Factors influencing effective Information Management using information technology systems in a Public Sector Department

A thesis submitted in partial fulfilment of the requirements for the Master's degree in Information Management

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ABSTRACT

The Public Sector encounters great challenges in its attempts to strengthen its public services. Public servants are in need of accurate and up-to-date information that can be readily accessible. They need information to be made available for effective and efficient decision-making. In order to improve service delivery, the Public Sector must aim to reach its objectives by increasing and improving accountability, transparency, efficiency, productivity and quality of services.

This study focuses on factors, which influence information management in a Public Sector Department in an effective way to manage information properly. An extensive literature review was conducted of information, the role of information management, the possible critical failure and success factors of information management. This led to the discovery of four main categories for critical failure factors: (i) people; (ii) process; (iii) policy and; (iv) technology; and three categories for critical success factors: (i) organizational culture; (ii) top management support; and (iii) strategies. A conceptual model was then developed for these categories with seventeen factors. This model was subsequently tested in the empirical setting of the studied Public Sector Department in South Africa by utilising a qualitative approach through the case-study method.

The findings suggest that the following factors would impact the successful implementation of an information management initiative for this Public Sector Department: information management; change management and communication strategies; culture; roles of responsibility for information; information lifecycle process; and information management policy.

The intended audience for this study includes both academics and practitioners, as it introduces a conceptual model, as well as guidelines to implement these factors for information management in a Public Sector Department.

Keywords: Information; Information Management; Critical Failure and Success Factors; Public Sector; South Africa
DECLARATION

I, Jacqueline Bessick, hereby declare that “Factors influencing effective Information Management using information technology systems in a Public Sector Department”, is my own original work, and that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by way of complete references.

Signed

_________________  _________________

Date

UNIVERSITY of the WESTERN CAPE
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ABBREVIATIONS

BYOD: Bring your own device

CEO: Chief Executive Officer

CFFs: Critical Failure Factors

CSFs: Critical Success Factors

DG: Director General

DDG: Deputy Director General

IG: Information Governance

ILM: Information Life Cycle Management

IM: Information Management

IS: Information System

IT: Information Technology

ITG: Information Technology Governance

MDM: Mobile Device Management

RDBMS: Record and Database Management System
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CHAPTER 1: INTRODUCTION

1.1 Background of research problem

The Public Sector encounters great challenges in its attempts to strengthen its public services. Public servants are in need of accurate and up-to-date information that can be readily accessible. They need internal and external information to be made available for effective and efficient decision-making. In order to improve their service delivery, the Public Sector must aim to reach their objectives to increase and improve efficiency, productivity and quality of services.

Three types of managers are responsible for decision-making in the public sector: senior managers, middle managers and supervisors. Senior managers are responsible for making strategic decisions, measuring performance and establishing key performance indicators, hence they require information timeously (Evans and Price, 2014). These responsibilities are necessary to control the organization’s short-term and long-term goals (Ladley, 2010). However, decision-making is often hampered by the lack of quality information, namely relevant, accurate, timely and complete information. The lack of quality information at a strategic, tactical and operational level, for example, results in managers struggling to plan, measure and control business strategies (Govil et al., 2008).

Information is either fragmented across different functional areas, or dispersed on different information platforms. As a result, they encounter great difficulty when attempting to access reliable information. There are also instances where information is available, but not accurate. Making decisions in real time becomes challenging when the accuracy of new interferences is lacking (Cox, 2014; Day et al., 2009). Senior managers often lack a unified view of key metrics in determining whether their decisions have led to the desired effect; or whether their goals have been reached through their corrective action. This hampers decisions, which are required to drive effective service delivery, evaluate information, implement changes, access reports and monitor results (Steenkamp and Kashyap, 2010).
Middle managers are responsible for carrying out goals that are set by senior managers. They motivate and assist supervisors to achieve business objectives and are involved in day-to-day operations. They provide valuable information to senior management, which assist to improve service delivery to the public.

Middle managers experience challenges in gathering information, which is required to complete strategic objectives for senior managers. Senior managers use this information to assist and inform decision-making regarding budgets for projects and to respond to high level queries. Some employees who are approached by middle managers to share information do not believe that sharing information is part of their daily tasks, and that they are too busy with other tasks, among others. Employees who are required to provide information on when tasks will be completed, give information-gathering a low priority in their overall time utilisation (Julibert, 2008; Kolekofsk & Heminger, 2003). Middle managers need access to relevant information and find it time-consuming and stressful if they fail to complete their tasks. Supervisors are responsible for the daily management of tasks through the work of supporting teams by keeping the operations smooth. Once a decision is made by managers, the supervisors have a significant role in deciding how to do it; how to achieve the objective that was established by the manager. They focus on task-orientated functions, while it is often difficult for them to put the middle managers’ plans into practice, and control the department’s day-to-day activities.

