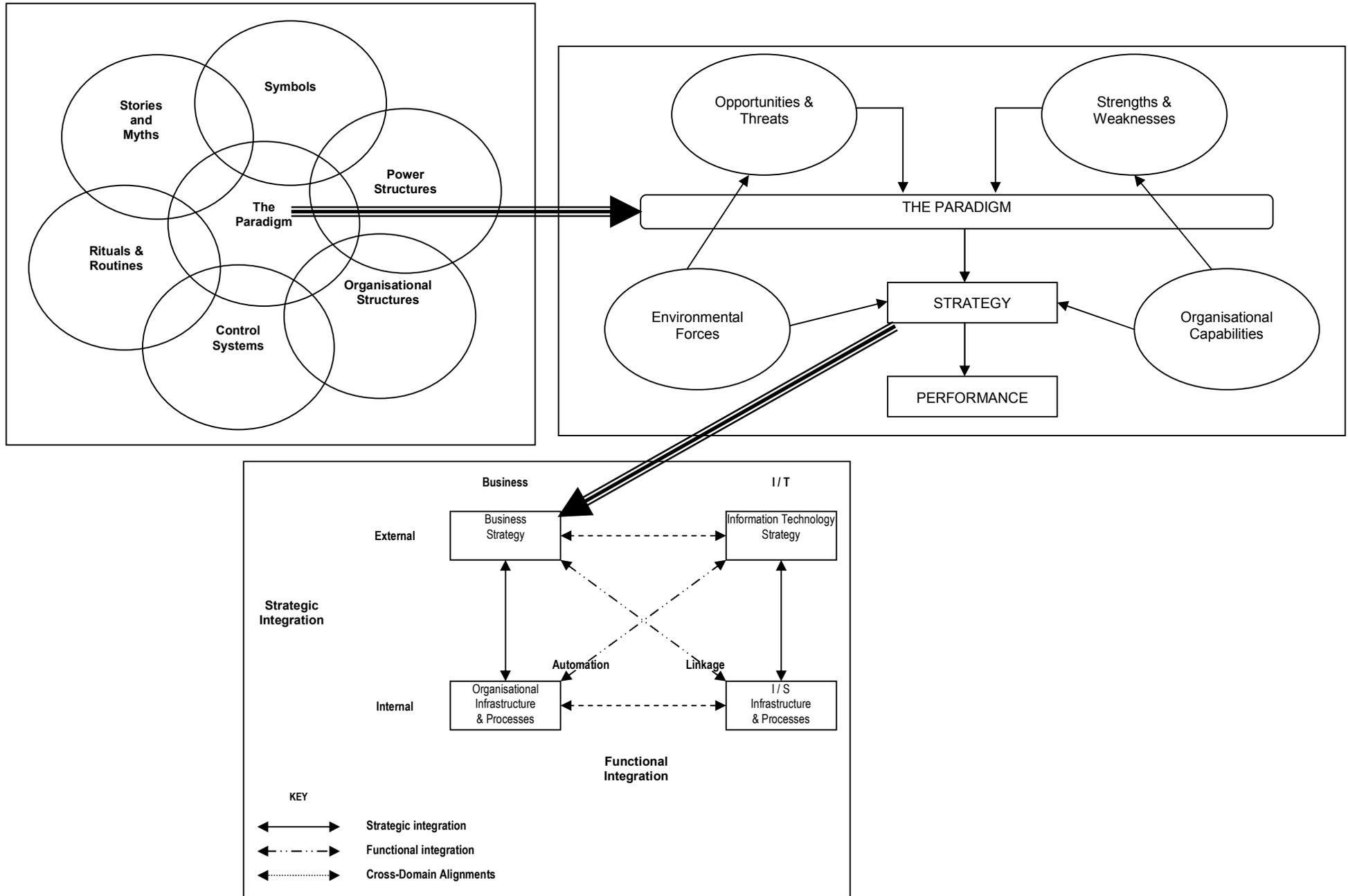


Figure 2.7. The interaction of culture (paradigm), business strategy and KM strategy.

It is thus of paramount importance that culture, strategy and KM are regarded as having interdependencies which should be accounted for in both the strategy formulation and re-alignment processes that are required with changes in the environment.

Furthermore, Schultz and Jobe (2001) described four categories of KM strategies as:

- **Codification:** the conversion of tacit knowledge into explicit knowledge with the aim of assisting with knowledge flows;
- **Tacit:** maintaining knowledge as tacit to impede knowledge flows to competitors;
- **Focussed:** knowledge flows are regulated by managing the extent of codification to be identical to the concentration and regulation of their knowledge by managing the overall level of codification of knowledge without special consideration of the capabilities of specific forms of codification; and
- **Unfocussed:** knowledge flows are regulated by controlling the overall level of codification of knowledge without special consideration of the capabilities of specific forms of codification.

It appears that DAFF's current KIM strategy falls into the codification category as its focus at this stage is mainly on the implementation of its EDMS as mentioned in the Section: Problem in Context in the Chapter 1.

2.5 IT INFRASTRUCTURE

According to a study conducted by Davenport, *et al.*, (1998 cited by Smith, Mills & Dion 2010:30), '*knowledge projects are more likely to succeed in those firms with effective technical and organisational infrastructure*'.

Smith, *et al.*, (2010) found that knowledge infrastructure capability (which includes technology) has a significant impact on knowledge process capability as illustrated by hypothesis 6 (H6) in their model in figure 2.9 below.

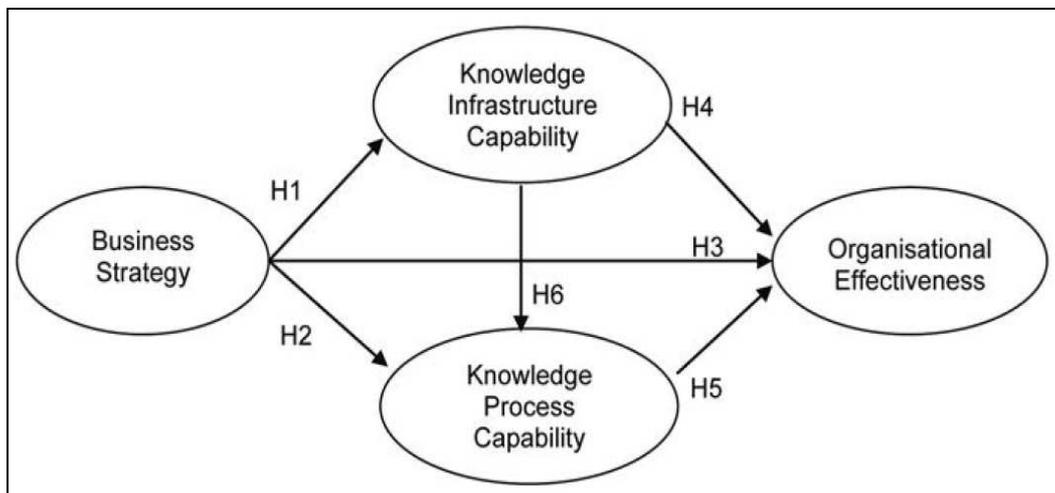


Figure 2.9. Research model (Smith, *et al.*, 2010).

It should be noted that the model regards organisational culture and structure – the shortcomings of both having been explored in section 2.3 above – as being part of the knowledge infrastructure capability. This highlights the salient feature of infrastructure as being co-dependant on these aspects of the organisation to function well. Thus any deficiencies in these systems such as incompatible structures and resistance to change will impact negatively on the IT infrastructure's ability to deliver on its intended purpose

as a KM enabler. The general consensus emerging from the Problem Review presented in Chapter 1 is that DAFF's IT infrastructure is not supportive of KM processes and in certain instances it even acts as an impediment. Hence the researcher will attempt to determine the current IT infrastructure status in DAFF as an essential enabler of KM.

2.6 SUMMARY

This Chapter analysed the research problem related to the research objectives of the study through the use of business models, theories and frameworks suggested in the management literature. The Full Range Leadership Development Theory developed by Bass and Avolio (1994) was used to analyse the leadership style of DAFF. This culture was identified using a range of prominent culture types suggested by Cameron and Quinn's (2006) Competing Values Framework (CVF). Strategic Alignment was analysed using the Strategic Alignment Model developed by Henderson and Venkatraman (1989) as well as the dominant KM strategies used by Multi-National Corporations (MNCs) which includes codification, tacit, focussed and unfocussed KM Strategies (Schultz and Jobe, 2001). Lastly, the DAFF's IT infrastructure was analysed using a research model developed by Smith, *et al.*, (2010) that shows the link of knowledge infrastructure capability and KM process capability to the business strategy and collectively its positive impact on organisational effectiveness.

CHAPTER 3

3. LITERATURE REVIEW

3.1 INTRODUCTION

Knowledge and its management has become a popular theme in management and business for which present times the idea of a 'knowledge economy' is being promoted. In this knowledge economy the 'knowledge' of an organisation is its competitive advantage where it plays a role in productivity and acts as the main driver of growth, wealth creation and employment (Storey and Barnett, 2000). The knowledge of the organisation has therefore become the dominant resource for creating a 'knowledge economy' characterised by massive investments in knowledge creation and distribution efforts throughout all levels of the economy. Thus if one is to describe a 'knowledge economy' it can best be expressed as an economy that is being more and more directly rooted in the production, distribution and use of knowledge than ever before.

This Chapter highlights the rise of the Knowledge Economy, emphasising the importance of knowledge and its management as it has gained the interest of many organisations and governments and will then further continue into reviewing the various key success factors for proper KM implementation.

3.2 THE KNOWLEDGE ECONOMY

'The knowledge economy is an intuitively appealing concept, though difficult to define in neat operational terms, and measure and explain in a convincing way. Nonetheless, it seems real when one looks at the evidence of the emergence of the knowledge economy' (Wurzburg, 1999).

In his statement Wurzburg basically states that even though we can't explain everything related to the knowledge economy it doesn't mean that it isn't real. He goes further to say that enterprises, governments and society would be put at risk if they ignored it or failed to understand its implications for future action. This then sets the foundation for this study as it will be realised that the knowledge economy is here to stay and that DAFF could achieve its full potential through consideration for KM implementation.

Storey and Barnett (2000:222) cited statements by various scholars of KM literature that highlights the overwhelmingly optimistic writings and claims about the value of knowledge such as that of Thomas Stewart (1991, 1997) when he stated that: *'.....knowledge has become the most important factor in economic life. It is the chief ingredient of what we buy and sell, the raw material with which we work. Intellectual capital – not natural resources, machinery or even financial capital – has become the one indispensable asset of corporations'*. Other scholars cited by Storey and Barnett (2000:222) claim that KM *'...is becoming a core competence that companies must develop in order to succeed in tomorrow's dynamic global economy'* (Skyrme and Amidon, 1998) and that *'the ever-increasing importance of knowledge in contemporary society calls for a shift in our thinking'* (Nonaka, 1999:14).

In light of these statements there is therefore no reason to doubt that we have entered a new age, this new economy known as, *'....the knowledge economy'* (Storey and Barnett, 2000:222).

The emergence of this knowledge economy has since instigated serious actions amongst businesses. This is so since changes in the value of knowledge was thought to have potentially enormous implications for what constituted wealth and therefore who

owned and controlled it. Hence already as early the 1990's (Wurzberg,1998) it was shown that enterprises have already gone ahead with changes in their business strategies, structure and behaviour to suit the realities of the knowledge economy Evidence includes succession planning; more systematic management of intellectual property (patents and copyrights); assessments of skills and competencies of workers; and technology-assisted communication links that aimed to improve feedback and communication across operating divisions and across hierarchical boundaries. Besides this there has also been an effort to identify these changes in business strategies through the use of enterprise and establishment surveys for which it broadly revealed two strategies to have been implemented including: (1) new forms of work organisation to better exploit technology and (2) more attention to investing in and managing intangible assets – particularly those linked to technology and human resources.

Today though, the importance of KM is often not properly understood in which case top level managers are implicated as uncommitted, however research shows that it is more a case of these managers rather wanting to be able to measure their considerable investments in a manner which is acceptable to the financial and investment community than it is that they do not have an interest to implement KM initiatives. For some knowledge or intellectual assets have been regarded as too 'noisy' – not comparable or reliable and therefore considered as having limited value, however, it was Joseph Stiglitz, who at the Symposium on Financial Accounting and Reporting of Intangible Assets in 1996 cited by Wurzberg (1999:42) attempted to change this view when he stated that '*simply because data is 'noisy' does not mean that it should not be used...the fact that we are uncertain about how to value some asset, does not mean that we should value it at zero*'. Therefore since knowledge is becoming such an important aspect for

the economy many researchers have started to and still are motivated to standardise its value. The next section will open up the idea of what KM offers the organisation.

3.3 THE KNOWLEDGE CONCEPT

Knowledge, as Lenard and Swap (2004:157) described, is '*...the 'stuff' that produces that mysterious quality, good judgement*' for which they gave it the term '*deep smarts*'. In a knowledge economy, it is the '*deep smarts*' that must be managed to ensure an organisation is successful and achieves higher profits over competitors. It is the '*deep smarts*' that must be harvested from individuals who hold this unexplained and profound intelligence and it is also the '*deep smarts*' that individuals in the organisation collectively possess that essentially results in an organisation's prosperity.

Therefore from the above emphasis on the importance of knowledge it is understood when it is described as the organisation's '*knowledge assets*' (Nonaka, Toyama & Konno, 2000:36) or its '*intellectual capital*' (Du Plessis, 2007:21; Andriessen, 2004:239) or even the organisation's '*skills*' and '*know-how*' (Grant, 2008:131). It has therefore become clear to many organisations that the knowledge it holds has surpassed even its tangible assets/resources such as infrastructure and financial capital in the hierarchy of significance.

What we observe here is that over the years organisations have come to realise the beneficial potential of this so called intangible resources and have subsequently embarked on various initiatives to try and manage it. Hence, it would be appropriate at this stage to investigate what is meant by this term 'knowledge' before embarking on the journey of how best to manage it in an organisation.

3.4 DEFINING KNOWLEDGE

Knowledge has been defined differently by various authors. The classical definition of knowledge is '*justified true belief*' (Kalkan, 2008:391) whereas Becerra-Fernandez, Gonzalez and Sabherwal (2004:13) followed the link between data, information and knowledge by indicating that knowledge would refer to information that enabled action and decisions. Then, according to Davenport and Prusak (1998:5) knowledge is '*...a fluid mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information*', and Du Plessis (2007:21) defined it as '*...any relevant intellectual capital information, learning, and personal perspective that stimulates, contributes to, or result in greater understanding, deliberate action, new behaviours, better decision-making, and further learning.*'

What is noted here is that knowledge is associated with experience, skills, aptitude and values and in an organisation it enables employees to perform their work. It is clear that knowledge is more than just information and although the vast majority of KM experts stress the importance of knowledge processes and investing in people's capacity for creating new knowledge, there remains the misunderstanding in some corporate leaders who instead invest heavily in the information technology (IT) aspects of KM and virtually ignore the advice of these experts. This tendency reflects the fact that information has become increasingly viewed in the business world as being synonymous with knowledge. In this study knowledge is rather distinguished from information by associating it with applied information and viewing it as synonymous with 'know-how' and expertise.

3.5 KNOWLEDGE FORMATS

Polanyi (1966 cited by Tsoukas, 2003) brought into discussion a distinction between tacit and explicit knowledge as two interwoven dimensions of knowledge. This distinction was taken up in the field of management and has been recognised by various authors (Nonaka, *et al.*, 2000; Bernstein, 1999; Osterloh and Frey 2000, Kreiner, 2002).

3.5.1 TACIT KNOWLEDGE

Tacit knowledge (personal knowledge) can be described as the '*unspoken and hidden*' knowledge that exists inside people (Kalkan, 2008:391). It is the knowledge which cannot be '*purchased on the open market*' (Lenard and Swap, 2004:157) as it is the 'skills' and 'know-how' that is intrinsic to each individual which is difficult to transfer. It is part of 'common sense' or 'local' knowledge and consists of mental models and experiences of individuals (Pretorius and Steyn, 2005:41). Tacit knowledge is the type of knowledge that reigns during learning and innovation processes and cannot be learned with a 'rule book' but instead through direct experiences (Mercer, Leschine, Drew, Giffith, & Nyerges, 2005:130).

3.5.2 EXPLICIT KNOWLEDGE

Explicit knowledge (codified knowledge) is described as the ordering of data and information according to well-defined, formalised procedures or rules (Mecer, *et al.*, 2005). It can be well articulated, communicated in formal and systematic languages or codes, and set down in written documents (Nonaka, *et al.*, 2000).

Bartholomew (2008) uses the picture of an iceberg to describe the differences in the types of knowledge using a three level distinction: explicit knowledge being the top of the iceberg, conscious tacit knowledge in the middle submerged and unconscious tacit

knowledge at the base of the iceberg. In his picture of the iceberg it is evident that none of the three forms of knowledge can exist without the others.

This interconnection is also described by Polanyi (1966 cited by Tsoukas, 2003:108) as he explains that tacit knowledge should not be conceived as in opposition to explicit knowledge but instead that it is 'simply its other side'. Bollinger and Smith (2001) defined knowledge on an individual level as '*the interpretation of information based on personal experiences, skills and competencies*' – a definition which appears to combine the explicit (information) with the tacit (the base-line dependent process); however also describing knowledge as a process rather than a tradable commodity.

3.5.3 MISUNDERSTANDING TACIT KNOWLEDGE

Tacit knowledge most often has been misunderstood and subsequently neglected. As a result knowledge in the organisation and its relation to individual skills and social contexts has been inadequately comprehended. Tsoukas (2003:108-109) asserts that the interpretation of tacit knowledge by Nonaka and Takeuchi that tacit knowledge could be converted to explicit knowledge and vice versa (which has been readily adopted in management studies) is not a proper version of the concept first described by Polanyi since in their determination to describe tacit knowledge, Polanyi and Prosch (1975:44 cited by Tsoukas, 2003:109) emphasised that '*all knowing involves 'skilful' action and that the knower necessarily participates in all acts of understanding*'. Hence, there is no such thing as objective knowledge and to say that tacit knowledge can be made explicit (independent of human action) is therefore incorrect. Even the most theoretical form of knowledge cannot be a completely formalised system as it is grounded on personal judgements and for its application it requires skills, '*a personal coefficient*' (Polanyi, 1962:17 cited by Tsoukas, 2003:108).

Because of this misunderstanding, knowledge in the organisation is therefore at risk of being lost. The tacit knowledge of employees may not be maximally harvested as knowledge leaders may not quite know how to appropriately do this due to their focus being mainly on converting tacit knowledge into explicit knowledge and managing the explicit knowledge (in the hope to better measure or market intangible assets to shareholders) through the use of IT, where information management takes precedence over the skill and know-how of the knowledge held in the heads of the employees.

Tsoukas (2003) advised that although tacit knowledge may be indescribable, the skilled performances in which one is involved can still be articulated. He suggests instructive forms of talk as a means to re-orientate ourselves to how we relate to others and the world around us, thus enabling us to talk and act differently and concludes that: '*Tacit knowledge cannot be captured, translated or converted but only displayed, manifested in what we do. New knowledge comes about not when the tacit becomes explicit but when our skilled performance – our praxis – is punctuated in new ways through social interaction.*' (Tsoukas, 2003:123).

3.6 ORGANISATIONAL KNOWLEDGE

As the concept of knowledge has been uncovered in the previous sections, this section will focus on how knowledge can be classified as organisational knowledge. Tsoukas and Vladimirou (2001:87) first defined knowledge as '*the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory or both*' and then went on to define organisational knowledge as '*..... the capability members of an organisation have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalisations whose application depends on historically evolved collective*

understandings'. Critical to the success of an organisation is the capability of making knowledge available to others in the organisation. The way in which this knowledge is shared, created or developed is what has brought about the concept of KM.