Supervisors experience challenges when tasked with finding information. Three such challenges include inadequate sourcing of information by team members; failing to execute the task effectively as a result; and regulatory policies in obtaining information. This situation causes feelings of stress, anxiety and fear amongst supervisors, as reports should be provided to senior managers within fixed, fast-approaching deadlines (Ward and Peppard, 2002).

Two main areas of concern in retrieving information are highlighted by supervisors, namely the quality of the sourced information and the storage of that information once it is retrieved. When approaching team members who operate in other units, the quality of information that is sourced can be compromised. This could be attributed to miscommunication or differences in the way in which various teams
source information (Berger, 2008). Supervisors find that teams of other units only do a portion of the task, which is requested – that is within their area of expertise. In order to complete the task, one should approach different team members who have additional information that is required. The information that is found is often inconsistent and not in a standard format (Pilerot, 2015).

A pertinent issue that middle managers address is the storage of information that pertains to their unit. Although this information is confidential, it is dispersed across the unit’s Personal Computers (PCs) in the form of spreadsheets (Mantzana & Themistocleous, 2004). Supervisors cannot access the team’s personal PCs to retrieve information, which is gathered by individual team members. The responsible team member is the only one who can do so. This poses further challenges when retrieving information, as it can only be made available once that team member has retrieved it himself/herself. Middle managers express how challenging this is – especially when members of the team have conflicting schedules and tasks. The information that is required to complete tasks is essentially only accessible by certain members of the team – without whose prompt cooperation the task cannot be completed (Laudon et al., 2012; Mantzana and Themistocleous, 2004). It should also be noted that there is no reward system for managing information (Yang & Maxwell, 2011).

It can be summarized that there are three inherent challenges, which affect sourcing reliable information. Firstly, a central repository, whereby information can be accessed, does not exist, as information is fragmented into separate environments. Secondly, there is a clear lack of proper management of information. Lastly, an additional challenge is posed by a lack of policies, as there is no guidance or effective communication in this regard.

The above is also true for the Public Sector Department, the intended empirical setting of this study.
1.2 Research aims

The study aims to establish the importance of information and to identify factors to determine an effective way to manage information, which contributes to improved service delivery for the public, with increased transparency, trust and accountability amongst employees in a Public Sector Department.

1.3 Research objectives

As a response to the practical concerns outlined above such as information managed in a dispersed environment and a lack of a clear information management policy, the objectives of this study are outlined below.

Main objective

To identify factors that might hinder the information management of a Public Sector Department, and to suggest possible solutions for the identified problems.

Sub-objectives

- To explore challenges that are associated with the implementation of information management by identifying the need for effective information management (IM).
- To explore and understand IM models, processes and technology, which are employed in the management of information in order to suggest an appropriate solution for the identified problem.
- To determine an effective way to manage information in the Public Sector Department and to propose an appropriate model.

1.4 Research questions

The main question that the research sought to answer is as follows:

What factors influence information management (IM) in a Public Sector Department, and what is an effective way to manage information properly?

The study will also answer the following sub-questions:

- What are the definitions of information and IM?
- What is the role of information in the organization?
• What factors possibly influence an effective IM within the Public Sector Department?
  o What are the critical failure factors of IM in the Public Sector Department?
  o What are the critical success factors of IM in the Public Sector Department?
• What is an effective way to manage information in the Public Sector Department?

1.5 Rationale and significance of the research
This research seeks to establish an understanding of the meaning of information management. In particular, it sought to uncover factors in a Public Sector Department that hinder the deployment of information management. The aim of the research is to explore factors that influence IM in a Public Sector Department. Despite the number of studies that have been conducted in the field, public sector organizations continue to experience challenges when it comes to effective decision-making and managing information. In this sector effective strategies in Information Management could particularly strengthen service delivery.

1.6 Approach of this study
The purpose of this study was to identify factors that might hinder information management within a Public Sector Department, and to suggest a possible solution for the identified problems. To accomplish the objectives, a single CSM was chosen as a sample (using purposive sampling techniques) Patton (2002), whilst collecting data by interviewing 15 research participants— who all function at a management and supervisory level and who are dependent on information for decision making and problem solving (Marshall, 1996).

This study has taken an interpretive stance towards the qualitative data that was collected, since the research questions compelled the researcher to study the participants’ perceptions in depth (Angen, 2000). This methodology is suitable because of the way that the research needed to gain a better, (namely more profound) understanding of how a Public Sector Department manage information to offer better service delivery to the public.
This study is mostly descriptive, because the research seeks to establish an understanding of the meaning of IM, and to identify possible components that comprise the IM concept (Saunders et. al., 2009).

The research was conducted by using sample groups of 15 participants, as authors have found that this sample size best serves research, which aims to develop an understanding and an interpretative framework. It is for this reason that a sample group of a similar size was utilised. The content-analysis technique approach was used to analyse the textual data that was transcribed from the interviews. The interview data was recorded on audiotapes, and then transcribed onto paper. This was followed by an “open coding” approach to begin the data-analysis process to create the categories (Creswell, 2009).

1.7 Ethics
Participants were informed of the research purpose and the voluntary nature of their participation. Their input was requested and their confidentiality was respected throughout the research process. In order to ensure anonymity, all participants are referred to as ‘respondents’. Furthermore, participants were made fully aware that they are free to withdraw from the study at any stage. The researcher also informed participants that they could access the research study’s findings, should they so wish.

1.8 Limitations of this research
This study focused on a particular branch in a department in the Public Sector in the Provincial Government of the Western Cape. Therefore, the findings from this study are only appropriate to this particular branch and exclude the other branches in this particular department. However, this limitation was not seen as an element that affected the study’s trustworthiness and findings. Chapter 2 that follows presents a review of the literature, which substantiated this rationale.

1.9 Chapter Outline
The research is divided into five chapters. An outline of every chapter is provided below.
Chapter 1 introduces the study, and gives a brief background of the project. Other aspects that were discussed include the research problem, objectives, research questions and significance of the study under investigation.

Chapter 2 introduces the reader to the nature of information management in the public sector. A detailed account of the area under study is given with challenges that are encountered during the delivery of services and decision-making. The concepts of data and information, the role of IM and critical failure and success factors are addressed here. Chapter 2 also presents a conceptual model of selected IM enablers, namely culture, strategy and leadership, resources and technology. The factors that hinder IM practices, as well as IM processes, are also discussed in this chapter.

Chapter 3 focuses on research design and methodology, and provides motivation for the research study’s selected research methods.

Chapter 4 presents findings from the qualitative method, which was used for the research study. These findings aim to understand IM practices.

Chapter 5 presents conclusions that were drawn from the analyses; and some recommendations are made with regard to successfully implementing an IM project.

The Harvard style of referencing was utilized to identify literary and other sources that were used for the research, while arguments are supported by literary evidence. The appendices contain material that is too detailed to include in the main report. However, excluding this information from the body of this study has not hindered the outcomes and conclusions that were reached.

1.10 Summary

This chapter has presented the background, the research aim, the research problem, the questions and objectives, as well as the introductory approach to this study. This is followed by the approach of the research scope and limitations. Finally, an outline of each chapter was provided.
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter first explains various definitions of information and IM before it reviews the role of information in organizations. The factors that influence success and failure are presented next. The literature review ends with a discussion of models, which are used for effective IM in organizations, and the conceptual model that the study proposes.

2.2 Definitions of information

The reviewed literature offers a number of different definitions for information. For example, information is defined as:

- “data that makes a difference” (Davenport and Prusak, 2002: 3);
- “data endowed with relevance and purpose” (Drucker, 1999: 124); and
- “information usually portrayed as “data in context” (Ward and Peppard, 2002: 466).

This suggests that data alone has limited meaning. Data is a prerequisite for information. As a result, there is a relationship between data and information. Another key point that was revealed by the reviewed literature referred to information as a message, typically in a form of a document or in another form of communication. Working within the information management area, necessitates that the differences between data and information competence should be re-examined and defined. Below are some definitions, which are relevant to this research:

Meadow and Yuan (1997: 705) propose that information is the source of knowledge:

“Information is something that changes the state of its recipient or, more specifically, the knowledge state. A slight variation is to say that information is what determines a decision or allows a choice to be made. Making a decision represents a change of state (from undecided to decide) on the part of the decision maker”.

8
In a way, information can also be described as facts and data, which are organised in order to symbolise a specific situation and knowledge as a set of truths and beliefs, perspective, concepts, judgement, expectations, methods and know-how (Wiig, 1999). This definition holds that data is ‘raw facts’, which become information once perspective or comparison is added to it. Information, in turn, becomes knowledge when direction and usage suggestions are added.