3.7 MANAGING KNOWLEDGE

Allee (2002 cited by Firestone and Mc Elroy, 2003:xxi) stated that: '*How you define knowledge determines how you manage it*' and hence in this study KM in the organisation addresses the competence to identify, capture, apply and utilise the knowledge available to the organisation for corporate and competitive advantage (Dence, 2010). Many organisations are increasingly becoming aware that the knowledge it holds has transcended to being their most valuable asset, with the potential to create differentiation in the marketplace. However, with so many different perspectives available about knowledge and its management coming from different discipline areas, it has been quite difficult to reduce it to its basics.

Dence (2010) summarised KM challenges into the following three aspects: firstly, the challenge of managing explicit information and processes; secondly, the challenge of managing people and the environment in which they work and thirdly, the challenge of bringing these together so that tacit knowledge is exchanged more naturally and systematically and is thus more widely available to key personnel in the organisation.

In Grant's (1996) view of KM, knowledge resides with an individual and the primary role of the organisation is to apply and integrate the knowledge of the knowledge workers. It appears that Grant (1996) captures the challenges as Dence (2010) described above by focussing on the 'knower'. He further agrees with Polanyi's view of tacit knowledge stating that '*tacit knowledge is not easily transferable between people as it cannot be*

codified and is only observable when it is applied and that acquisition is through learning by doing and hence its transfer is slow, costly and uncertain' (Grant, 2008:160). He also distinguishes tacit knowledge from explicit knowledge and explains how important this is for the distribution of decision-making authorities in the organisation by stating that *'if the knowledge relevant to decisions is explicit, it can be easily transferred and assembled in one place, hence permitting centralised decision making and if knowledge is primarily tacit, it cannot be transferred and decision making needs to be located among the people where the knowledge lies.'* (Grant, 2008:160). What this essentially means is that knowledge workers are the ones who should be making decisions and implies this knowledge to be at any level within the organisation.

Tsoukas (2003) deduced that in an organisation there are various sets of rules that guide individuals in the form of manuals, documents and computerised information but which does not constitute explicit knowledge but rather information that can be used as a tool by individuals in a specific context to carry out his or her tasks. This information helps in guiding behaviour which is collectively understood. Each person's capacity to draw distinctions in their work *'by taking into account the context of their actions by acting on generalisations in the form of generic rules produced by the organisation'* is what constitutes organisational knowledge (Tsoukas, 2003:91). It is not just the information generation nor the capability of an organisation to convert tacit knowledge into explicit and back into tacit knowledge, i.e., SECI, as described by Nonaka, *et al.*, (2000) but rather that collective understandings are instrumentalised (made tacit) through experience and reflective processing so that it gradually is driven into subsidiary awareness where it is dwelled in so that the focus can be on new experiences (Tsoukas and Vladimirou, 2001).

Knowledge strategy is turning out to be as important as product, market, financial, operational and people strategies, however programmes to manage knowledge still compete for attention with other, probably equally pressing, demands on organisations, on their management teams and on the resources available. The pressures of everyday management means that knowledge practitioners need to be able to develop robust processes and procedures that: (a) can be operationalised readily; (b) can command senior management attention; and (c) ideally offer some short-term gains for busy managers as well as longer-term strategic advantages.

3.8 KM IMPLEMENTATION

Storey and Barnett (2000) asked the question as to how knowledge can be managed and how managers will effect and implement a knowledge perspective on business strategy giving consideration to the difficulties that may be stumbled upon in doing so. This indeed forms the crux of this study, as it is in these current times many organisations fail in their attempts to manage their knowledge.

It seems fit then to express the lessons suggested by Storey and Barnett (2000:234) at this point as a way to delve into how organisations could achieve successful KM implementation from the supposed 'failures' of many organisations. The following represent the six lessons listed in their paper:

- 1) careful attention should be given to everybody's expectations;
- 2) continued commitment of top management should be ensure;
- 3) confusion between KM as a technology-fix and the complexities of learning in practice should be avoided;

- 4) everyone should understand the full implications of being asked to behave differently;
- 5) there should be an awareness that reverting to low trust command and control approaches could undermine the credibility of attempts to introduce the new 'KM culture'; and
- 6) it should be recognised that knowledge is used in different ways at different levels in the organisation.

What is evident from these six lessons given above is that KM implementation should follow a holistic approach. The next section offers a reflection on a few key factors constituting such an approach. Pun and Balkissoon (2011) cites Demarest's (1997) advice that the degree to which KM is beneficial to an organisation depends on six factors:

- the management culture pertaining to the value and purpose of knowledge;
- how knowledge is created, transferred and used in the company;
- the benefits expected to come about from KM;
- the existing level of KM systems in the company;
- the methods used to institute KM; and
- the level to which information technology will be applied within the KM system.

Du Plessis (2007) provided an overview of some generic KM critical success factors as well as the factors found to be critical for KM implementation in a few South African companies. Her research shows that KM and its implementation rely on the environment and specific context within which the organisation operates. Her list includes amongst

others: the importance of a KM strategy and linking it to the business strategy, a holistic approach to KM, the importance of top management support for successful implementation, incentives and rewards, performance measurement, a knowledge creating and sharing culture, change management and communication and infrastructure management.

Heisig (2009:14) on the other hand boils it down to four critical success factors including: Human-oriented factors: culture-people-leadership; Organisational factors: processes and structures; Technology factors: infrastructure and applications; and Management processes: strategy, goals and measurements. This is in line with Dence's (2010) framework for KM planning which suggests knowledge enablers such as leadership and direction, developing a vision and strategy that integrate KM into the fabric of the organisation's management decisions and business processes, an appropriate 'knowledge-capable' structure in which people are assigned KM responsibilities and creating a culture that helps stimulate innovation and learning.

The factors to be further discussed here include the importance of the KM strategy alignment to the business strategy followed by the importance of top management support, a knowledge creating and sharing culture and the need for an appropriate IT infrastructure which assisted in the development of the statements used in the research questionnaire to collect data for understanding the enquiry resulting from the research objectives of this study.

3.8.1 KM STRATEGY LINKED TO BUSINESS STRATEGY

The importance of a KM strategy is crucial to the success of a KM programme (Du Plessis, 2007). KM strategies are used to derive competitive advantage from the control

and coordination of organisational knowledge flows. Schultz and Jobe (2001) described four categories of KM strategies used by multinational corporations (MNCs) and compared the effect of each of these strategies on their performance. The four categories of KM strategies included were:

- **Codification:** the conversion of tacit knowledge into explicit knowledge with the aim of assisting with knowledge flows;
- **Tacit:** maintaining knowledge as tacit to impede knowledge flows to competitors;
- **Focussed:** knowledge flows are regulated by managing the extent of codification to be identical to the concentration and regulation of their knowledge by managing the overall level of codification of knowledge without special consideration of the capabilities of specific forms of codification; and
- **Unfocussed:** knowledge flows are regulated by controlling the overall level of codification of knowledge without special consideration of the capabilities of specific forms of codification.

Their findings revealed that focussed KM strategies were most often implemented and further emphasised the importance of allowing knowledge to flow within the organisation so as to ensure coordination especially in MNCs where knowledge is required to be replicated into new international environments. It is important to note that the KM process cannot be isolated from the context in which it appears and in order to ensure a balanced KM strategy implies that the macro environment in which KM should occur also has to be addressed.

Kamara, Anumba and Carrillo (2002) described a framework for selecting a KM strategy, with reference to organisational and people issues. They suggested that a dedicated KM strategy would ensure an organisation to benefit from KM for which the first step was for organisations to identify the 'high-grade' knowledge, secondly to transform this 'high-grade' knowledge into its explicit form which had to be highly controlled and then to select the appropriate KM strategy that reflected the unique features of the organisation which is done through identifying: (1) the knowledge to be transferred, (2) the knowledge sources, (3) the knowledge transfer target and (4) selecting a transfer method. This helps to establish whether transfer will be from person to person or person to paper. Furthermore it would be important to ensure that resistors and enablers that could affect each step are identified. In a nutshell Kamara, *et al.*, (2002) provides assistance to companies in the form of a framework to enable them to select a KM strategy fit to accommodate their specific needs.

Smith, Mills and Dion (2010) investigated the link between business strategy and KM capabilities for organisational effectiveness in an attempt to understand the link between the business strategy and the KM processes that has been often suggested to be one of the reasons for KM initiative failures. Their study used a framework (Figure 3.1) which brings together many of the key aspects of KM capabilities but essentially consisted of two broad types of KM capabilities (knowledge infrastructure capability and knowledge process capability) which were then used to examine its impacts on the organisational performance (Gold, Malhotra and Segars, 2001 cited by Smith, *et al.*, 2010). The results showed that business strategy together with KM capabilities (both infrastructure and process) impacted organisational effectiveness and of the three factors knowledge process capability and business strategy had the greater direct impact.

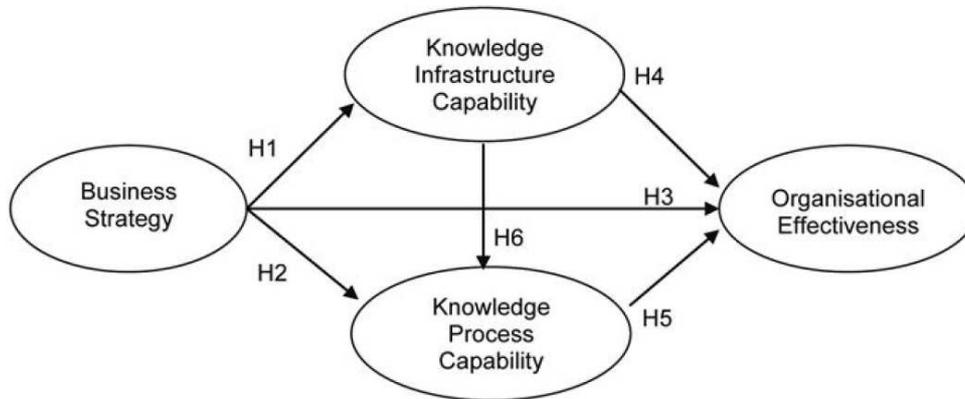


Figure 3.1. Research Model (Smith, Mills and Dion, 2010).

Considering the framework suggested above it is clear that the organisation's KM strategy has been accepted as important for aligning organisational knowledge to a defined business strategy where KM is the process that optimises creation, sharing and market leverage of knowledge assets and core capabilities (Grant, 2008). The KM strategy started with the notion that an organisation's business strategy should guide their planning for KM.

Firestone and Mc Elroy (2003) however questioned this notion by asking then how is KM different from IM? Few authors raised the idea of business strategy being a product of knowledge processing (a social process organisations use to produce and integrate their knowledge) and that the business strategy was rather guided by the knowledge of the organisation and hence Firestone and Mc Elroy (2003) suggested that KM is not an implementation tool for strategy but instead there to enhance knowledge processing which in turn provide people with the knowledge needed to resolve epistemic problems, the behavioural outcomes from which we can observe in business processing.

Strategising then is a type of knowledge making or knowledge producing activity, a knowledge processing outcome that flows from knowledge production, the quality itself of which can be enhanced by making KM interventions of various kinds. So basically they assert that KM is not suppose to round up information resources needed to fulfil a strategy but rather enhance knowledge processing and not the implementation of a vision personified by a strategy.

Firestone and Mc Elroy (2003) then further suggested that KM should be assigned to the board since errors in judgement could be as costly to the organisation as errors in accounting which could lead to an organisation's destruction. Furthermore Firestone and Mc Elroy (2003:259) stated that, 'Bad knowledge leads to bad practice, and bad practice is the product of bad knowledge processing.'

Therefore when organisations endeavour to implement KM initiatives they should understand that effective KM requires an integrative approach that considers the interrelationship between business strategy, knowledge process capability and infrastructure capability.

3.8.2 TOP MANAGEMENT SUPPORT

Top management support and the identification of KM champions and sponsors throughout the organisation to be evangelists and role models within the programme is important to ensure a greater chance of the KM programme's success (Du Plessis, 2007). Knowledge leadership extends well beyond just KM. Cavaleri, Seivert and Lee (2005) provided a description of knowledge leaders as the persons who integrate KM with knowledge processing and make certain that knowledge is woven into the very fabric of an organisation, i.e. its operations, management systems and infrastructure.

Leaders differ in their approach of leading: while some focus on effecting control over employees' activities, others focus on invigorating their inventiveness; while some leaders emphasise the importance of efficiency, others emphasise effectiveness; and still while some leaders view employees as a cost to be economically utilised, others see these same employees as a source for advancement and productivity. Cavaleri, *et al.*, (2005) assert that it will gradually become more and more important for organisations to have knowledge leaders who support the value of knowledge since they will not only envisage how a company's resources can be marshalled to support the creation and sharing of knowledge but also lead individuals in the development of new knowledge.

Switzer (2008) brings together the key points required to understand why a successful change from traditional management styles to KM methods is crucial to future success. He considers that because of the rapid changes in the global economy KM may need to be the new focus even at the so called 'mundane' levels where knowledge managers and their supervisors must take on new responsibilities and roles of self-direction, now more than ever acting as leaders and coaches. He further suggests that until managers, supervisors and executives change their view of the organisation by understanding that their new roles are to create, share and generate knowledge can the organisation transition to the knowledge organisation. This is substantiated by AL-Hakim (2011) where he confirmed the direct relationship between middle managers role and the core requirements of KM implementation that will enable its sustainability.

Although it is shown that knowledge manager's support is essential for KM implementation, it has also been shown that it is in fact transformational leaders who are at the forefront of a knowledge based organisation (Soliman, 2011 and Crawford, 2005). Cavaleri, *et al.*, (2005) further present the key ingredient for becoming a knowledge

leader as being willing to be free from self-limiting intellectual prisons by engaging in experiments for new ways of looking at how things actually work in practice and revising the knowledge gained to reflect on these insights which will lead to continued improvement in performance and innovation for the business.

3.8.3 A KNOWLEDGE CREATING AND SHARING CULTURE

Knowledge sharing is a key process in translating individual learning into organisational capability (Nahapiet and Ghoshal, 1998). Each organisation has its own unique organisational culture that influences the behaviour of individuals within the organisation and thus in order to create a knowledge creating and sharing environment, organisational individuals need to be willing to share and integrate their knowledge. Cultural barriers is the term often used to explain away change initiative failures as it is often said that in order for the organisation to implement any change either as a new initiative or new strategic direction they need to change their culture. However, an organisations culture forms part of its identity and hence is therefore the most difficult to change. Kotter and Heskett (1992) put it better by stating that, *'When cultures are our own, they often go unnoticed – until we try to implement a new strategy or programme which is incompatible with "their" central norms and values. Then we observe, first hand, the power of culture'*. Firestone and Mc Elroy (2003) proposed that since there are so many different meanings of culture, it is important that when trying to identify the root of the cultural failure to implement a change initiative, that there is clarity of the definition of culture. Schein (1990) defines culture as simply how we naturally do things in the organisation. It is segregated further into values, norms and practices (Fahey and De Long, 2000). Culture for an organisation is then therefore a reflection of the way people perform tasks, make decisions, set objectives and manage resources to achieve its objectives (Thompson, 2002 cited by Amos, 2006). Amos (2006) also states that

organisations develop a culture or personality through a collective assessment of the organisation's pattern of shared basic assumptions that the group learns as it solves its problems of external adaptation and internal integration and that has worked well enough to be considered valid and therefore be taught to new members as the correct way to perceive, think and feel in relation to those problems. Likewise, the way people interact with one another has a direct impact on the organisation's knowledge creating and sharing capability which is then perpetuated in new members and that over time becomes ingrained in the workings or the actions of a collection of individuals within the organisation. Teachings may not always be formal but is rather most often informal through new member's observations of the norms that are indirectly set out or implied during interaction with longer serving employees.

Suppiah and Sandhou (2011), in using the Competing Values Framework (CVF) designed by Cameron and Quinn (2006) whereby an organisation can be diagnosed as having either or a combination of a clan, adhocracy, market or hierarchy culture type, together with the Organisational Culture Assessment Instrument (OCAI) concluded that clan culture had a positive influence on the tacit knowledge sharing behaviour whereas the market and hierarchy culture types negatively influenced it (the adhocracy organisational culture type was not analysed). Their study puts forward a set of instruments and models to measure and predict tacit knowledge sharing behaviour which will provide top managers with the necessary information to make informed decisions around ensuring a knowledge based organisation and that in understanding or transforming their organisation's culture to facilitate tacit knowledge sharing will secure the vast economic potential in leveraging on this knowledge type.

In another study done in the Czech Republic, Mládková (2012) concludes that there are major reservations with tacit knowledge sharing in various organisations. As a follow on to this study, perhaps from a different perspective, Finestone and Snyman (2005) used Prime's (1999) three approaches to management in the South African working environment to highlight the effects of a dominant traditional value system on the extent to which individuals function naturally in knowledge creating and sharing environments. The approaches included:

- **The Eurocentric approach:** a traditionally dominant Western style of management that is consistent with Western value systems based on individualism, self-centredness, competition, exclusivity and instrumentalism;
- **The Afrocentric approach:** founded on African home base and inclusive Ubuntu-based value system¹ that propagates humanism, communalism and solidarity with the community; and
- **The Synergistic inspirational approach:** a dualistic approach that embraces and consciously integrates traditional African management practices, values and philosophies with Western management techniques.

Perhaps from the above descriptions specified for the South African work environment, the suggested reservations alluded to by Mládková (2012) could be due to the Czech Republic's naturally Eurocentric approach to management which may not draw on a culture conducive for knowledge sharing.

¹ Ubuntu is the sense of belonging, transparency or approachability, informality open communication channels and opposition to individualism and insensitive competition (Prime, 1999 cited by Finestone and Snyman, 2005).

King, Kruger and Pretorius (2007); Finestone and Snyman (2005) and Prime (1999) have all contributed to the literature related to creating a knowledge sharing culture in South Africa's multicultural corporations for which they agree that it is quite a difficult task not only based on race but also differences in educational systems. King, *et al.*, (2007) in particular mentions that African individuals (black and white) who received schooling from within predominantly western philosophical perspectives were so influenced to the extent that they also were reluctant to share knowledge. King, *et al.*, (2007) also seed a very interesting viewpoint that black African's though (unlike white African's) do not have problems with sharing expertise however resent asking for and/or using the expertise of others.

In an attempt to address the contribution into knowledge repositories of organisations, Durcikova and Gray (2009) realised that the processes for validating these contributions which are characterised by duration/speed (the time lag between submission of a new contribution and a decision by a reviewer), transparency (the extent to which contributors can observe the validation process in action) and restrictiveness (overall rejection rate) indeed also affect the extent to which individuals consider depositing/sharing their knowledge/information. To succeed, a repository must contain 'knowledge' that will prove useful for employees looking for answers to their questions and solutions to their problems. For this, the quality of this 'knowledge' needs to endure a validation process or the repository ends up being just another 'information junkyard' failing in its reason to exist as a contributor to improved organisational performance and instead loses its credibility with employees. However on the other hand, validation could also result in less contributions thus growing stale and eventually being abandoned. Durcikova and Gray (2009) therefore suggests that managers needing to deal with the dilemma of having to understand individual perceptions of a validation process on the knowledge

contribution should attempt implementing processes that positively affect their perceptions as a way to ensure the success of their repositories. Their findings also show that transparent validation is one such positive influence on individuals' perceptions. When the validation system processes are well communicated, individuals' expectations are thus improved.