In a similar way, Buckland (1991) gives opines that information is something that can have various forms such as an object, data or text communication. This is the only type of information that an Information System (IS) can deal with. He mentions that if it has the intention to convey knowledge, it must be expressed or represented in a certain physical way such as a signal, communication, or plain text. Information, as a process, however, refers to an action that informs or is informed by a person.

2.3 Role of information in the organization

Studies, which relate to information usage in organizations, uncover a somewhat different, less perfect picture. Organizations seem to deal with information in many different ways, and these are discussed below.

According to Popa et al. (2011), the potential of information in providing a competitive advantage in the public sector is evident, as it has a potential to improve public services and to eliminate inefficiencies. For example, Fuzile (2015) explains that information is essential for the provision of a competitive advantage in the South African public sector in order to manage public expenditure. He further explains that a competitive advantage in the public sector is to match the quality product or service, which is requested by the public. The building or maintenance of roads and ports, and the delivery of school material on time are a few examples of such services. Often, the result of these services is achieved through people, processes and technology (Fuzile, 2015).

Many researchers argue that, like any other resources that are valuable assets of an organization such as financial assets, human assets, and physical assets, information as a resource must be seen as an asset that is valuable for the
organization (Evan and Price, 2014; Khatri and Brown, 2010; Ward and Peppard, 2002; Wilson et al., 2000).

It has been established that information assets are critical as means to perform organizational activities such as operations, which are dependent on IS activities and have an impact on the performance of the organization (Salamuddin et al., 2010; Jhunjhunwala, 2009; Chaffey and Wood, 2005).

The importance of information in an organization is also stressed by Evans and Price (2012) who believe that information is managed by everyone in the organization, and that it has an important role to play in the success of the organization. They hold that information should be managed through reporting, writing, reviewing, researching, and during meetings (Evans and Price, 2012).

The value of organizational information as an asset is confirmed by a number of other authors (Steenkamp and Kashyap, 2010; Choo, 2002; Choo, 1995), who all emphasize that adequate information can be valuable:

- To drive and enforce organizational strategy;
- To assist managers to make informed decisions and planning;
- To solve problems where concerns are obviously identified;
- To deal with problems where concerns need to be shared and clarified; and
- To increase customer acquisition, retention, and improve employee motivation and loyalty.

Chaffey and White (2010) contend that organizational performance has been pointed out to improve the use of information assets to assist in delivering improved services to customers. Individual performance is improved by providing employees with more relevant, timely information to support their decision-making.

Wilson et al. (2000) state that the value of information assets is that it has two key purposes: (i) to report on the financial position of the organization in the annual Operating and Financial Review report; and (ii) to improve the management of information to assist in making improved decisions.

Earlier research that was conducted in South Africa and Australia (Evans and Price, 2011; Hunter et al., 2011) maintain that organizations consider information assets of value that enable organization activities such as operations and productivity. In
addition, it supports tasks in Finance and Human Resources. Managers realise that information assets are the organization’s livelihood, without which the organization will gradually come to a standstill or end. Information assets, for instance, have the capability to deliver services, support decision-making and the day-to-day operations that require the availability of knowledge. However, information is often a non-physical or intangible asset. This aspect has made information more difficult to manage. Consequently, there is a lack of a governance drive to set up a program that manages the information assets.

Evan and Price (2012) confirm that the organization manages information assets and IT manages the technology. IT is the enabler for organizations, and those who consume IT are defined as “users” (Ladley, 2010). According to de Waal et al, (2012) the adoption of information systems simplifies business processes and removes unnecessary activities. Information systems add controls to employee processes, ensuring that users can perform operational tasks. Furthermore, information systems eliminate repetitive tasks and increase accuracy, allowing employees to concentrate on more high-level functions.

Summarily, it can be stated that the reviewed literature shows that various authors strongly suggest that information is a critical asset for organizations, hence it is important to manage this asset appropriately.

2.4 Information management

2.4.1 Definition

Many definitions exist for the term IM. A few examples are outlined below:

“IM is the way in which an organization plans, collects, organizes, maintains, uses, controls, disseminates and disposes of its information, ensuring that the value of that information is identified and exploited to the fullest extent to meet its business objectives as well as to support business activities” (Mutula and Wamukoya, 2009:334).

Choo (1995:81) defines IM as “a cycle of processes that supports the organization’s learning activities: identifying information needs, acquiring
information, organizing and storing information, developing information products and services, distributing information and using information”.

“Information management includes all management tasks within an organization or another business entity that are concerned with a computer supported or computer supportable information and communication system; this system is developed according to the existing and possible technical support of the tasks to be solved and according to the needs of people that are assigned with these tasks” (Rick et al., 2010:176).

Best (2010:61) defines IM as “the economics, efficient and effective coordination of the production, control, storage, retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organisation”.

The above definitions indicate that there are different sentiments, which surround IM. Mutula and Warmukoya (2009); and Choo (1995), for instance, focus on placing the information lifecycle process into operation by making the information measurable in some way. Rick et al. (2010) consider IM to be the management duties of the organization with the assistance of computer or communication systems. Another finding by Best (2010) explains certain phases of the information lifecycle process as collection and distribution. Bearing in mind the differences of the above presented definitions, this study has adopted the following definition:

IM is the collection, processing and management of information that is guided by people, process and policies to maximise its value to support management tasks by using IT to meet the organization’s objectives.

2.4.2 Role of IM in the organization
IM is important as it provides the ability to respond to the needs of the organization, depending on how well it can create, use and preserve information to make decisions and take action to achieve its operational and strategic goals (Kooper et al., 2011).
IM supports decision-making by the collection and processing of data to produce meaningful information that is useful to the organization (Rad et al., 2009); and, therefore, ensures that the correct information is obtainable by the right person in the right layout at the right time (Robertson, 2005). IM plays a critical role in extracting information regarding trends and developments in the external environment so that the organization can respond to changes that are activated by economic, social, technology and legislative influences (Touray et al., 2013).

An equally significant aspect is that IM plays a central role in maintaining the sustainability of information in the organization. This is in relation to how information is processed when it is created, acquired, organized, stored, distributed, and used that is useful, current and accessible by people (Detlor, 2010; Mutula and Wamukoya, 2009; Choo, 1995). At the same time, IM guarantees the delivery of accurate, relevant, timely and reliable information. As a result, it increases transparency, trust and accountability in the public sector (Mutula and Wamukoya, 2009). With regard to public sector organizations, IM plays an important role in electronic government by influencing the quality of service delivery for the public (Svärd, 2014).

IM helps organizations to achieve and sustain agility in decision-making, both on a strategic and/or operational level. When IM is aligned with business objectives, the quality, timing and impact of organizational decisions can be considerably improved with minimal interruption to people and processes (Ionita, 2013).

In the following section critical failure and success factors are discussed interchangeably in relation to the effective way to optimise the factors.

2.5 Critical failure factors (CFFs) for the effective implementation of IM

The author defines critical failure factors (CFFs) as important areas where “things must go wrong” in order for an Information Technology (IT) implementation process to achieve a great level of failure (Wong et al., 2005). This suggests that the failure rate remains high for instance, it emerges frequently, while the consequent impacts are damaging to the organization.

However, Garnesh and Metha (2010) argue that critical failure factors are those factors (attributes) that can contribute to failure. This suggests that the CFFS
determine the probability of failure. The above authors recommend that these factors can be addressed when possible guidelines and plans are implemented to avoid the failure. Bearing in mind the differences of the above presented definitions, this study has adopted the definition of Garnesh and Metha, (2010).

There is no comprehensive study that identifies IM CFFs in developing countries, within a public sector context. The main purpose of this section is to identify such factors and to classify them to help other implementers to prevent failures in the implementation of IM projects.

The following table provides an overview of the CFFs under investigation. The CFFs, which are presented in Table 2.1 below, are grouped in four categories that impede the effective implementation of IM. This emerged from the literature, and was commonly discussed by different authors.

<table>
<thead>
<tr>
<th>Categories</th>
<th>CFF Factors</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People</strong> (2.5.1)</td>
<td>The absence of a role to take accountability for IM (2.5.1.1)</td>
<td>(McCall, 2015; Evans &amp; Price, 2014; Logan 2010)</td>
</tr>
<tr>
<td></td>
<td>The role of responsibility for IM (2.5.1.2)</td>
<td>(Cox, 2014; Evan &amp; Price, 2014; McKeen and Smith, 2007)</td>
</tr>
<tr>
<td></td>
<td>The absence of the appointment of an Information Manager (2.5.1.3)</td>
<td>(Ismail &amp; Jamaludin, 2011; Logan, 2010)</td>
</tr>
<tr>
<td><strong>Process</strong> (2.5.2)</td>
<td>The lack of information lifecycle management</td>
<td>(Cox, 2014; Govil et al., 2008; Short, 2006)</td>
</tr>
<tr>
<td><strong>Policy</strong> (2.5.3)</td>
<td>The lack of an IM policy (2.5.3.1)</td>
<td>(Cox, 2014; Mancini, 2010; Daum, 2007)</td>
</tr>
<tr>
<td><strong>Technology</strong> (2.5.4)</td>
<td>Silo Information environment (2.5.4.1)</td>
<td>(Akoramurthy &amp; Priyarahadikadevi, 2015; Cox, 2014; Day et al., 2009; Petrides 2004)</td>
</tr>
</tbody>
</table>
In the sections that follow, the four categories and factors are presented and discussed. The first category focuses on the people who are accountable and responsible for IM in the organization; the second on the process of information and a process model; the third on an IM policy and a policy model; and the fourth on the technology that is used for IM in the organization.