Then according to Mats (1995) there are specific values in an organisation that can either enhance or retard the management of knowledge which links into whether someone would be willing to share their knowledge through depositing information into a repository. Allee (1997) talks of a climate of trust and openness as key elements of these values. Openness, in this context would refer to the honesty and directness with regard to what is happening in the organisation that could facilitate dissemination of information resulting in employees becoming accustomed to the idea of sharing information.

Then, in an environment that enforces knowledge sharing, e.g. in the South African context, many individuals (rather than revealing a sharing inclination) display a sense of power in knowledge sharing. Knowledge sharing in multidimensional cultures where individuals from different cultures were exposed to past political and cultural turmoil, and/or present empowerment policies such as employment equity are being implemented, is another dimension, one in which knowledge becomes power, the power to prove worth. This power play is prolonged long after liberation when former oppressors use knowledge to retain power (opposing policies such as affirmative action) and the formerly oppressed use knowledge to gain power. Perhaps it is worth noting then that South Africa poses a huge difference in its ability to create and share knowledge than in Japanese mono-cultural workforce where they share common beliefs, values and fundamental views about life and business.

Perhaps at this stage a motivation based perspective could prove more probable. As Lam and Lambermont-Ford (2010) highlighted that depending on the architecture of the organisation, an understanding of how individuals are motivated could be key in developing a knowledge creating and sharing environment. They propose that in a professional bureaucracy, the social dilemma of knowledge sharing may be overcome through normative motivation, with provision of hedonic motivation through extrinsic incentives such as training and career progression. In an operating adhocracy where interdependent teamwork is vital, it may be overcome through normative alignment reinforced by intensive socialisation. Extrinsic motivators that align with hedonic motivation may also reinforce the propensity for knowledge sharing. In both organisational types, financial extrinsic incentives do not appear relevant on their own and may crowd out other motivators.

3.8.4 IT INFRASTRUCTURE

KM scholars such as Drucker and Nonaka both point out the crucial role information technology (IT) plays in ensuring increased information and knowledge flows within the organisation. However, Junnarkar and Brown (1997) insist that managers interested in IT as an enabler to KM should not simply focus only on using IT to connect people to people with information but rather also to develop the organisational context conducive to tacit knowledge creation.

The integration of information systems (IS) across the entire organisation has become one of the most important technology management challenges in today's organisations. Probably the most important aspect of the challenge is the development and implementation of an integrated IS infrastructure (Byrd, Lewis & Bradley, 2006). Many companies are confounded by the complexities and subtleties involved in leveraging IT

resources and hence struggle to extract the true value from it and hence end up basking in their sophisticated technological applications just to prove that they are part of the knowledge economy. According to Tarafdar and Qrunfleh (2010:107) there have been widespread accounts of wasted IT investments and deployment of business-irrelevant applications as IT infrastructure started assuming the role as the new competitive weapon.

Junnarkar and Brown (1997:147-148) however suggested four IT management guidelines for effective KM as follows:

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

Many researchers have studied strategic IT-business alignment and demonstrate how it can lead to improved business performance and increased effectiveness of the IT function (Henderson and Venkatraman, 1989; Dale, 2007; Liang, Liang and Wen, 2011; Djurickovic and Kovacevic, [no date]). Byrd, *et al.*, (2006) highlighted that it is the invaluable role of leadership to recognise the powerful role of IT and Carmeli, Schaubroeck and Tishler (2011) further confirms this view by stating that executive

leadership's ability to achieve team cohesion as a means to reaching organisational objectives is an invaluable skill; and central to establishing an integrated team is the requirement to empower the top management team. Kearns and Sabherwal (2006-7:130) justifies the need for top management involvement by proving that "*organisational emphasis on KM and centralization of IT decisions affect top managers' knowledge of IT, which facilitates business managers' participation in strategic IT planning and IT managers' participation in business planning, and both of these planning behaviours affect business-IT strategic alignment.*" Tarafdar and Qrunfleh (2009) further offers the idea of tactical IT business alignment which is the process to address communication and matching of resources, objectives and implementation priorities between IT and the business at the execution levels of which the benefits would be particularly significant only when strategic alignment is present as well.

Because organisations are evolving with environmental changes in order to remain competitive or simply as a means of survival it is crucial that IT infrastructure is flexible to respond to changes appropriately. Despite the upheaval caused by change, organisations need to stay abreast of developments – both from within and from its external environment. According to Dale (2007) "*change is taking place in the context of an unprecedented and increasing growth in information volumes and complexity.*" It is thus crucial that organisational KM Systems are configured to complement change and provide a source of continuity for organisations embarking on or emerging from change initiatives.

If strategic IT-business alignment exists in an organisation, it is expected that the firm has a plan to deploy IT necessary for supporting its business strategy along with changes in strategy. The implementation of planned applications requires execution

level IT-business alignment (Tarafdar and Qrunfleh, 2010). With increasing growth in information and the continuous development of IT plans, actual success to top management would include better management decisions, improved financial decisions, faster, more accurate transactions, cost reduction, improved inventory and asset management, ease of expansion/growth and increased flexibility. Seddon, Calvert and Yang (2010) hypothesized that the variance in organisational benefits from IS is driven by the variance in functional fit, overcoming organisational inertia, integration, process optimisation, improved access to information and on-going major IS business improvement projects.

Difficulties pertaining to the implementation and maintenance of a functional Knowledge Management System (KMS) usually are that employees often associate information and knowledge with power (Maglitta, 1995). Sometimes, specialists may resist pressure from decision-makers to acquire new technologies which may differ sharply from those already in use. In a state of flux this could provide them with a means of maintaining some control over their destiny. Hence they become reluctant to share their information and knowledge which is an essential principle of a KMS. Marchand, Davenport and Dickson (2000) state that these negative reactions usually die down as people become accustomed to new systems and glitches are ironed out. Although true to a certain extent, most people simply 'get by' with IT applications and do not ever use them to their maximum effectiveness and for this it is important to reiterate Bhatt and Grover's conclusions that although the quality of IT infrastructure may not be a direct source of differentiation, the ability to effectively leverage that infrastructure is. When organisations have strong IT personnel they can create a unique competence that can lead to better leveraging of commodity infrastructure, thereby leading to competitive advantage.

On the assumption that information and knowledge will be much more important drivers of business value in the future than what it is today, it is perhaps important to consider the role of the Chief Information Officer (CIO). The CIO has in recent years been moved to centre stage to realise the potential of IT to create value. Peppard (2010) however contests that too much emphasis is being placed on the CIO and that it is rather the environment within which the CIO operates that plays a crucial role in the success of the organisation in optimising IT value. He further suggests that it is rather the CIO together with the IT savviness of the CEO and the IT management team that are pivotal to the realisation of IT in today's knowledge driven organisations. Crisp, Hickman Lyons, Seddon and Romer (2009:2) make the case for the evolving role of the CIO which now is being expected 'to move beyond the confines of a traditional Information Technology (IT) based role' and proposes the *intent and style of leadership* as an area of focus for the CIO to be able to evolve his role successfully. Although this applies mainly to IT organisations it can be infused into other organisations as Peppard (2010) suggested where CIO and CEO work together to optimise the IT value of the organisation.

3.9 SUMMARY

This chapter reviewed the literature on knowledge and its management along with certain key success factors for KM implementation with the purpose of gaining a broader perspective on the various studies being conducted pertaining to this subject. With all that is written about organisational, cultural and strategic factors that must be considered to improve the management of knowledge within organisations it is important to bear in mind that the best situation for any organisation would evolve over time through history and experience and that for organisations to gain maximum benefits from KM initiatives they would need to ensure that their KM strategy is aligned to its business strategy, that

top management supports the ongoing KM programme, that the organisation puts in place systems to ensure a knowledge creating and sharing culture and that IT infrastructure is aligned with the KM purpose.

CHAPTER 4

4. RESEARCH METHODOLOGY

4.1 INTRODUCTION

Chapter 1 facilitated a reflective process of contextualising KM practices in DAFF, where the problems were reviewed and defined to generate research objectives that would allow the researcher to determine the prevalence of KM processes in DAFF. Chapter 2 further investigated the factors in DAFF considered as hindrances to successful KM implementation including the leadership, culture, strategic alignment and IT infrastructure by means of relevant business management theory and models. Chapter 3 presented a further in depth review of KM in the knowledge economy from the broad selection of KM literature most relevant to the objectives developed for this research. This Chapter will consider the research design process encompassing the research approach, research instruments and the data collection and data analysis methodologies to be used for the purpose of informing the research objectives of this study. For the purposes of gathering data that would allow an understanding of the various key success factors in KM implementation, a qualitative study of the opinions and perceptions of employees within DAFF was carried out by way of electronically disseminated questionnaires. This study assumes the view that adopting a holistic approach to KM could lead to successful KM implementation and longevity in DAFF.

4.2 RESEARCH APPROACH

This study uses a qualitative research approach as it is centred on the attitudes, opinions and values which shape individuals' perceptions. Research approaches are either quantitative and/or qualitative in nature. The distinction between these two

research approaches lie in their difference in the research methods used and the type of data gathered. Quantitative research is usually conducted in a scientific manner with the main focus on gathering numerical data that can be subjected to complex statistical analysis (Charlesworth, Lawton, Lewis, Martin, & Taylor, 2007) and which starts with a series of predetermined categories that are embodied in standardised quantitative measures (Terre Blanche, *et al.*, 2006), whereas the qualitative approach allows the researcher to study selected issues in depth, openness and detail as information emerge from the data and as an understanding of various categories are being developed where data is collected in the form of written or spoken language, or in the form of observations and analysed by identifying and categorising themes (Charlesworth, *et al.*, 2007).

When conducting studies in the discipline of management, people are the real subjects of enquiry as it is people who an organisation employs and people who make up the market. Then, since Cohen, Manion and Morrison (2000) observed human nature to be an immensely complex social phenomenon and that the quality of this social phenomenon cannot be measured purely based on science, the qualitative research approach is suitable for this study due to:

- the heavy reliance on the human element for successful KM implementation and
- the role that respondents' perceptions play in their choice of adopting a KM system.

Table 1 below reviews the two main research methods.

Table 4.1. Comparison of quantitative and qualitative research

	QUANTITATIVE	QUALITATIVE
GENERAL FRAMEWORK	Seek to confirm hypotheses about phenomena	Seek to explore phenomena
	Instruments use more rigid style of eliciting and categorizing responses to questions	Instruments use more flexible, iterative style of eliciting and categorizing responses to questions
	Use highly structured methods such as questionnaires, surveys, and structured observation	Use semi-structured methods such as in-depth interviews, focus groups, and participant observation
ANALYTICAL OBJECTIVES	To quantify variation	To describe variation
	To predict causal relationships	To describe and explain relationships
	To describe characteristics of a population	To describe individual experiences
		To describe group norms
QUESTION FORMAT	Closed-ended	Open-ended
DATA FORMAT	Numerical (obtained by assigning numerical values to responses)	Textual (obtained from audiotapes, videotapes, and field notes)
FLEXIBILITY IN STUDY DESIGN	Study design is stable from beginning to end	Some aspects of the study are flexible (for example, the addition, exclusion, or wording of particular interview questions)
	Participant responses do not influence or determine how and which questions researchers ask next	Participant responses affect how and which questions researchers ask next
	Study design is subject to statistical assumptions and conditions	Study design is iterative, that is, data collection and research questions are adjusted according to what is learned

4.3 RESEARCH DESIGN

Coldwell and Herbst (2004:35-36) described the research design as '*the strategy of the study*' or '*the structure of the research*' which maps out how the study will be conducted. Other authors describe research designs as 'architectural blueprints' implying that research designs are fixed and specified in advance of execution and defined by technical considerations meaning designs are developed in accordance with scientific principles to ensure that the findings will stand against criticism (Terre Blanche, Durrheim and Painter, 2006). This description does not hold for this study which is qualitative in nature, i.e. more open, fluid and changeable and not defined in technical terms. A qualitative research study is rather an iterative process that requires a flexible, non-sequential approach and thus should make allowance for not only technical considerations but also that pragmatic consideration may well influence the final research design. Since architectural blueprints are not changed once building has started, the research design in this study cannot use the metaphor of an architectural blueprint.

The research design of this study is thus defined by the following characteristics as suggested by Coldwell and Herbst (2004:36):

- It is an interrogation/communication study which entails the researcher questioning subjects by way of questionnaires;
- It is a descriptive study as it intends to describe the current state of KM practices within DAFF.

- The study is *ex post facto* since the researcher does not have the ability to manipulate variables but rather only report on what is happening with regards to KM in DAFF.
- The study is cross-sectoral as it reveals a snapshot of the KM practices within DAFF at a particular point in time.
- Then finally this is a field study as it takes place within the actual working environment of DAFF and the sample has been made up of DAFF employees.

Furthermore the study is non-experimental and therefore does not make use of random assignment or control groups but rather collects the opinions and perceptions of KM practices in DAFF by means of a survey and more specifically questionnaires.

Questionnaires which are a form of structured interviewing where all respondents are asked the same questions and offered the same options in answering them have been the instrument of choice since the researcher took into consideration the current organisational restructuring exercise and the sensitivities of those adversely affected within DAFF for which confidentiality, made possible through the questionnaires, possibly ensured the ease of respondents to respond honestly due to its anonymity.

Although questionnaires are not usually suitable for a qualitative research approach which by nature is more open and flexible, Charlesworth, *et al.*, (2007:23) opined that '*there are no methods necessarily exclusive to either approach*' and that it is rather a matter of how the method is used. In this study, the questionnaire was used to gain an understanding of how people perceive knowledge is currently being managed in DAFF and since questionnaires can be sent to a large amount of individuals ensuring a

relatively short turnaround time than having to obtain the same information through the use of more personal interviews or having to arrange time for focus groups would not have been possible considering the huge population and the short time period given to conduct the research.

Questionnaires on the other hand did pose limitations on the researcher's ability to interact and/or observe the respondents which ultimately also restricted the researcher from probing respondents to gain a deeper understanding of their opinions. The researcher was also obliged to pose closed questions using a Likert-scale so as to limit differences in interpretation which could have been rather difficult to analyse due to no face-to-face contact. The disadvantage of this is that there may have been a tendency for respondents to agree with all of the statements as the strongly agree option of the five-point Likert scale was listed first for each of the statements in the questionnaire. Nonetheless, the choice for considering the questionnaires as the most appropriate survey instrument was also due to the fact that it could be disseminated to many respondents quickly and inexpensively using DAFF's existing e-mail facilities. In using the response scale there was some allowance for flexibility in terms of how they could rate the actual category/statement. Then from the perspective of questionnaires being less flexible as apposed to face-to-face interviews also allowed for meaningful comparison of responses across participants where some elements of quantitative data gathering and analysis may be possible given that the Likert scale is utilised throughout as the measuring instrument which allows for some forms of statistical analysis. Below is a table listing the advantages and disadvantages of three types of communication approaches for qualitative research which confirms the suitability of the use of questionnaires as the data collection instrument for this study based on anonymity, reach (geographic and number of respondents) and quick response rate.

Table 4.2. The Advantages and Disadvantages of Communication Approaches to gathering data (Cooper and Schindler, 2001).

APPROACH	ADVANTAGE	DISADVANTAGE
<p>PERSONAL INTERVIEW</p>	<ul style="list-style-type: none"> • Can contextualize & clarify • Get results back in short time • Good co-operation • Gather information by observation • Special visual aids and scoring devices can be used • Illiterate and functionally illiterate respondents can be reached • CAPI-computer assisted personal interviewing possible, meaning that responses can be entered into a microcomputer to reduce error and cost. • Pre-screening for population fit can be done • Have undivided attention 	<ul style="list-style-type: none"> • Follow-up can be laborious • Possibly wide geographic spread • Anonymity not guaranteed • High costs • Time consuming • Bias • Requires highly trained interviewers • Reluctance/refusal to talk to strangers • Longer field time required for data gathering • Some areas are difficult to visit • Questions may be altered or respondents coached by interviewers • Not all respondents are available/ accessible
<p>TELEPHONIC INTERVIEW</p>	<ul style="list-style-type: none"> • Lower cost than personal interview • Expanded geographic coverage without proportionate cost increase • Uses fewer, more highly skilled interviewers • Reduced interviewer bias • Fastest completion time • Better access to hard-to-reach respondents through repeated calling • Can use computerized random-digit dialling • CAPI-computer assisted telephone interviewing possible, meaning that responses can be entered directly into a computer file to reduce error and cost. 	<ul style="list-style-type: none"> • Response rate lower than personal interviewing • Higher cost if interviewing geographically dispersed sample • Interview length may be limited • Many numbers are unlisted or not working, making directory listings unreliable • Some target groups are unavailable by phone • Responses may be less complete • Illustrations cannot be used
<p>SELF-ADMINISTERED SURVEYS (E.G. QUESTIONNAIRES)</p>	<ul style="list-style-type: none"> • Perceived to offer greater anonymity • Easy to turn into quantitative results • Can reach more respondents • Lower cost • Less staff • Wider geographic coverage possible • Allows respondents time to contemplate questions & answers • Visual aids may be used • More complex instruments can be used • Fast access to the computer literate • Sample frame lists viable locations rather than prospective respondents • Respondents inaccessible by phone/personal interview may be reached 	<ul style="list-style-type: none"> • No observation • Limited depth • Low response rate • No interaction to probe/clarify • Cannot be long or complex • Accurate mailing lists needed • Often only population extremes / outliers respond to questionnaires – skewed responses • Respondent anxiety (some) • Directions/software instruction for progression through the instrument • Computer security • Need for low distraction environment for survey completion

4.4 METHODOLOGY

In this study primary qualitative data by way of standardised closed ended questionnaires employing a 5 point Likert-scale was gathered to determine the current state of KM implementation in DAFF.

4.4.1 RESEARCH INSTRUMENT

A structured survey questionnaire was used for collecting data from the individuals selected as the sample for this study. Since only questionnaires were used, the study does not comply with the criteria for methodology triangulation (Denzin, 1970) which is the use of multiple methods to study a single problem, looking for convergent evidence from different sources, such as interviewing, participant observation, surveying and a review of documentary resources. Although triangulation is a powerful technique that facilitates validation of data through cross verification from more than two sources, it is labour intensive and often not feasible for smaller research projects as this. The researcher has had to consider that although employing triangulation could facilitate validity, the researcher has neither the time nor the budget to do so. If it was used in the study it would have been applied to either facilitate validation or inquiry since combining multiple observers, theories, methods, and empirical materials, the researcher would be in the position to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer and single-theory studies.

However, since the study merely wishes to gauge where the gaps with regards to KM practices are in DAFF, at this stage a the quick response from the questionnaires will dictate whether a more in depth investigation into the various aspects would be required as a follow up to the present study.

4.4.2 QUESTIONNAIRE DESIGN

The questionnaire was designed based on each of the research objectives listed in Chapter 1 and consisted of 5 questions relating to each of the objectives, thereby creating a questionnaire divided into the following four sections:

- The use and co-ordination of KM practices;
- The KM infrastructure;
- The organisational culture; and
- The Leadership of DAFF.

4.4.3 USE AND CO-ORDINATION OF KM PRACTICES

The use and co-ordination of KM practices provides a direct correlation of an organisation's obligation to ensure that its KM strategy is aligned with the overall organisational business strategy. The use and co-ordination of KM practices is highlighted through the establishment of functioning measures for capturing ideas to solve problems, officials' access to vital information and regular cross-functional engagements (both internally and externally structured at either national or international levels). The researcher aims to identify whether these type of activities are occurring in DAFF so as to conclude that indeed KM practices are pragmatically accounted for in the main departmental strategy of DAFF.