2.5.1 People category

2.5.1.1 The people who are held accountable for Information Management

As noted by scholars such as Evans and Price (2014), a direct correlation can be drawn between the success of effective information management and an organization’s commitment to an information management initiative. They argue that information cannot be effectively managed where the management of Information Assets does not rank high on a Board’s agenda.

Earlier studies, which were conducted by Swartz (2007) and McFadzean et al. (2007) concur. Together, they argue that the lack of effective management can be attributed to the fact that organizations are not aware of the strategic importance of information planning as a means to achieve organizational goals and objectives. According to McFadzean et al. (2007), this oversight occurs where the value of the information has not been appreciated. Failure to do so, as noted by Swartz (2007), impacts key organizational outcomes and performance, which ultimately influence the success of an information management initiative.

Logan (2010) takes this theory a step further. She holds that information mismanagement does not only point to a lapse in administrative work, but also points to a lack of accountability. She attributes that the lack of accountability is “the root of all problems with information”, and proposes adding ‘information governance’ to a staff member’s job function. Accountability entails being held answerable for decisions that are made, actions that are undertaken, and projects that are completed in order to accomplish a goal (McCall, 2015; Evans & Price, 2014). This implies that senior managers take ownership and accountability for information (ethics) (Evans and Price, 2014; Hawley, 1995). McManus (2004) explains that ethics is the behaviour and collective outcome of actions, which are taken by managers and employees. In terms of information governance, accountability would, therefore, include providing a consistent method for employees to grapple
with information in a way that ensures that all information, which is processed, is of a good standard and adheres to the legal ramifications within which an organization operates (Logan, 2010).

Saffady (2011) concurs, noting that when managed correctly, records have four functions. They comply with legal and regulatory requirements, promote continuity of business operations in the event of a disaster, support policy formulation and decision-making, and protect the rights and interests of an organization’s stakeholders. The acclaimed IT Research firm, Gartner, released a report in which such a position was highlighted. The report recommended the appointment of a Chief Data Officer, that is, a senior executive who is tasked with overseeing the data and information strategy, information governance, as well as policy development (McCall, 2015). Furthermore, the Chief Data Officer is responsible for the protection and privacy, governance and quality of data, as well as data life cycle management (ibid).

A qualitative study was conducted by Evans and Price (2014) in Australian and South African organizations, both in private and public sectors. They argue that information asset is managed through the practice of Information Asset Management (IAM) in conjunction with governance. The findings of their study indicate that Chief Executive Officers who are the head of the unit are accountable for establishing an IM strategy for information. The Chief Executive Officer (CEO) should drive a strong culture of value in order to measure the benefits of information assets. He/she should similarly establish measures in order to ensure that information is managed in accordance with an organization’s compliance, standards and policies.

In the context of South African Government, and under the authority of various legislation and regulations, for example, the Public Service Act of 1994 and the Minimum Information Security Standards of 1996, amongst others, the Head of the Department (HOD) is accountable for the management of information for a specific provincial department. In the context of the South African Government, the Premier, who is the head of the Provincial Government, Director General (DG) who is responsible for provincial departments and his/her Deputy Director General (DDG) who is responsible for a branch in a provincial department fulfil this obligation. They are accountable for their actions, decisions, policies and administration, and have an obligation and responsibility to report and explain information to the public.
2.5.1.2 The people who are responsible for Information Management

Everyone creates information with e-mails and written reports. Thus, everyone has a responsibility to consider the effects of their actions. Therefore, employees at all levels must take responsibility for information (Cox, 2014).

Evan and Price (2014), states that senior managers are responsible for overseeing IM strategy. Their responsibility is to ensure that the CEO’s information policies and standards are adhered to and solved. However, numerous authors (Ladley, 2010; McKeen and Smith, 2007; Kirk, 2004) believe that senior managers are responsible for the visible support of, and adherence to, the IM strategy and policy by:

- contributing to the development of strategic documents, for example, the information management strategy;
- remunerating employees with performance incentives for IM practices;
- showing interest and commitment to IM practices by providing evidence of ways to deal with information; the impact that it would have on the employees’ tasks; and to spur them to change their reasoning and conduct when dealing with information towards better performance;
- endorsing information management policies and procedures and direct staff to follow them; and
- providing an on-going and relevant training programme to enable employees to manage information resources effectively.

In view of employees, middle managers and their teams are responsible for creating information that reach the strategic objectives that are set by senior managers whilst using the ILM process to produce accurate and reliable information (McKean and Smith, 2007; Ward and Peppard, 2002; Kirk, 1999). These managers and their teams must understand their responsibility towards information lifecycle management, which relate to their activities in accordance with applicable organizational policies, standards, procedures that are in line with a training program (Ward and Peppard, 2002), including the management of information that they deal with while doing their daily tasks (McKean and Smith, 2007). Therefore, they have a duty to keep information up to date (Detlor, 2010).
They should possess a competent level of knowledge and proficiency, which is required to find, access and apply information, as required by their daily tasks (Ward and Peppard, 2002). Likewise, they should also have good communication skills so that they are able to convey information to the relevant team members in a clear and simple manner (Du-Babcock, 2006).

Burke and Mouton (2013) emphasise that IT professionals that have extensive knowledge and unique skill sets must manage the technology. According to Hendriks (2012), technical training is essential for the success of a project; therefore, IT professionals must ensure that they are continuously trained so that they are able to sustain an IT system. Ladley (2010) proposes that the employee’s job description should include the responsibility for information; their roles such as decision makers, implementers, updates, collaborators, communicators and maintainers must be defined. However, the management of organizations must use performance agreements to define employees’ performance expectations regarding the management of information, and to ensure that it aligns with their daily operations in order to achieve organizational goals (Atkinson & Shaw, 2006). In this way, it empowers employees to use their skills to perform their tasks in a productive manner and support management to review their performance, whilst rewarding staff appropriately for information management activities (Yang & Maxwell, 2011).

2.5.1.3 The lack of the appointment of an Information Manager
Logan (2010) contends that a root problem with the management of information is the lack of accountability. The organizational structure excludes the role of an Information Manager to support the appropriate management of information.

Ismail and Jamaludin (2011) have gone some way in problematizing this. They contend that because the correct professionals are not in place, the present record personnel are unable to demonstrate a body of knowledge to identify, describe and make the relevant facts and data available (Ismail & Jamaludin, 2011). Furthermore, they caution against tasking any professional with the duty to manage information, as they may not be equipped enough to do so. Their work suggests that a technical professional, namely a computer scientist or an engineer with sound personal
organizational skills, would be best suited to fulfil this role. Information management would then serve as an additional function of their technical role.

Hill et al. (2011), in the 2011 ARMA International Records Management Online Survey that was conducted by Forrester, add a significant caveat to this debate. The survey revealed that 44% of information managers were not included in the IT strategic planning process. It could, therefore, be deduced that the mismanagement of information may not require the employment of a designated professional, but rather a restructuring of the individuals that attend those planning process meetings. It should be noted that the strategies that are implemented by senior managers who themselves do not understand the intricacies of information management, cannot be said to represent the efforts of information managers who did not have a voice in the information management planning process (Hill et al., 2011).

In order to improve information management practices, an organization will benefit from having a skilled Information Manager who is responsible for organizational information (Best, 2010). The responsibilities of an Information Manager include providing specialised advice, which relates to IM practices, whilst contributing to the strategic direction of IM within an organization (Best, 2010; Rad et al., 2009). Fundamentally, they are answerable for regulating, analysing, maintaining and distributing information (Rad et al., 2009; McKean & Smith, 2007; Farhoomand & Dury, 2002). Moreover, an Information Manager is tasked with contributing to the overall ethos of the organization by encouraging the vision behind the IM policy direction and by taking responsibility for the actions and outcomes of all stakeholders (Septer, 2013). Yang and Maxwell (2011) propose the appointment of an Information Steward. The Information Steward would be held accountable for the overall responsibility for an organization’s information. This appointment is primarily aimed at eliminating the notion of ‘individual information ownership’ amongst employees.