4.4.4 KM INFRASTRUCTURE

Information and Communication Technology (ICT) is viewed as a necessary tool in enabling a knowledge sharing environment in the present day 'knowledge economy' (Nonaka and Takeuchi, 1995:96; Junnarkar and Brown, 1997:144 and Carmeli, *et al.*, 2011) with its role in the organisation being emphasised by various knowledge scholars such as Pretorius and Steyn (2005:46); Marchand, *et al.*, (2000); Drucker (1993) and Du

Plessis (2007). Hence, it is important to determine the extent of ICT operating within DAFF by drawing on the type of technologies employed and the extent of it being utilised as a knowledge sharing and knowledge creating tool. This information thus would allow the researcher to further understand where DAFF is lacking in terms of its technology being employed as well as highlight whether the existing technology has been a wasted investment due to the lack of skill of officials to fully exploit its potential in order to manage knowledge in the Department along with relevant information sharing with its various stakeholders.

4.4.5 ORGANISATIONAL CULTURE

Suppiah and Sandhou (2011) showed the relationship between an organisation's culture and its effects on influencing the tacit knowledge sharing behaviour. Most authors would agree that a knowledge creating and sharing culture depends not only on the IT infrastructure but rather also on the organisational management style considering indicators such as whether teamwork is a norm, where the value and benefits of sharing knowledge is clearly understood or whether there is sufficient initiatives set out to motivate employees to participate in knowledge sharing processes and that they have surety that their contributions are being done in a trusting environment. In posing the questions in this section of the questionnaire the researcher wishes to interpret the steadfastness of the current culture of DAFF and whether (1) it could be ready for the implementation of KM practices or (2) there is indeed a need for a total paradigm shift within DAFF due to a lack of awareness or more specifically a lack of understanding of the potential of a system to manage the Department's knowledge.

4.4.6 LEADERSHIP

Another important success factor of KM implementation is the support from top management as it has been recognised that knowledge leadership is not just about managing knowledge but rather extends into its processing to ensure the knowledge creating and sharing culture (Cavaleri, *et al.*, 2005). In this section of the questionnaire the researcher sought to understand the involvement and commitment of DAFF's leadership in promoting this said environment. It is this section that appears most crucial as KM process implementation would be guided by a leader who buys in to the ideas and concepts of KM. Gaps in any of the set questions amongst the various management levels targeted in this study would provide the researcher with sufficient evidence of top management's commitment since, as demonstrated in the literature review of this study, top managers would best succeed at any change initiative through empowering all managers and supervisors at all levels with their vision for the organisation.

All responses are ranked according to a five-point Likert scale format ranging from strongly agree to strongly disagree. The researcher is aware that the Likert scale may result in a response set with all questions indicating either 'strongly disagree' or 'strongly agree' depending on the side of the scale the individual starts filling out the questionnaire and that no measure such as having questions where responses could be either **Yes** or **No** has been put in place to counteract this practice. This has been recognised as a possible disadvantage to the type of data that could have been collected. Furthermore, the questionnaire had been mailed together with a covering letter of which both the covering letter and questionnaire has been attached to the report as Appendix 1, where permission to conduct the study has been done verbally with the head of the Knowledge and Information Management (KIM) director based in Arcadia, Pretoria.

4.4.7 QUESTIONNAIRE PILOTING

Two individuals from the population group were identified for the purpose of piloting the questionnaire. The feedback from this exercise has been consolidated into the final version of the questionnaire. Both individuals approached in the pilot phase were excluded from the sample group to prevent potential learning-effect errors and since the finalised version contained changes from the two perspectives, the pilot survey responses could not be included in the respondent data set.

4.4.8 THE RELIABILITY AND VALIDITY OF THE RESEARCH INSTRUMENTS

Coldwell and Herbst (2004:17) stated that '*truly scientific statements of the world must be both reliable and valid*'. According to Cooper and Schindler (2001:215) '*A measure is reliable to the degree that it supplies consistent results*' which means that a particular technique, applied repeatedly to the same object, would yield the same result each time. Validity on the other hand indicates that the measuring instrument measured what it was intended to measure.

4.4.9 RELIABILITY

Cooper and Schindler (2001:215) listed three perspectives by which to evaluate reliability which includes: stability, equivalence and internal consistency.

- **Stability** is achieved by obtaining steady results with repeated measurements of the same individual using the same instrument and is confirmed by a test and re-test approach. This method is more difficult to apply with a survey when compared to observation-based research.

- **Equivalence** pertains to the amount of error introduced by different investigators or different samples of items being studied, i.e. it is concerned with variations at one point in time among observers and samples of items, and
- **Internal Consistency** is an assessment of the internal homogeneity among the items, e.g. by checking the correlation for two halves of the scores (where very similar items are listed).

Due to this study being carried out using the qualitative approach to measure the perceptions of respondents and the data collection instrument being a five point Likert-scale questionnaire that rated individuals' perceptions of KM, there is the potential for yielding different results from the same participants even when the same questionnaire has been used by a different researcher (meaning that who is conducting the research has an influence on the respondents) or by the same researcher on a different day (meaning that respondents could rate a particular statement differently based on the situation they find themselves in at a particular point in time), hence the study does not prescribe to one of high reliability as it fails in two of the three criteria used to measure reliability according to the above descriptions.

4.4.10 VALIDITY

There are two major forms of validity namely external validity where findings can be generalised across persons, settings and times (Cooper and Schindler, 2001) and internal validity where findings are related to a particular study (Coldwell and Herbst, 2004).

Internal validity further consists of three components namely, content, criterion-related and construct validity.

- **Content Validity** refers to the extent to which the measuring instrument provides adequate coverage of the investigative questions guiding the study. The questionnaire used was divided into four categories related to the objectives of this study with each category consisting of five questions/statements deemed necessary for the purpose of assessing KM in DAFF. Content validity was achieved although better results could have been obtained by posing more specific questions to reduce the number of “neither agree nor disagree” responses.
- **Criterion-Related Validity** is either predictive or concurrent. The extent to which the questionnaire correctly forecasts a particular outcome is a measure of its predictive validity. Concurrent validity in turn refers to an observational method’s ability to estimate the existence of a current behaviour or condition. In this study, concurrent validity has been the category of interest as it aims to estimate the existence of a current condition, i.e. KM prevalence and practices. The degree to which the study results reflect the true state of KM in the DAFF population will be indicative of the criterion validity. A verification exercise within the population would be needed to conclude on this category of validity in order to evaluate the (concurrent) criterion validity as it did not form part of this research. Then, according to Cooper & Schindler (2001) further consideration should be given to the relevance, freedom from bias (this study partially achieves this by proportionate stratified sampling), reliability (stable & reproducible) and availability of the validity criterion measured. For this study the criteria measured is relevant and available. Freedom from bias is sought through measures such as proportionate stratified sampling. As stated above reliability was not achievable due to the nature of the instrument used. On the balance of this qualities the instrument is considered to be valid.

- **Construct Validity** measures/infer the presence of abstract characteristics with seemingly no empirical validation footprint. It considers both the theory and the measurement instrument, i.e. it ensures that the theory is empirically founded and that the instrument used for measuring the theoretical construct is valid. **KM as a construct is well defined.** The constructs contained in the research objectives (leadership's support, organisational culture, strategic alignment and KM infrastructure) are individually well defined and serve as indicators to the prevalence of KM. It is thus accepted that construct validity is achieved in this case.

External Validity refers to the data's ability to be generalized across persons, settings and times. In this study, the research instrument may succeed in its ability to gather data across various organisational settings and individuals in an attempt to assess the prevalence of KM practices and processes including environmental and infrastructural conditions. The time dimension might threaten the external validity as alluded to under the reliability section. For the purpose of this study though time should not be an influencing factor as the study was performed as a "snapshot" in time and the criteria being measured are fairly stable for long periods.

As validity refers to the extent to which differences found with a measuring tool reflects actual differences among respondents (Cooper and Schindler, 2001), meaning that the research findings should correctly represent what is actually happening in the phenomenon being researched, the research should show what the researcher deems that it should (using any research instrument) then it is said to be valid. In this study, the research instrument seeks to gather rich data and therefore the research instrument (which allows respondents some flexibility to respond in a way that most closely matches their perceptions) is deemed valid.

4.4.11 THE POPULATION AND SAMPLE SIZE

The population chosen for this study has been limited to middle and senior management consisting of individuals positioned at Post levels 11-15 within the Agricultural component of DAFF located in Pretoria consisting of the head office (dispersed over a few buildings) in Arcadia as well as satellite offices in Silverton and Roodeplaat. A defining characteristic of this group is its access to e-mail and the availability of the associated e-mailing list to the researcher which made for a convenient sampling frame. In addition the high prevalence of decision-makers, knowledge workers and potential executioners in the above grades led to the associated grade "filter". The geographic proximity constraint was instituted purely to allow for face-to-face follow-up sessions as a possible contingency should difficulties have been encountered during data gathering.

In total the said population consisted of 261 individuals and a relatively large sample of 150 (57%) was drawn to compensate for the low response rate associated with the self-administered questionnaires.

4.4.12 THE SAMPLE SELECTION PROCESS

In order to arrive at the number of participants for the sample, a probability sampling method called stratified random sampling was used. Stratified random sampling is a technique in which a population is divided into mutually exclusive groups (called strata) and then a simple random sample is selected from each group (each stratum) A restricted, complex random (stratified according to grade) sample was drawn from the identified population. In particular, proportionate stratified sampling was applied due to its inherent high statistical efficiency, simple stratification process and self-weighting characteristic (Cooper and Schindler, 2001). The latter characteristic resulted in the

ability to extrapolate the findings to the population without having to apply weighting. The number of participants per stratum was calculated as shown in Table 4.3 below.

Table 4.3. Population and Sample frame for Survey Data Collection

STRATUM (POST LEVEL)	11	12	13	14	15	TOTAL
POPULATION	130	64	47	15	5	261
% REPRESENTATION IN POPULATION	50%	25%	18%	6%	2%	
SAMPLE	75	37	27	9	3	150

A web-based randomising programme i.e. Research Randomizer (Version 3.0) [Computer software] (Urbaniak and Plous, 2011) was used to generate random numbers within the respondent ranges for each grade. Table 4.4 below contains profiles of the sample by grade, gender, length of service and population group respectively for illustration and a comparison of the sample make-up to the population can be found in Appendix 2 which shows the sample to be representative of the population in terms of the percentages selected per grade relative of the population making the representation in pie charts almost a mirror image of the other.

Table 4.4 Profile of sample by grade, gender, length of service and population group

GRADE	GENDER		LENGTH OF SERVICE								POPULATION GROUP			
	Male	Female	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Black	White	Indian	Coloured
11	36	37	25	24	5	7	7	3	1	1	42	26	4	1
12	18	20	6	9	8	3	3	5	2	2	22	13	2	1
13	17	10	7	5	10	1	2	2	-	-	21	3	2	1
14	6	3	1	2	4	1	-	1	-	-	8	1	-	-
15	2	1	1	-	-	1	-	1	-	-	3	-	-	-
Total	79	71	40	40	27	13	12	12	3	3	96	43	8	3

4.5 THE ETHICS OF RESEARCH DESIGN

There are several ethical aspects associated with the research design. Probably the most significant was the choice of population which could be conceived as exclusionary and undermining the knowledge possessed by the individuals outside the chosen grade levels.

Subsequent to the researcher initiating the study, she was incorporated into a steering committee established to re-invigorate the KIM strategy within DAFF. This could introduce a mutual bias. Should this body require access to the findings of the study for organisational purposes full disclosure and consent from the respondents would first need to be sought.

The security of the internal DAFF e-mail network may be compromised leading to a breach of confidentiality. There are also various levels of administrative rights within the IS support group resulting in limited access to e-mails. It is assumed that the internal IS policies and procedures would provide the required safe-guards.

Some employees might experience a conflict of interest when faced with the possibility of “openly criticising” leaders (to whom they are loyal) as part of the questionnaire – a fact that would obviously detract from the value of the study. This yet again underlines the importance of maintaining the integrity of the process by ensuring the anonymity of the respondents is not only maintained but demonstrated.

Sensitive information is included in the e-mailing list which was supplied to the researcher. It is incumbent on the researcher to maintain the confidentiality of this list – both in terms of content and further distribution.

As part of the covering letter an offer was made to all respondents that the findings of the study would be readily shared on request. It is important that this commitment is honoured.

4.6 ANALYSIS OF DATA

Analysis of the questionnaire data was done by way of the general analytical procedure which is a non-quantifying data analysis method described by Hussey and Hussey (1997). They assert that although there are various means to analyse qualitative data the quality of the data analysis will ultimately depend on the researcher's interpretation of the data.

Questionnaires were collected electronically and coded according to the date and time received. In this way the researcher could trace it back to the specific respondent in the case of an incomplete questionnaire. Data from the questionnaire were tallied up to obtain frequency counts of each of the statements relating to each section of the questionnaire. Once the data counts were made, graphical representations in the forms of tables, pie charts and bar charts were developed.

Biographical descriptions of the survey respondents were analysed according to length of service, gender and population group for each of the grade levels selected for the study, i.e. grades 11-15. This was done to ascertain the respondent distribution across the sample set.

Analysis of the data from questionnaires was conducted firstly as a collective of the perspective of respondents as per section of the questionnaire as related to the research objectives. This was followed by a further in depth analysis of each statement per section and was presented as bar charts. The trends represented for each of the

statements of each section were analysed in relation to various empirical studies conducted in KM which is presented in the literature review of Chapter 3. Analysis was based on the perception of respondents in relation to prominent business models and management theory.

4.7 LIMITATION OF THE STUDY

During the distribution phase it was discovered that some of the e-mail addresses listed on the source data base were incorrect.

The turn-around period for the questionnaires coincided with a number of public and school holidays which resulted in limited time in the office to tend to the questionnaire.

Many of the prospective respondents (levels 13-15) also were attending an off-site review session with limited e-mail access.

4.8 SUMMARY

This chapter considered the different research approaches available for which the qualitative research approach was selected since the researcher was interested in the perceptions of individuals to that of KM related matters in DAFF. It further provided detail of the research design as being a communication, descriptive, *ex post facto* and cross-sectoral field study. The collection of primary qualitative data was achieved through the use of a questionnaire consisting of closed questions using a five-point Likert-scale. Issues about the reliability and validity of the data were also discussed. The population from which the research sample was drawn was done using stratified random sampling where grade levels presented the various strata from which to select the sample from. The ethical considerations of the study were presented next followed by a description of

the qualitative data analysis and lastly the limitations of the study. In the next chapter the research data will be presented and interpreted.

CHAPTER 5

5. RESULTS AND DISCUSSIONS

5.1 INTRODUCTION

This Chapter presents the analysis and interpretation of the research data collected from DAFF employees (in either supervisory or managerial roles) with the aim of determining the prevalence of KM in DAFF. The data collected would provide evidence for discussions to the research statement and objectives of this study (from Chapter 1) which are:

To explore the prevalence of KM practices in The Department of Agriculture, Forestry and Fisheries (DAFF) (focussing specifically on the Agricultural component of DAFF) to enable its delivery on its mandate with specific objectives as follows:

Objective 1: To determine leadership's support in driving KM processes.

Objective 2: To review the current organisational culture as an enabler to implementing KM.

Objective 3: To determine the extent of use and co-ordination of KM practices.

Objective 4: To review the KM infrastructure.

The chapter will start with a description of the sample and respondents relative to the population, followed by a biographical description of the study's respondents so as to lay a foundation for the presentation of the descriptive analysis for each of the research objectives developed in Chapter 1.

5.2 POPULATION, SAMPLE AND RESPONDENTS DISTRIBUTION PER GRADE

The researcher was interested in the distribution of the respondents in relation to the sample and the population based on the strata (grades) used for selection. Figure 5.1 below shows the number of respondents for grade 11 to be 19 respondents out of a sample of 75; for grade 12 (15 out of 37); for grade 13 (7 out of 27); for grade 14 (1 out of 9) and for grade 15 (0 out of 3) respectively which totals to 42 respondents.

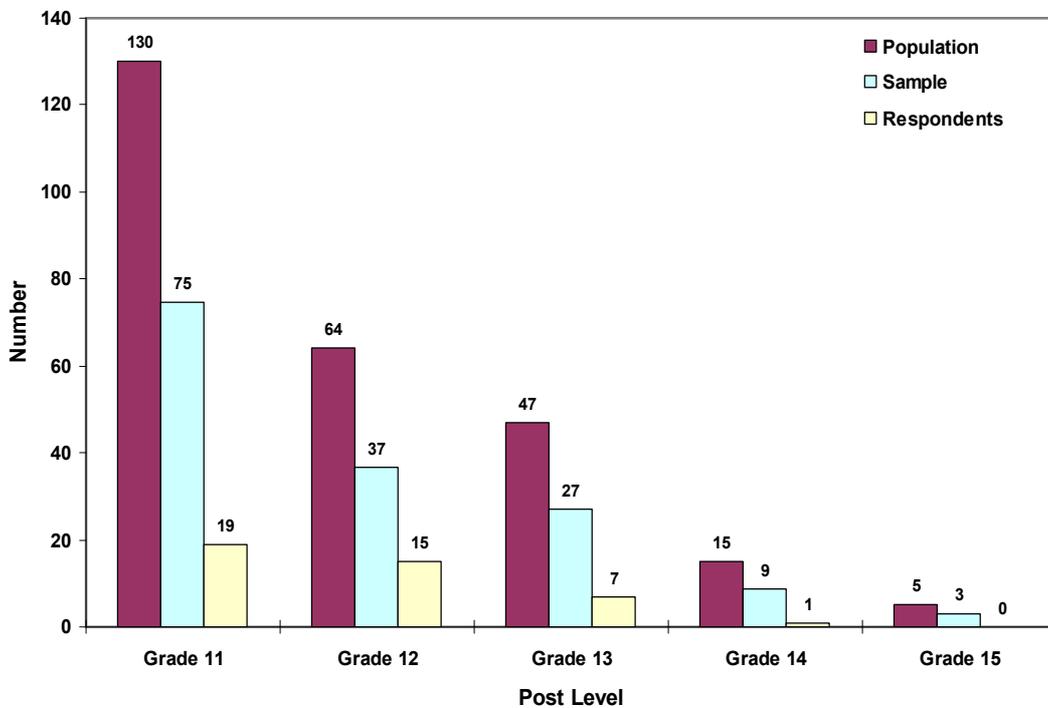


Figure 5.1. Distribution of the Population, Sample and Respondents per grade.

5.3 BIOGRAPHICAL DESCRIPTION OF SURVEY RESPONDENTS

The biographical information of the entire population was provided to the researcher by the Human Resources Directorate of DAFF. In the following section the biographical information of the survey respondents are presented as a percentage of the total number

of respondents. Out of the 44 questionnaires returned, 2 were incomplete and excluded from results. The final respondent count was thus 42. The following data is provided as a percentage of the total number (42) of valid questionnaires returned.

5.3.1 PERCENTAGE OF RESPONDENTS PER LENGTH OF SERVICE

In terms of the length of service of respondents 24% [10] had served the Department for a period equal to or less than 5 years, 5 < 31% [13] ≤ 10 years; 10 < 17% [7] ≤ 15 years; 15 < 7% [3] ≤ 20 years; 20 < 10% [4] ≤ 25 years; 25 < 7% [3] ≤ 30 years; 30 < 2% [1] ≤ 35 years and 35 < 2% [1] ≤ 40 years.

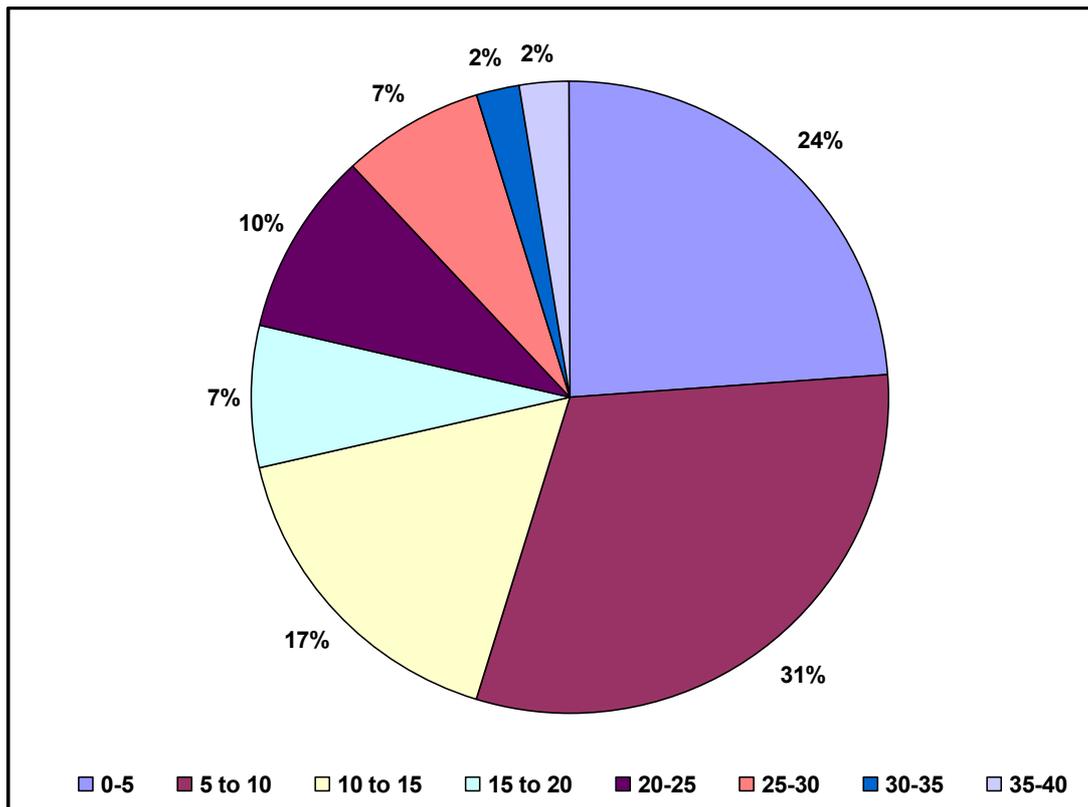


Figure 5.2. Percentage of Respondents per years of service

5.3.2 PERCENTAGE OF RESPONDENTS BY GENDER

In relation to the gender of respondents, 52% [22] were male and 48% [20] were female.

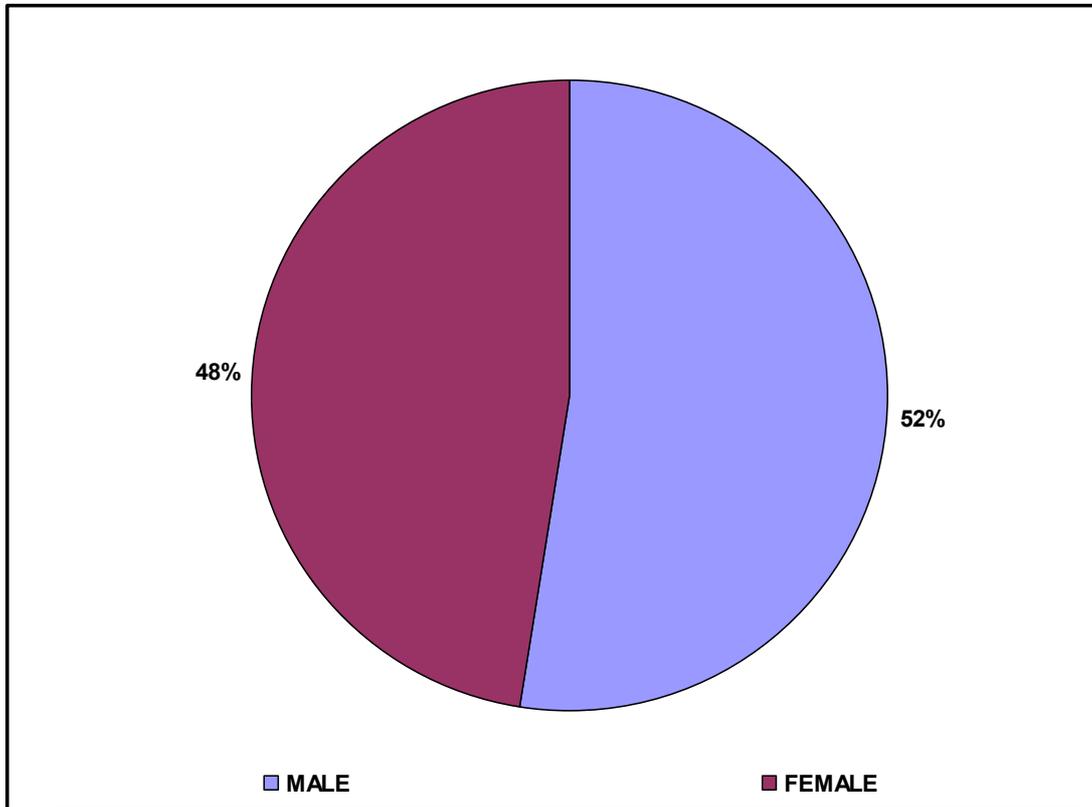


Figure 5.3 Percentage of respondents per gender category

5.3.3 PERCENTAGE OF RESPONDENTS BY POPULATION GROUP

With regard to the population grouping of the respondents, 62% [26] were black, 31% [13] white, 5% [2] Indian and 2% [1] coloured.

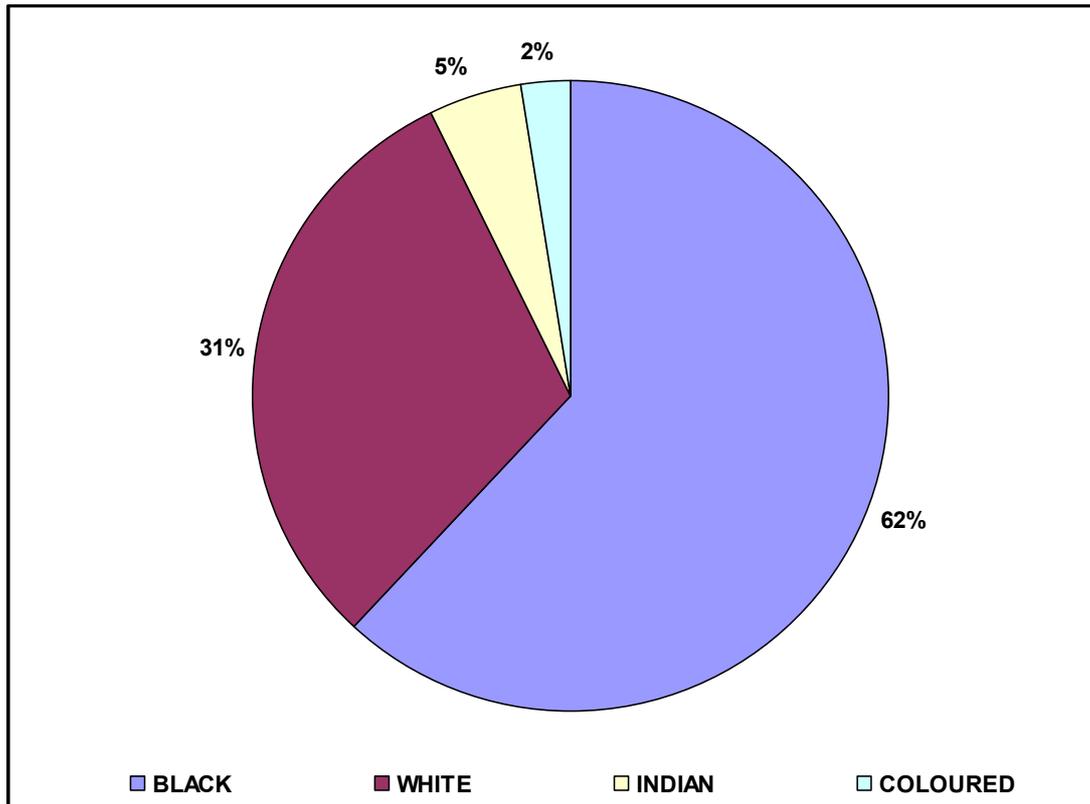


Figure 5.4 Percentage of respondents per population group

Respondents' biographical information (length of service, gender and population group) were further analysed by grade and is presented in Table 5.1 below. This was done to determine the characteristics of the various strata and to correlate it with both the sample and population to ensure representation of the population being researched. The data in the last row of Table 5.1 has been presented in the charts above. None of the respondents from grade 11 category served the Department between 30 and 35 years

and only one respondent across all grades have served the Department for more than 35 years. Most respondents served the Department in the 5 to 10 year category. Also more males responded than females and a higher response rate were from black employees than either white, Indian or coloured; although it is also noted that the respondent distribution across the grades correlated with that of the sample selected for the study that does closely resemble the population profile of participants within DAFF selected to form part of the study.

Table 5.1 Profile of respondents by grade, gender, length of service and population group.

GRADE	GENDER		LENGTH OF SERVICE								POPULATION GROUP			
	Male	Female	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Black	White	Indian	Coloured
11	10	9	7	6	1	1	2	1	-	1	10	7	1	1
12	7	8	1	6	3	2	1	1	1	-	10	4	1	-
13	5	2	2	-	3	-	1	1	-	-	5	2	-	-
14	-	1	-	1	-	-	-	-	-	-	1	-	-	-
15	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Total	22	20	10	13	7	3	4	3	1	1	26	13	2	1

5.4 PRESENTATION AND ANALYSIS OF RESEARCH RESULTS

The data collected through the survey will be presented as pie charts (overall sections) and histograms (bar graphs) (per question/statement) for each of the questionnaire sections. The results will firstly depict the overall percentages for each section followed by a closer examination of each of the five questions provided for each of the sections. Overall percentage scores per category of the 5 point Likert-scale were calculated based on the total scores for each of the 5 point Likert-scale categories, i.e. Strongly agree, Agree, Neither agree nor disagree, Disagree and Strongly disagree with respect to the total score for all of the categories collectively, i.e. there were 42 respondents each answering 5 questions per section resulting in a total score for each to be 210. Each final score per category was taken as a percentage of 210. A tabulated form of all the respondents' scores per question/ statement per section is provided in Appendix 3. Furthermore, each section can be identified by a code as follows:

S1: Use and co-ordination

S2: IT infrastructure

S3: Organisational Culture

S4: Leadership

Each of the questions/ statements were coded, e.g. S1.1 for the first question/ statement followed by S1.2 for the next until S1.5 for the last question/ statement for the first section. This coding trend was thus followed for each of the four sections of the questionnaire.

5.5 USE AND CO-ORDINATION OF KM (S1)

In this section, questionnaire participants were provided with statements relating to the use and co-ordination of KM practices in DAFF of which they were aware of or currently using. Collectively most respondents (38%) agreed that KM practices were being utilised and co-ordinated with (29%) in disagreement and (9%) in strong disagreement. (19%) of the respondents were neutral (neither in agreement or disagreement) and 5% were in strong agreement. These overall section percentage scores were based on the following five statements and are depicted in Figure 5.5 below.

- S1.1:** The Department has in place measures for capturing ideas to solve problems.
- S1.2:** I have access to information of other directorates.
- S1.3:** The Department hosts regular cross- functional (between directorates) engagements.
- S1.4:** I regularly attend conferences/ workshops/ seminars related to my field of expertise.
- S1.5:** I interact regularly with a wide network of contacts within my field.

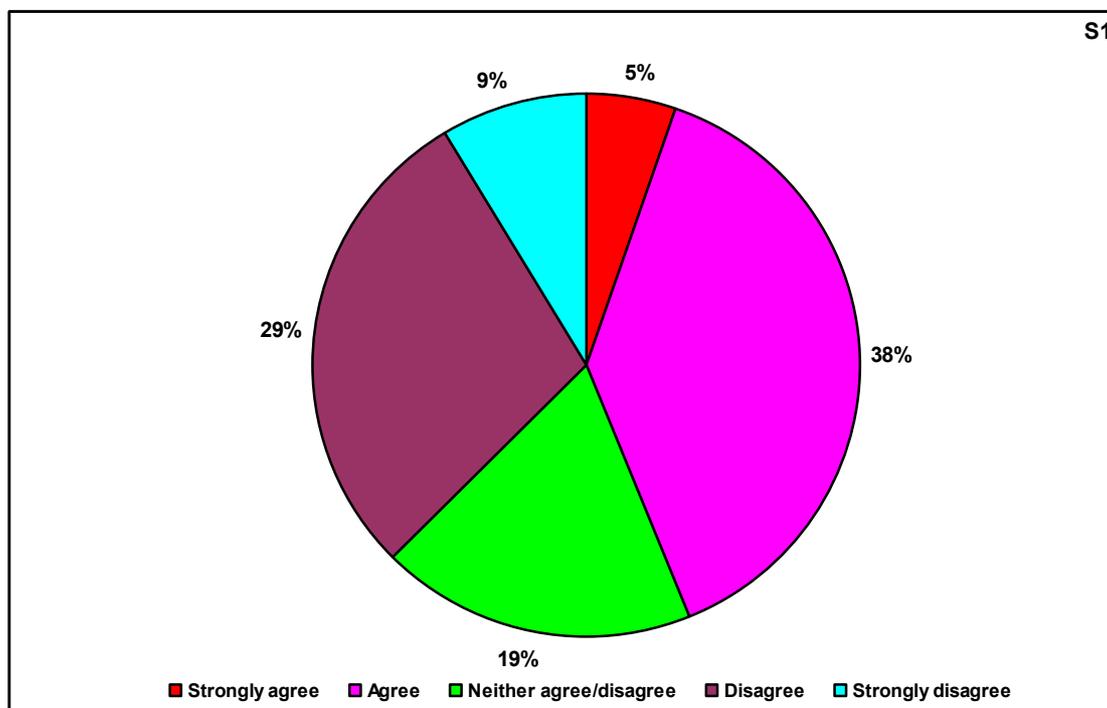


Figure 5.5. S1: Use and Co-ordination of KM in DAFF.

Although it may appear that there is good use and co-ordination of KM in DAFF, the researcher rather sought to identify those areas for which the questionnaire revealed gaps. This was done by constructing bar graphs for each of the questions/ statements presented above and are depicted in Figure 5.6 below. Each of the statements is coded on each of the bar graphs from S1.1 to S1.5 respectively.

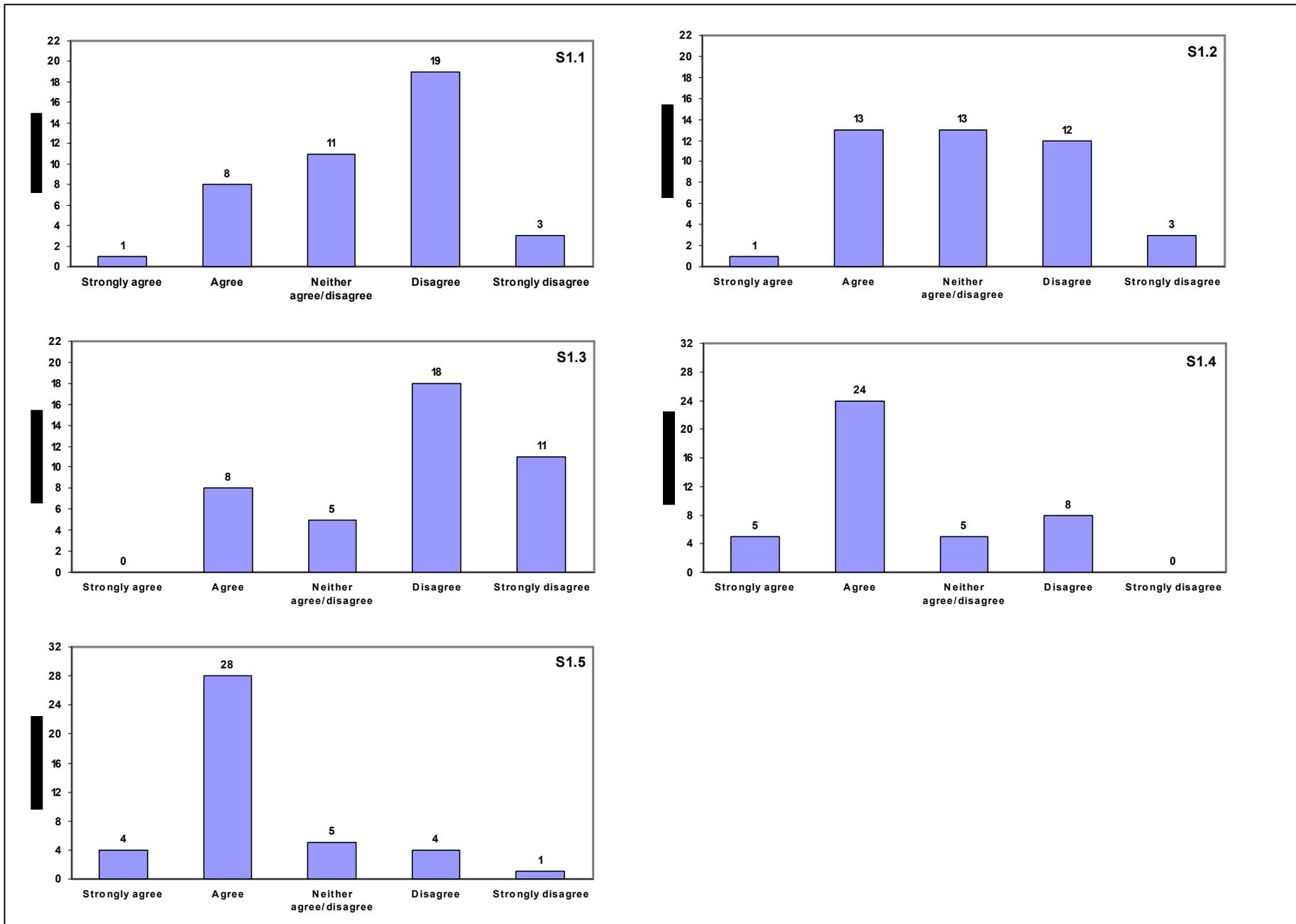


Figure 5.6. Use and co-ordination (S1) of KM per questionnaire statement.

For S1.1 and S1.3 there appears to be a high number of respondents in disagreement with its respective statements. These statements have been linked to the sharing of knowledge internally as reflected in the statements through reference to ideas being captured and intra-departmental engagements respectively. S1.4 and S1.5 are more focussed on the external acquisition of information or knowledge transfer through reference to conference, seminar and workshop attendance and wide network engagements. The bar graphs for these latter two statements revealed 24 and 28 respondents were in agreement with each of the statements respectively. This result demonstrates good interventions in DAFF for its officials to acquire knowledge from external sources however, highlights a gap in the internal sharing and documenting of that knowledge or information which has been acquired. As for S1.2, at first glance it may appear that most respondents agree that they have access to information from other directorates but what should be noted is the strong disagreement in addition to the disagreement category of the Likert-scale for this statement which highlights a more negative response from officials. This may be added to the statements relating to internal knowledge sharing (S1.1 and S1.3) to confirm the gap within DAFF to effectively ensure that the knowledge within the heads of officials (tacit knowledge) is being exploited and cross-pollinated. However as with all initiatives, systems are made up of processes for which there needs to be the appropriate infrastructural capabilities to allow it to function well. This leads to the next section of the questionnaire (IT infrastructure) where just that will be unravelled. Is there proper IT infrastructure to allow for this internal knowledge sharing as well as the external KM practices in DAFF?

5.6 IT INFRASTRUCTURE S2

In this section, questionnaire participants were provided with statements relating to the IT infrastructure employed for KM practices in DAFF which they were aware of or currently using. Collectively most respondents (34%) agreed that the IT infrastructure was sufficient to ensure KM in DAFF with (25%) in disagreement and (10%) in strong disagreement. 22% of the respondents were neutral (neither in agreement or disagreement) and (9%) were in strong agreement. These overall section percentage scores were based on the following five statements and are depicted in Figure 5.7 below.

- | | |
|-------------|---|
| S2.1 | Technology, i.e. e-mail/ video / telephone conferencing/ online meeting facilities allows for communication across the entire Department. |
| S2.2 | The Department has an intranet facility for sharing learning material, i.e. material to assist you to do your job. |
| S2.3 | The Department has an interactive, informative and user-friendly website. |
| S2.4 | New collaborative technology is readily adopted in the Department. |
| S2.5 | I belong to an online community in my field. |

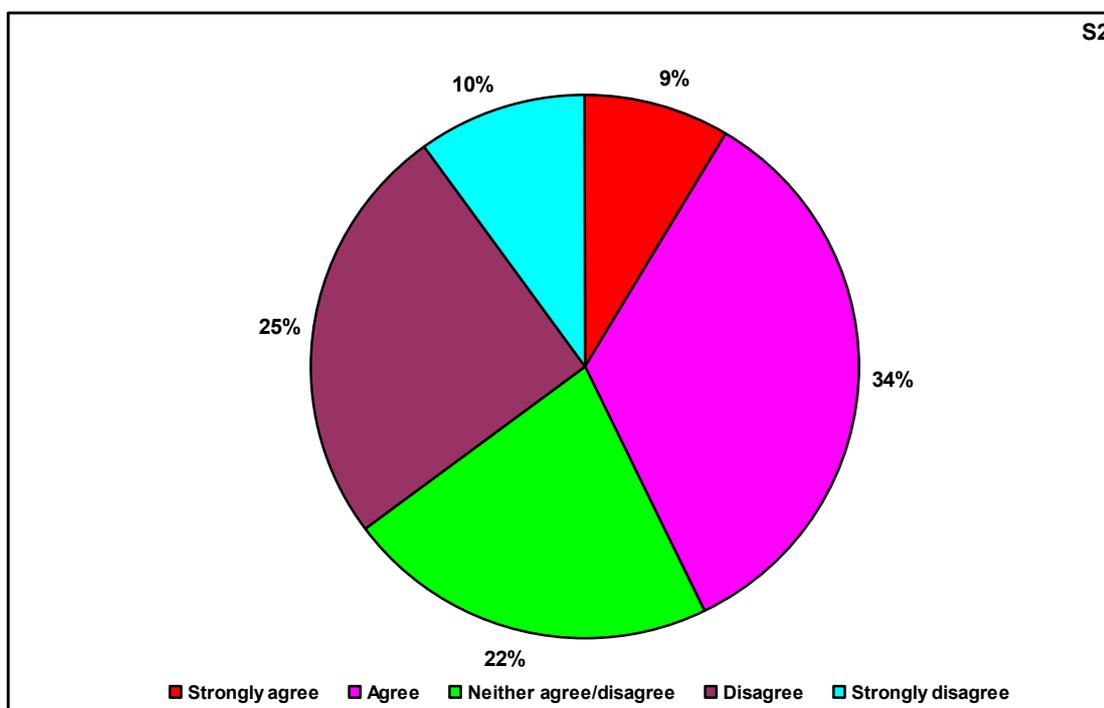


Figure 5.7. S2: IT Infrastructure in DAFF.

Although it may appear that DAFF employs good IT infrastructure for KM, the researcher rather sought to identify those areas for which the questionnaire revealed gaps. This was done by constructing bar graphs for each of the questions/ statements presented above and are depicted in Figure 5.8 below. Each of the statements is coded on each of the bar graphs from S2.1 to S2.5 respectively.

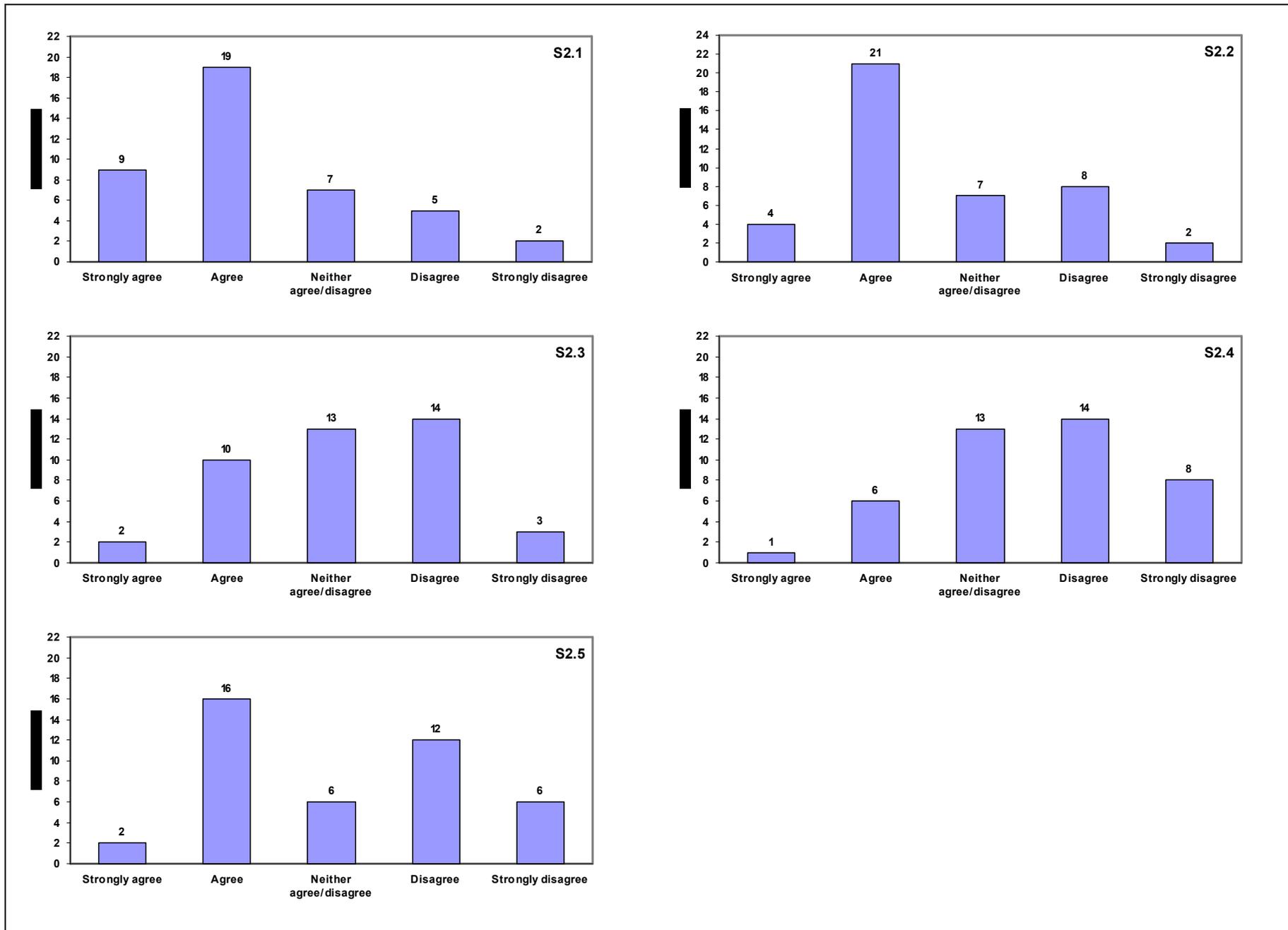


Figure 5.8. IT Infrastructure (S2) in DAFF per questionnaire statement.

For S2.3 and S2.4 there appears to be a high number of respondents in disagreement (17 and 22 collectively from those that disagree and strongly disagree) with its respective statements. The first statement refers to DAFF's website which is the link between government and the public. Respondents do not perceive DAFF's website to be sufficient for engaging the South African society and feel that the current technology may be outdated to ensure its efficiency in this new knowledge economy. However, many respondents agree (28 and 25 collectively from those that agree and strongly agree) that the current technology does allow for effective internal communication as well as a resource to facilitate their activities (S2.1 and S2.2). Important to note when comparing the bar graphs for statements S2.1 and S2.2 with S2.3 and S2.4 is the difference in the number of respondents who remain neutral. There appears to be a higher number of respondents being neutral to S2.3 and S2.4 than for S2.1 and S2.2. What this means is that a higher percentage of respondents are uncertain of the website and the collaborative technology adoption than they are about the current infrastructure such as the intranet and e-mail. Another interesting observation from the data received from respondents is the even split between respondents who belong to an online community and those who do not with both sides of the Likert-scale adding to 18 respondents with 6 who are uncertain.

5.7 ORGANISATIONAL CULTURE (S3)

In this section, questionnaire participants were provided with statements relating to a knowledge creating and sharing organisational culture within DAFF. Collectively most respondents (32%) were neutral (neither in agreement or disagreement) of which (26%) were in agreement that DAFF has a knowledge creating and sharing culture with (24%) in disagreement and (11%) in strong disagreement. These overall section percentage scores were based on the following five statements and are depicted in Figure 5.9 below.

- | | |
|-------------|--|
| S3.1 | All employees are aware of the value and benefits of sharing knowledge. |
| S3.2 | I have a significant say in my development plan. |
| S3.3 | The Department recognizes and/or rewards employees that contribute positively toward improved performance. |
| S3.4 | Employees share information openly and trustingly. |
| S3.5 | The Department allows flexible working arrangements for knowledge workers. |

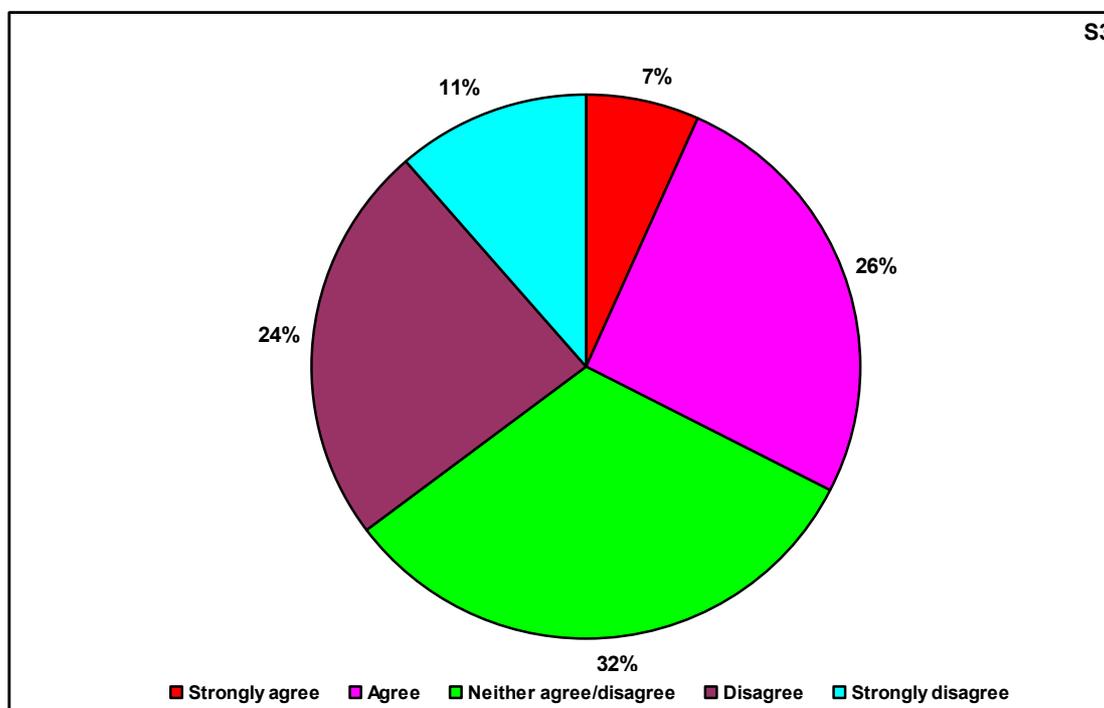


Figure 5.9. S3: Organisational Culture of DAFF.

Although it may appear as though DAFF indeed does have a knowledge creating and sharing culture as reflected in the pie chart above, the researcher rather sought to identify those areas for which the questionnaire revealed gaps. This was done by constructing bar graphs for each of the questions/ statements presented above and are depicted in Figure 5.10 below. Each of the statements is coded on each of the bar graphs from S3.1 to S3.5 respectively.

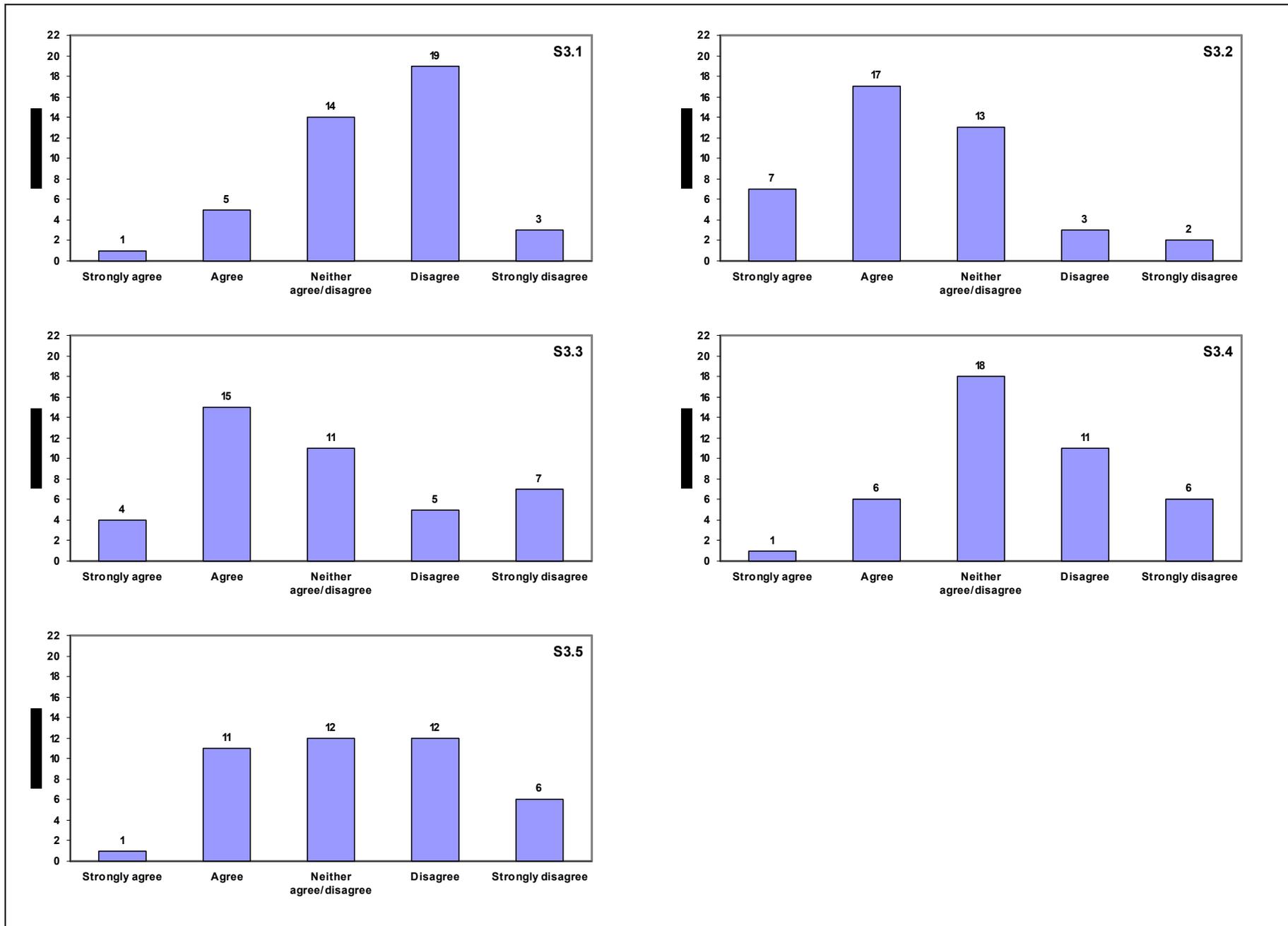


Figure 5.10. Organisational culture (S3) of DAFF per questionnaire statement.

For S3.2 and S3.3 there appears to be a high number of respondents in agreement (22 and 19 collectively from those that agree and strongly agree) with its respective statements. The first statement refers to the development of officials toward creating new knowledge and the second statement refers to officials being rewarded for adding value to the Department, the knowledge inputs of officials into the systems and operations of DAFF. Respondents thus are comfortable that they are being encouraged to seek opportunities for generating new knowledge and that DAFF has in place a system to reward positive contribution to DAFF's overall performance. However, many respondents disagree with the current state of awareness of the benefits of KM and do highlight that there are challenges with the sharing of information openly and trustingly (22 and 17 collectively from those that disagree and strongly disagree) and more respondents (18 collectively from those that disagree and strongly disagree) disagree with the allowance of flexible working arrangements for knowledge workers as depicted in line graph, S3.5, of Figure 5.10.

5.8 LEADERSHIP (S4)

In this section, questionnaire participants were provided with statements relating to the commitment and support of DAFF's leadership for a KM implementation. Collectively most respondents (29%) agreed that DAFF's leadership showed both commitment and support for KM implementation with (24%) in disagreement and (18%) in strong disagreement. (27%) of the respondents were neutral (neither in agreement nor disagreement) and only (2%) were in strong agreement. These overall section percentage scores were based on the following five statements and are depicted in Figure 5.11 below.

S4.1	I know the Department's knowledge management strategy.
S4.2	I am measured on knowledge sharing as part of my performance assessment.
S4.3	Leadership allows for regular bottom-up and top-down interaction.
S4.4	Leadership openly expresses support for knowledge sharing.
S4.5	There is senior level, ongoing review of the effectiveness of knowledge management in the Department

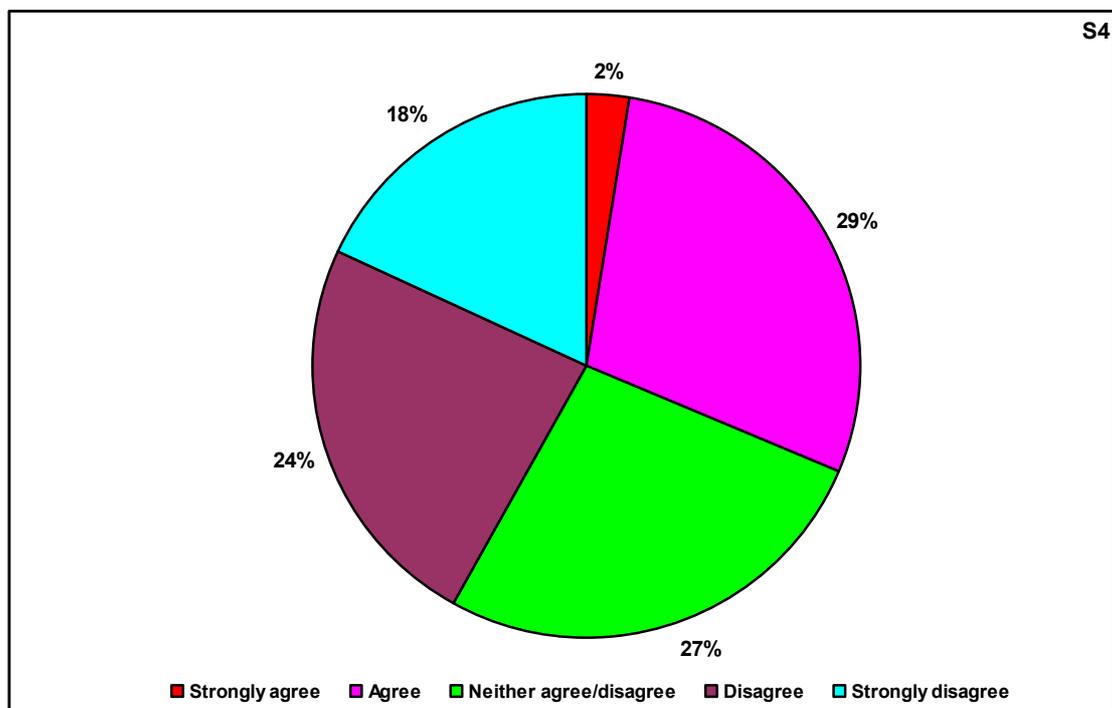


Figure 5.11. S4: Leadership in DAFF.

Although it may appear as though DAFF indeed does have the support and commitment from its leaders as reflected in the pie chart above, the researcher rather sought to identify those areas for which the questionnaire revealed gaps. This was done by constructing bar graphs for each of the questions/ statements presented above and are depicted in Figure 5.12 below. Each of the statements is coded on each of the bar graphs from S4.1 to S4.5 respectively.

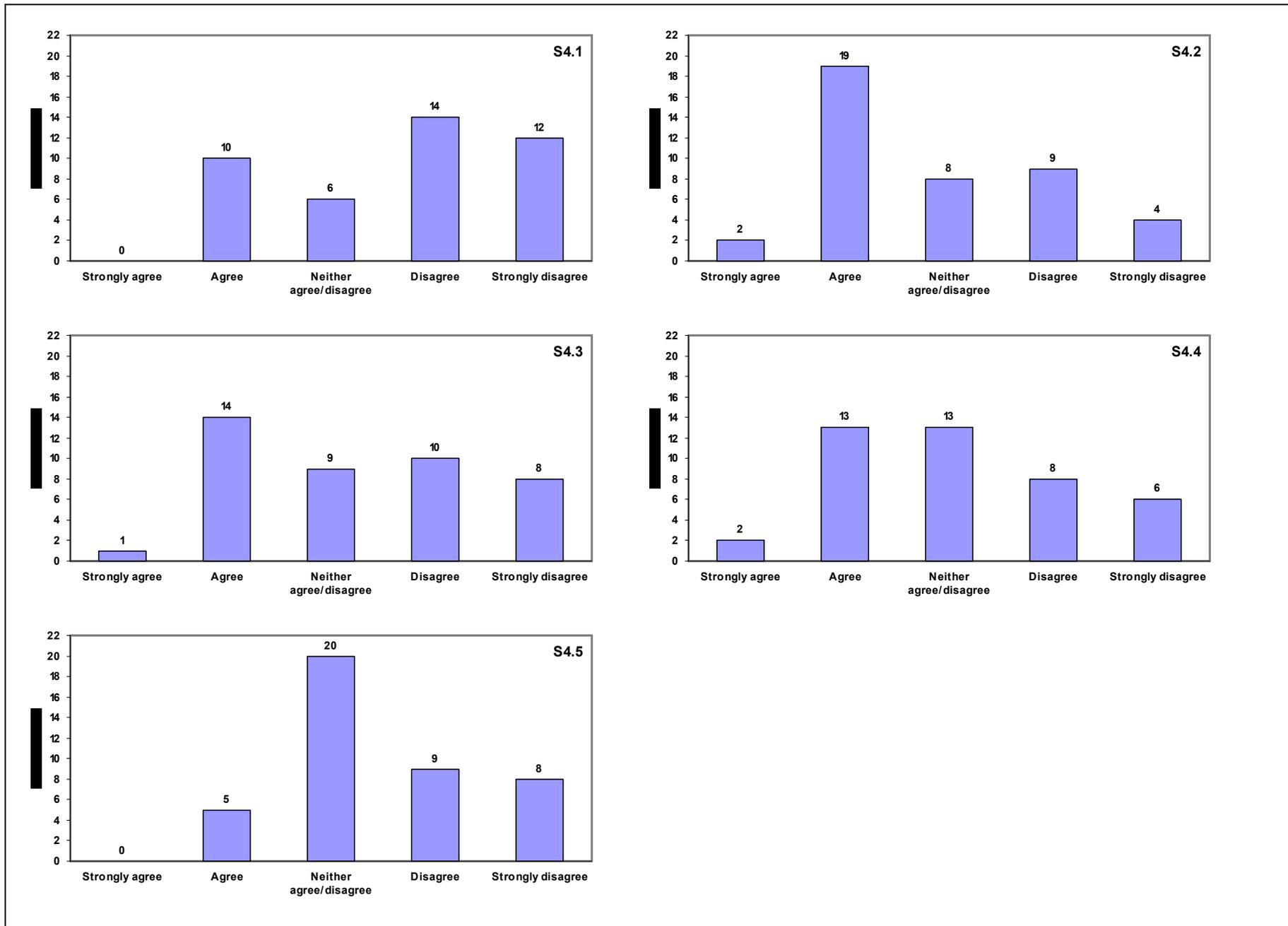


Figure 5.12. Leadership (S4) in DAFF per questionnaire statement.

For S4.2 and S4.4 a higher number of respondents are in agreement (20 and 15 collectively from those that agree and strongly agree) with its respective statements. The first statement refers to the fact that they are measured on knowledge sharing and the second statement refers to the fact that leadership openly expresses support for knowledge sharing. These results of these statements reflect the commitment of DAFF's leadership to knowledge sharing as positive. Although interestingly, 26 (62%) respondents (collectively disagree and strongly disagree) do not know the KM strategy of DAFF with 14 and 12 respondents disagreeing and strongly disagreeing respectively. Respondents also gave a negative response to regular bottom-up and top-down interaction with 18 respondents collectively disagreeing and strongly disagreeing. Many respondents were uncertain of the ongoing review of KM effectiveness in DAFF (20 respondents neither agreeing nor disagreeing) with 17 respondents collectively disagreeing and strongly disagreeing and 5 respondents collectively agreeing and strongly agreeing to the said statement.

5.9 KM IN DAFF

This section represents the total of all the statements for the entire questionnaire to assess KM in DAFF. Collectively most respondents (38%) agreed that KM initiatives in DAFF were appropriate with (29%) in disagreement, (5%) in strong agreement, (9%) in strong disagreement and (19%) of the respondents were neutral (neither in agreement nor disagreement). These overall questionnaire percentage scores were based on respondents' perceptions of the use and co-ordination of KM, the IT infrastructure, the organisational culture and the leadership collectively and is depicted in Figure 5.13 below.

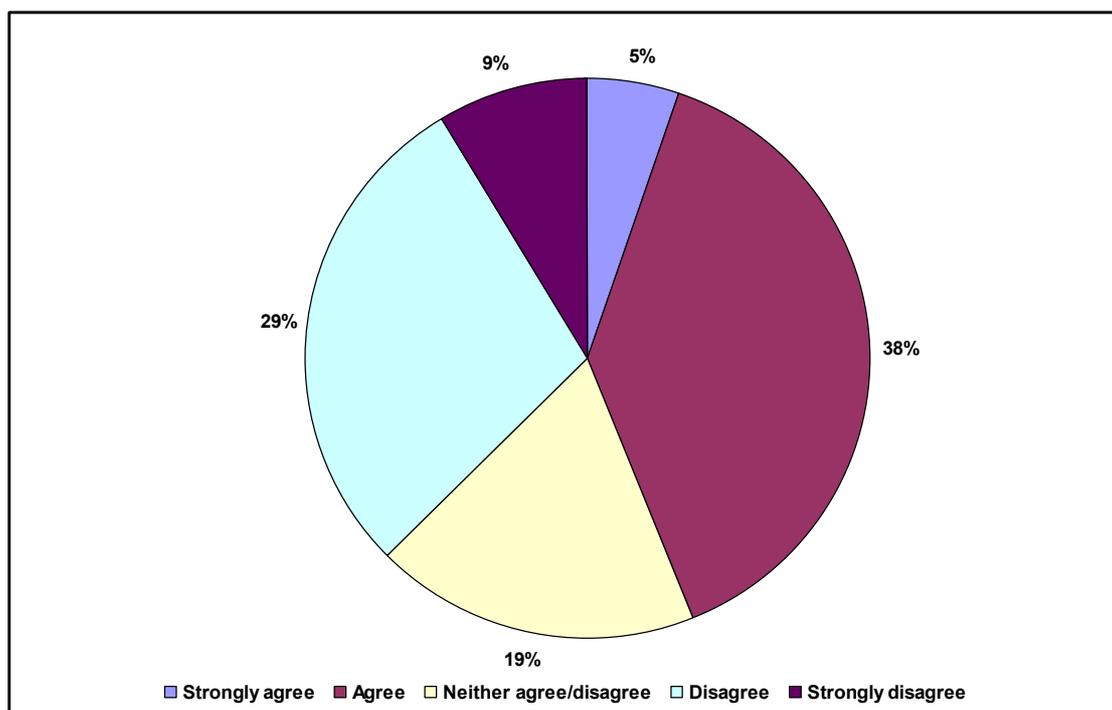


Figure 5.13. (S1-S4): Collective representation of respondents' perceptions to KM in DAFF.

5.10 DISCUSSION OF STUDY RESULTS

This section interprets and discusses the findings of the survey results presented above in relation to the objectives of the study under the themes presented in the questionnaire.

5.10.1 LEADERSHIP

The first objective of the study was to determine leadership's support in driving KM processes. According to KM literature, the expression of positive leadership characteristics at various levels of management is a vital aspect for developing knowledge culture in organisations. These attributes include, empowering subordinates, allocation of resources, openness towards change and experimentation, developing trust, tolerance to mistakes and building long-term perspective of the organizational goals among employees.

The statements composed to yield qualitative data related to the first objective of the study are re-listed below for convenience for the interpretation presented below.

- S4.1 I know the Department's knowledge management strategy.**
- S4.2 I am measured on knowledge sharing as part of my performance assessment.**
- S4.3 Leadership allows for regular bottom-up and top-down interaction.**
- S4.4 Leadership openly expresses support for knowledge sharing.**
- S4.5 There is senior level, ongoing review of the effectiveness of knowledge management in the Department**

The high proportion of respondents who do not know the KM strategy (S4.1) is indicative of poorly run induction programmes (which is exacerbated by high staff turn-over) and/or the lack of awareness regarding KM in the Department. Given the highly transactional leadership environment in DAFF, it is expected that priority items (as identified by

leaders) would receive the necessary focus. It could thus be a sign that KM is not prioritised in performance contracts.

According to the relatively high scoring for item S4.2 and S4.4 it would appear that there are pockets of managers who do give priority to the knowledge sharing aspect of KM. This could be due to necessity to ensure employees are equipped with the skills necessary to perform their work or it may be that there are enlightened managers who have entered the ranks of DAFF and are aware of the importance of KM and are thus creating a platform for entrenching it within their sphere of control. Very significant though is the fact that more than 25% of respondents are adamant (strongly disagree with S4.2) that they are not being rewarded / penalised with respect to knowledge sharing. This could point to leaders either inconsistently applying the performance management system or the total absence of KM measures in large parts of the Department.

Although the two-way communication question was mainly scored negative (indicative of leaders functioning within the boundaries set by the structure and associated hierarchical culture), the significant number of positive responses would again indicate that there are leaders who are opening the dialogue channels which should make them more approachable and thus allow for the migration toward a transformational realm of leadership.

It would appear that a high proportion of respondents do not have visibility of senior management processes and were hence unable to answer S4.5. This also casts doubt on the completeness of top-down feedback.

5.10.2 ORGANISATIONAL CULTURE

The second objective of the study was to review the current organisational culture as an enabler to implementing KM. According to KM literature, a knowledge creating and sharing culture is closely related to the leadership, the organisational structure, and reward systems, amongst others, which collectively develop the way organisations conduct their activities.

The statements composed to yield qualitative data related to the second objective of the study are re-listed below for convenience for the interpretation presented below.

- S3.1 All employees are aware of the value and benefits of sharing knowledge.**
- S3.2 I have a significant say in my development plan.**
- S3.3 The Department recognizes and/or rewards employees that contribute positively toward improved performance.**
- S3.4 Employees share information openly and trustingly.**
- S3.5 The Department allows flexible working arrangements for knowledge workers.**

From the results shown responses reflect a rather self-serving nature of knowledge management shown by the high respondent scores revealed for S3.2 and S3.3 where the focus is on the individual's contribution to their development plan and being rewarded for positive contribution to the overall performance of the Department. This highlights the impact of the dominant transactional leadership style within DAFF. Officials are used to having goals set for which they expect to be reward for a job well done. It further highlights the impacts of a hierarchical organisational design through the low scoring of respondents for S3.1 and S3.4 which is related to a culture of trust, knowledge sharing and openness. What is evident from the results is that knowledge management is not necessarily achieved by compensating individuals and that it goes

beyond issuing instruction and waiting for an expected outcome since even though a reward system is in place, officials still are not inclined to share information. Many reasons for this can be extracted from the literature such as the fact that it could be related to the silos developed as a result of DAFF structure or that it implies that KM as a priority is not being clearly articulated.

In a bureaucracy such as DAFF, this may be considered appropriate for the purpose and existence of DAFF as a government department for which officials rather collectively contribute to the mandate without needing to perform cross-cutting tasks over a wider scope. The fact that an individualistic culture is apparent could thus ensure that each official is focused on their specific task and hence achieve greater results through being the master of the knowledge needed to perform the task, much like the 'machine bureaucracy' described by Henry Mintzberg (Grant, 2008).

5.10.3 USE AND CO-ORDINATION

The third objective of the study was to determine the extent of use and co-ordination of KM practices. According to Nonaka *et al*, 2000 the knowledge creating process is context specific in terms of who participates and how they participate. They suggest that knowledge needs a physical context to be created for which *ba* offers such a context. *Ba* provides the energy, quality and place to perform the individual conversions and to move along the knowledge spiral. *Ba* emphasises interaction among individuals and interaction between individuals and their environment.

The statements composed to yield qualitative data related to the third objective of the study are re-listed below for convenience for the interpretation presented below.

S1.1: The Department has in place measures for capturing ideas to solve problems.

S1.2: I have access to information of other directorates.

S1.3: The Department hosts regular cross- functional (between directorates) engagements.

S1.4: I regularly attend conferences/ workshops/ seminars related to my field of expertise.

S1.5: I interact regularly with a wide network of contacts within my field.

Based on the results from the survey which shows DAFF as having the necessary processes in place for knowledge acquisition from the external environment in the form of conferences and networks, the use and co-ordination from the perspective of interaction between individuals and the environment is according to Nonaka's model. However, the interaction required among individuals within DAFF creates an area of concern and does highlight a gap in the KM of DAFF. This is highlighted by the low respondent scores in agreement with statements S1.1, S1.2 and S1.3.

From the literature review, four categories of KM strategies were described including codification, tacit, focussed and unfocussed for which it was ascertained in Chapter 2 that DAFF appears to be implementing a codification KM strategy. Briefly a codification strategy is the conversion of tacit knowledge into explicit knowledge with the aim of assisting with knowledge flows. If DAFF is to successfully implement a codification KM strategy the gaps related to the internal interaction among individuals (officials) would need to be addressed which would thus envisage a more complete application of what Nonaka proposed to ensure that knowledge is shared.

5.10.4 IT INFRASTRUCTURE

The fourth objective of the study was to review the KM infrastructure.

The statements composed to yield qualitative data related to the fourth objective of the study are re-listed below for convenience for the interpretation presented below.

- S2.1 Technology, i.e. e-mail/ video / telephone conferencing/ online meeting facilities allows for communication across the entire Department.**
- S2.2 The Department has an intranet facility for sharing learning material, i.e. material to assist you to do your job.**
- S2.3 The Department has an interactive, informative and user-friendly website.**
- S2.4 New collaborative technology is readily adopted in the Department.**
- S2.5 I belong to an online community in my field.**

It would appear that the sampled group are generally satisfied with the IT infrastructure as borne out by the positive responses to S2.1 and S2.2. This despite on-line collaborative and efficiency enhancing tools such as Net Meeting / Live Meeting and video conferencing being unavailable. In an organisation such as DAFF with regional, national and global reach and obligations this is surprising as costs associated with attending meetings (travel, accommodation, etc) could be greatly reduced by employing these technologies which will also improve efficiency by reducing travel time. The material available on the intranet is mainly of a peripheral support nature such as human resource templates, forms and policies with no real technical content as required by scientists. It might be that the question as posed (S2.2) was not understood in the intended context. The fact that the current low level IT infrastructure availability is not a cause for concern with the respondents would imply that there is no real desire to adopt new technologies as was confirmed by the responses to S2.4. This is an ominous sign for any future technology infrastructural upgrades as a general sense of complacency in

the current state of infrastructure could dampen the enthusiasm for any significant improvements to bring DAFF on par with the available tools relevant to its environment.

In the modern organisational context – both private and public – the on-line image portrayed is of great significance to stakeholders. Given the wide reach of an organisation's web-site it is of paramount importance to ensure that the desired impression is created on this platform. Even though an on-line presence does not directly impact the internal functioning of DAFF, it is an important link between external stakeholders and internal processes. It is thus a cause for concern that S2.3 has elicited a negative response. The static nature of the web-site's content might be responsible for the low score as only infrequent updates are conducted via information provided by line personnel with no direct responsibility for website maintenance. There is also little to no interactive functionality available on the website.

It would appear that respondents do participate in on-line communities. Again this is consistent with the finding that external acquisition of information is indeed taking place. Unfortunately no distinction could be drawn between email, social media or blog sites.

5.11 SUMMARY

Chapter five presented and discussed the research data that was collected. This chapter was structured around addressing the research objectives by way of findings from the research data collected using a questionnaire consisting of statements relating to each of the research objectives. A summary of respondents perceptions for each of the questionnaire sections were as follows:

Use and co-ordination: (38%) agreed that KM practices were being utilised and co-ordinated with (29%) in disagreement, (9%) in strong disagreement, (19%) that were neutral (neither in agreement or disagreement) and 5% were in strong agreement.

IT infrastructure: (34%) agreed that the IT infrastructure was sufficient to ensure KM in DAFF with (25%) in disagreement, (10%) in strong disagreement, (22%) that were neutral (neither in agreement or disagreement) and (9%) were in strong agreement.

Organisational culture: (26%) were in agreement that DAFF has a knowledge creating and sharing culture with (24%) in disagreement, (11%) in strong disagreement, (32%) that were neutral (neither in agreement or disagreement).

Leadership: (29%) were in agreement that DAFF's leadership showed both commitment and support for KM implementation with (24%) in disagreement, (18%) in strong disagreement, (27%) that were neutral (neither in agreement nor disagreement) and only (2%) were in strong agreement.

A discussion of the results was also provided.

CHAPTER 6

6. CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides a summary to the research conducted. The research statement and objectives of this study were:

To explore the prevalence of KM practices in The Department of Agriculture, Forestry and Fisheries (DAFF) (focussing specifically on the Agricultural component of DAFF) to enable its delivery on its mandate with specific objectives as follows:

Objective 1: To determine leadership's support in driving KM processes.

Objective 2: To review the current organisational culture as an enabler to implementing KM.

Objective 3: To determine the extent of use and co-ordination of KM practices.

Objective 4: To review the KM infrastructure.

The overview presented in this chapter will highlight the outcomes for each of the research objectives as well as highlight various guiding principles relevant to each of the research areas that would contribute to the future implementation of DAFF's KIM strategy.

6.2 LEADERSHIP

The leadership style of DAFF which is influenced by its organisational structure is not appropriate for KM which requires that knowledge be shared amongst the individuals within a knowledge-based organisation. Transactional leadership does not instil the

appropriate culture for this to occur. Although it may appear that some KM practices can be successfully implemented, this is clearly not rooted in top management support for KM but rather that it is individual managers within the tall hierarchy who are taking the initiative to ensure KM. This is in line with literature that advocates KM sustainability to be a function of middle and front end managers who demonstrate transformational leadership attributes to develop and support a knowledge culture and essentially determine the success of KM programmes through developing a knowledge culture in their specific teams or divisions. This study highlights the essential role of middle and front level managers in developing knowledge culture through the manifestation of various leadership characteristics. The findings correlate with the view that effective management and leadership are integral to each other and leadership at all managerial levels is required to develop a desired culture

Recommendations

The top level leaders of DAFF need to be made aware of KM and the existing benefits it has already achieved in various pockets within the organisation. This would require a committed executive level member to support initiatives in KM in which their performance agreements are rightly amended to reflect their priority given to KM.

Detailed roll-out plans should be developed which should include activities such as road shows, focus groups, e-mails and notices in the DAFF newsletters for which a top level management member should be given the appropriate support (resources) to facilitate the process.

Current adaptors of KM (managers/leaders who are exhibiting KM enhancing behaviours) could become change-agents for embedding KM practices in DAFF. They

could typically become focal points in planning and implementation of KM. These individuals will therefore need to be identified, and trained in the various aspects of KM where generous recognition and incentives are provided for their participation. This would highlight the importance of the initiative specifically as DAFF is already rooted in this type of transacting system, where good performance is rewarded.

It would therefore be incumbent on the leaders of within DAFF to re-establish the integrity of the current Performance Management System (PMS) prior to re-vitalising the KIM strategy implementation. This will foster trust within a familiar transactional framework from which to embark on KM initiatives.

Top level managers would also need to be appropriately trained in change management to ensure the sustainability of the effort put into ensuring KM.

6.3 IT INFRASTRUCTURE

For the current level of KM prevalence in DAFF its IT infrastructure adequately fulfils its role as an enabler. There is general acceptance and usage of the systems available which is contrary to the anecdotal accounts elicited during the brainstorming phase. A lack of awareness of the technology gap between DAFF and best-practice organisations and the associated benefits might explain this anomaly. The brainstorming session could possibly have tapped into individuals who might be aware of and frustrated by this gap – hence their poor perception of the performance of the system. Significant benefits can be realised by evolving the IT infrastructure to meet the needs of a fully functional KM system.

Recommendations:

DAFF should invest in enabling IT infrastructure in order to improve efficiency in service delivery while curtailing the associated costs. The positive attitude toward the existing IT infrastructure should be harnessed and utilised as the basis for embarking on further enabling infrastructure establishment according to a structured implementation plan. Upgrades should be conducted in an incremental fashion that should strategically realise easily observable benefits to demonstrate the effectiveness and potential of the programme to the wider organisation. Such a phased approach will be easier to justify and control from a financial perspective as well.

6.4 USE AND CO-ORDINATION OF KM

DAFF currently focuses on knowledge acquisition from the external environment in the form of conferences, seminars, tertiary education, workshops and meetings (both nationally and internationally). However, in order for true KM to be active, internal integration, knowledge sharing and knowledge generation is key. This is the gap identified from the research results above.

Recommendations

This may be a good time for DAFF to do a knowledge audit in which they would be able to identify the various skills and capabilities held within the heads of various individuals within the organisation. The post evaluations that were conducted to inform the 2009 re-structuring exercise could be utilised as a basis for conducting an internal co-ordination exercise down to director level (which was the last level at which the re-structuring was conducted). Directors responsible for similar functions can then be grouped in logical forums to share experiences, provide mentorship opportunities and form an internal

network. Time allocation and specific outcomes would need to be agreed upon beforehand in order to set boundaries.

External knowledge acquisition should continue as knowledge generation relies on new knowledge to enter the system. However, it would need to be controlled so as to ensure appropriate feedback as well as the feedback being integrated into the activities of the department across the directorates. As an example all meeting held in certain international forums could enjoy the well deserved comparison of outcomes in internal knowledge sharing activities to ensure validation to the knowledge acquisition processes. This will also ensure maximum benefits to be harnessed that could feed into more than one individual and thereby creating efficiency in problem solving and decision making.

6.5 ORGANISATIONAL CULTURE

DAFF's bureaucratic structure and dominant leadership style markedly shape its culture. This culture is not conducive to the successful implementation of any of the four KM strategies proposed in the theory.

Recommendations

A culture audit should be conducted to determine the dominant paradigm within DAFF given the central role it plays in both organisational and KM strategy formulation. This will inform the approach to take to implement KM as it will highlight significant risks such as sources of resistance to change. It will also create the initial awareness with staff and a potential "burning platform" to justify any corrective changes to come.

Next a communication platform should be established to disseminate information relevant to KM to the wider DAFF community. Typically a newsletter can be published on the intranet to catalogue and celebrate milestones and recognise employee contributions to KM. In addition to keeping the KM effort front of mind it will also create powerful symbols to hopefully aid the entrenchment of a new paradigm associated with KM in the organisation.. In keeping with the spirit of IT advances, an internal blog could also be established to provide an outlet to engage on articles published in the newsletter which could serve as a near real-time barometer to capture feedback on the KM initiative and inform further planning. This approach should typically resonate with younger staff members as well by allowing them a more contemporary outlet and hopefully assist them with overcoming any insecurity issues related to a lack of experience which might have otherwise stifled their contributions in the protocol conscious government environment.

6.6 SUMMARY

Chapter six offered conclusions and recommendations in line with the problem statement that was articulated in chapter 1. The conclusion summarised the themes that emerged from the research data which highlighted that DAFF's leadership, culture, IT infrastructure and Strategic alignment as not appropriate for KM and hence the recommendations offered guiding principles related to these various key success factors for which DAFF could make use of in the future implementation of its KIM strategy.

The results of this research are specific DAFF and cannot be generalised within other businesses or government departments due to the qualitative approach taken to conduct this study. The research results are thus deemed to be relevant and beneficial to DAFF as the data provided an overview of the current KM situation in DAFF.

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APPENDICES

APPENDIX 1: COVER LETTER AND QUESTIONNAIRE

Dear Sir/Madam

I am currently conducting research in partial fulfilment of the requirements for a Masters degree in Business Administration (MBA) through the Graduate School of Business Leadership (SBL) of the University of South Africa (UNISA).

May I kindly request your assistance through your participation in this research study by completing the questionnaire below. As your time is precious, the questionnaire has been designed to only consume approximately 15 minutes to complete. I am very dependent on your participation as without it I will not be able to complete the research. Please answer all the questions of the questionnaire otherwise I will not be able to use your input.

It would be highly appreciated if your completed questionnaire could be returned via e-mail to NatalieF@DAFF.GOV.ZA by 11 April 2012 to allow sufficient time to perform the appropriate analysis.

The survey is confidential and results will only be used for the purpose of this study. You are expected only to indicate the level of accuracy (from 1 = strongly disagree to 5 = strongly agree).

The reason for my research is briefly explained below:

South Africa has taken its place in the global business environment and needs to compete on an equal footing with the rest of the world. Operational efficiency is a given requirement just to compete but in order to survive and prosper; the need exists for organisations and governments alike to apply their knowledge capital.

I am investigating whether **Knowledge Management Practices** have been employed in the Department of Agriculture, Forestry and Fisheries (DAFF) and would need your participation in order to do my research. My research however, will only concentrate on the Agricultural component of DAFF and only within Pretoria, i.e., Forestry and Fisheries components as well as Agriculture divisions in other provinces have been excluded from the study.

You can contact me by email after 30 June 2012 regarding the results of the research.

Yours truly

Natalie Feltman

Final year MBA student

Graduate School of Business Leadership

University of South Africa

QUESTIONNAIRE GUIDELINES

This Questionnaire is developed for the purpose of determining whether knowledge is being managed within the Department of Agriculture, Forestry and Fisheries (herein referred to as DAFF) and more specifically the Agricultural component of DAFF, i.e., excluding the Forestry and Fisheries.

The questionnaire has 4 sections with 5 statements each:

S1: Knowledge Management Practices;

S2: Knowledge Management Infrastructure;

S3: Organisational Culture

S4: Leadership

Read the statements below and evaluate the Department accordingly. The scale is as follows:

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree

In the survey, “the Department” refers to the **Agricultural component of DAFF**. Below are a few definitions to assist with completing the questionnaire.

DEFINITIONS

Knowledge: “Knowledge is a fluid mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories, but also in organisational routines, processes, practices and norms” (Davenport and Prusak, 1998:5)².

Knowledge management:is the way data, information and knowledge are captured, stored and shared and how they are applied to help an organisation strengthen its competitive advantage (Becker, 2007:42)³.

Knowledge worker: is an individual “who does work which is knowledge and information based” (Harman and Brelade, 2000)⁴. According to Harman and Brelade, these individuals are found at all levels of the organisation where their primary job is to do something with knowledge: to create it, distribute it and apply it.

Collaborative technologies:are technologies that help groups work with computer-based information in a virtual meeting room. In using collaborative technology, widely dispersed work teams can easily share information, whether they’re located across the country or around the world.

² Davenport, T. H. and Prusak, I. 1998. *Working Knowledge: How organisations manage what they know*. Boston: Harvard Business School Press.

³ Becker, F. 2007. ‘Organisational Ecology and Knowledge Networks’, *California Management Review*, 49(2): 42-60.

⁴ Harman, C. and Brelade, S. 2000. *Knowledge Management and the role of HR: securing competitive advantage in the knowledge economy*. London: Prentice Hall.

ADDITIONAL INFORMATION

Please mark the appropriate box with a Capital X.

POST LEVEL	
Assistant director	
Deputy Director	
Director	
Chief Director	
Deputy Director General	

QUESTIONNAIRE

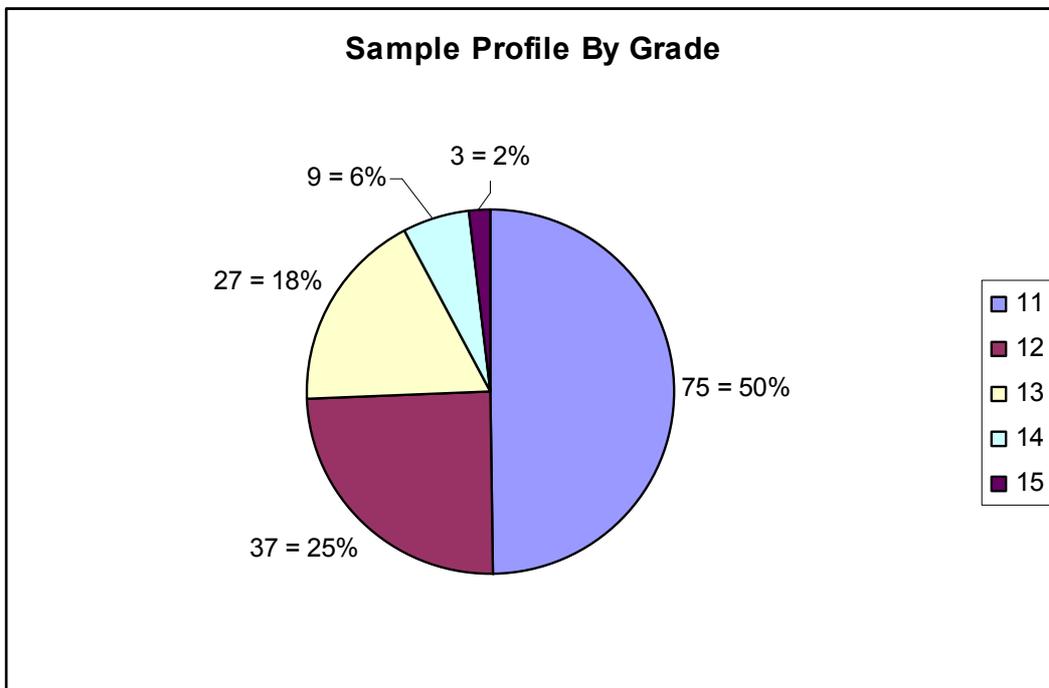
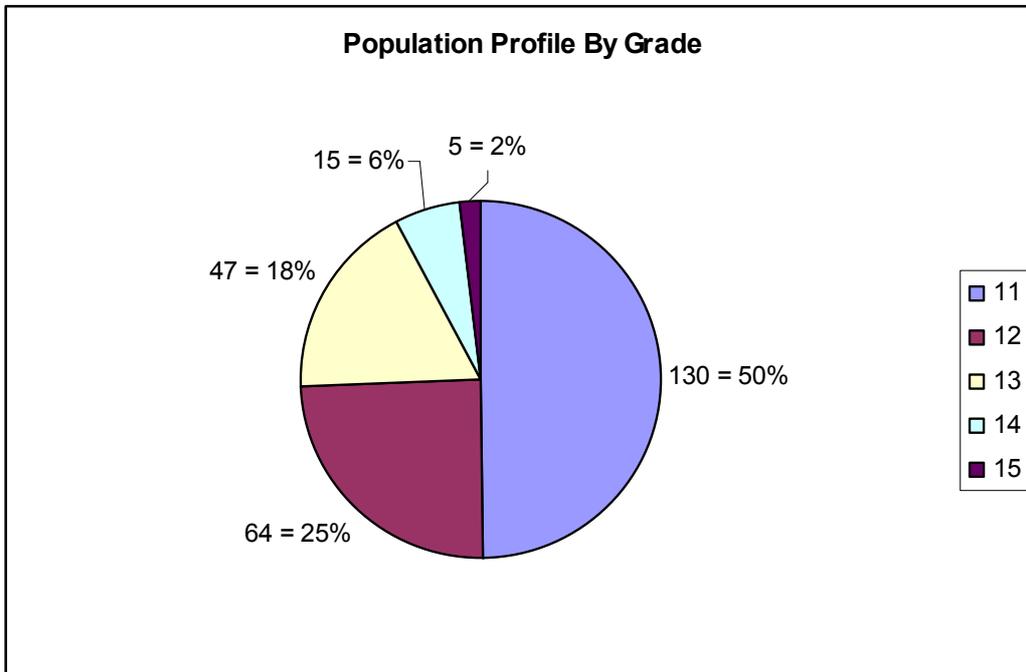
Please mark the appropriate box with a Capital X.

S1: USE AND CO-ORDINATION OF KNOWLEDGE MANAGEMENT PRACTICES					
Scale	Strongly Agree 5	Agree 4	Neither Agree Nor Disagree 3	Disagree 2	Strongly Disagree 1
Statements					
S1. 1. The Department has in place measures for capturing ideas to solve problems.					
S1. 2. I have access to information of other directorates.					
S1. 3. The Department hosts regular cross-functional (between directorates) engagements.					
S1. 4. I regularly attend conferences/ workshops/ seminars related to my field of expertise.					
S1. 5. I interact regularly with a wide network of contacts within my field.					
S2: KNOWLEDGE MANAGEMENT INFRASTRUCTURE					
Scale	Strongly Agree 5	Agree 4	Neither Agree Nor Disagree 3	Disagree 2	Strongly Disagree 1
Statements					
S2. 1. Technology, i.e., e-mail/ video / telephone conferencing/ online meeting facilities etc.) allows for communication across the entire Department.					
S2. 2. The Department has an intranet facility for sharing learning material, i.e., material to assist you to do your job.					
S2. 3. The Department has an interactive, informative and user-friendly website.					
S2. 4. New collaborative technology is readily adopted in the Department.					
S2. 5. I belong to an online community in my field.					

Please mark the appropriate box with a Capital X.

S3: ORGANISATIONAL CULTURE					
Scale Statements	Strongly Agree 5	Agree 4	Neither Agree Nor Disagree 3	Disagree 2	Strongly Disagree 1
S3. 1. All employees are aware of the value and benefits of sharing knowledge.					
S3. 2. I have a significant say in my development plan.					
S3. 3. The Department recognizes and/or rewards employees that contribute positively toward improved performance.					
S3.4. Employees share information openly and trustingly.					
S3. 5. The Department allows flexible working arrangements for knowledge workers.					
S4: LEADERSHIP					
Scale Statements	Strongly Agree 5	Agree 4	Neither Agree Nor Disagree 3	Disagree 2	Strongly Disagree 1
S4. 1. I know the Department's knowledge management strategy.					
S4. 2. I am measured on knowledge sharing as part of my performance assessment.					
S4. 3. Leadership allows for regular bottom-up and top-down interaction.					
S4. 4. Leadership openly expresses support for knowledge sharing.					
S4. 5. There is senior level, ongoing review of the effectiveness of knowledge management in the Department					

APPENDIX 2: POPULATION AND SAMPLE PROFILES



APPENDIX 3

Use and Coordination								
Section	Code	Qu.	Strongly agree	Agree	Neither agree/disagree	Disagree	Strongly disagree	Total
S1	S1.1	The Department has in place measures for capturing ideas to solve problems.	1	8	11	19	3	42
	S1.2	I have access to information of other directorates	1	13	13	12	3	42
	S1.3	The Department hosts regular cross- functional (between directorates) engagements	0	8	5	18	11	42
	S1.4	I regularly attend conferences/ workshops/ seminars related to my field of expertise.	5	24	5	8	0	42
	S1.5	I interact regularly with a wide network of contacts within my field.	4	28	5	4	1	42
Total			11	81	39	61	18	

IT infrastructure								
Section	Code	Qu.	Strongly agree	Agree	Neither agree/disagree	Disagree	Strongly disagree	Total
S2	S2. 1.	Technology, i.e., e-mail/ video / telephone conferencing/ online meeting facilities etc.) allows for communication across the entire Department.	9	19	7	5	2	42
	S2. 2.	The Department has an intranet facility for sharing learning material, i.e., material to assist you to do your job.	4	21	7	8	2	42
	S2. 3.	The Department has an interactive, informative and user-friendly website.	2	10	13	14	3	42
	S2. 4.	New collaborative technology is readily adopted in the Department.	1	6	13	14	8	42
	S2. 5.	I belong to an online community in my field.	2	16	6	12	6	42
Total			18	72	46	53	21	

Organisational Culture								
Section	Code	Qu.	Strongly agree	Agree	Neither agree/disagree	Disagree	Strongly disagree	Total
S3	S3. 1.	All employees are aware of the value and benefits of sharing knowledge.	1	5	14	19	3	42
	S3. 2.	I have a significant say in my development plan.	7	17	13	3	2	42
	S3. 3.	The Department recognizes and/or rewards employees that contribute positively toward improved performance.	4	15	11	5	7	42
	S3.4.	Employees share information openly and trustingly.	1	6	18	11	6	42
	S3. 5	The Department allows flexible working arrangements for knowledge workers.	1	11	12	12	6	42
Total			14	54	68	50	24	

Leadership

Section	Code	Qu.	Strongly agree	Agree	Neither agree/disagree	Disagree	Strongly disagree	Total
S4	S4. 1.	I know the Department's knowledge management strategy.	0	10	6	14	12	42
	S4. 2.	I am measured on knowledge sharing as part of my performance assessment.	2	19	8	9	4	42
	S4. 3.	Leadership allows for regular bottom-up and top-down interaction.	1	14	9	10	8	42
	S4. 4.	Leadership openly expresses support for knowledge sharing.	2	13	13	8	6	42
	S4. 5.	There is senior level, ongoing review of the effectiveness of knowledge management in the Department	0	5	20	9	8	42
			5	61	56	50	38	
Likert-scale Total			48	268	209	214	101	840