Ladley (2010) describes ways in which the Information Manager can influence management principles. These include (i) proposing training and communication plans in order for employees to safeguard and enhance information assets; (ii) highlighting management principles that are necessary to affect change in employees’ behaviour towards IM; and (iii) ensuring that security principles are met. This will require that the Information Manager should possess various skills such as
communication skills, the ability to work in a team, to ascertain clients’ needs, and IT skills to understand the development of systems (Hill et al., 2011). Evan and Price (2014) suggest that an Information Manager who is on a senior manager’s level should take ownership of IM, including policies and standards of information. This manager should possess the ability of a strong Change Champion, with a clear direction of the retention and disposal of information, and who provides insight to utilise a central database storage facility for information.

2.5.2 Process category
The process category of the critical failure factors for IM, as shown in Table 2.1, indicates that there is a lack of information life cycle management, as identified by various authors.

Organizations struggle to process information in order to facilitate its flow amongst employees. This contributes to a lack of understanding of the value of Information Lifecycle Management (ILM), and how it can assist to actively manage information during the time from creation and use to support the organization to improve performance through better service delivery or customer relations (Short, 2006). Another problem that was found is the high usage of systems and a decline in productivity that is caused by the inability to properly manage information through its lifecycle in the organization (Govil et al., 2008). Cox (2014) argues that this is because there is a lack of a standard ILM process, which manages information exchange, content and the creation and maintenance of information. Generally, it hinders the accessing, sharing, quality, availability and usability of information.

Having identified problems that hinder ILM, the next step in this study was to identify a process model that can be used to address these problems in order to achieve an effective ILM for information management in an organization.

2.5.2.1 A process model of Information Management
An effective way to manage information is through a life cycle management process, which ensures efficiency in their creation, use, handling, control, maintenance and use. ILM concerns various lifecycle stages that information experiences from inception of the information through creation to access, thereafter the availability of it or for future use (Schotanus et al., 2011). Govil et al. (2008) argue that ILM utilizes
policies, processes, practices, and tools that are used to align the organizational value of information with the most appropriate and cost-effective IT infrastructure from creation through to archiving.

The process model, which is shown in Figure 2.1 below, depicts IM as a continuous cycle of six interlinked activities: identification of information needs; information acquisition; information organization and storage; developing information products and services; distributing information; and using information (Choo, 1995).

Figure 2.1: Information Management Cycle adapted from (Choo, 1995)

The process begins at the right-hand end of the cycle with “adaptive behaviour”. When new information is generated the organization’s behaviour adapts and acts for effective ways of gathering the demands of the situation as it changes. It initiates a new cycle of decision-making, and takes action that affects the outcome. Choo and Nadarajah (2013) argue that the process is a chain of actions or steps, which are taken with information in order to achieve a particular outcome.

Identification of information needs
In the step, which identifies information needs, according to Choo (1995), the need arises when employees seek relevant information in order to gain insight into the situation (or need information pertaining to a specific task); and thereafter it will have the required information to assist with decision-making or to solve a problem. Information needs is defined by a subject-matter requirement, “what information is needed”, and the situation determined incident, “why the information is needed and how it will be used”. A subject-matter means those employees who have different
interests and needs for information, which relates to their tasks. Choo (1995) further explains the aim of the “identification of information needs” and illustrates the true needs of the user, which can be realised in a proper functional IM process (Choo, 2002). This process is necessary to ensure that information is created and is available.

Information acquisition

Information acquisition is steered by information needs, which must be adequately fulfilled. However, information acquisition appears to be a complex function as it deals with two opposing demands: (i) the wide diverse information needs of the organization; and (ii) the limitation of the employee’s attention and reasoning ability. To support these demands, an organization must ensure that information is managed and involves as many people as possible in the information gathering process. Quality information is produced through a four-step process. The information sources should be planned for; during this time the current information sources should be monitored and evaluated; new sources should then be assessed; and once a source is matched, it must be regularly re-examined (Choo, 1995).

While producing information, one should make sure that the document content is relevant to the contextual information. This is necessary to ensure that a transaction is correctly documented and has value and quality as a source of information to others (Simpson, 1997). This stage involves the process of figuring out the worth, amount, or quality of information of the current sources, as well as the evaluation of new sources and its matching to needs.

Information organization and storage

The organization and storage step focuses on the creation of an organizational memory through the creation of a functional depository as a means to store information. The purpose of this step improves the quality of information and guarantees the availability of information to people (Kirk, 1999).

According to Choo (1995), IT provides a platform to support this step during the information life cycle process. Chen et al. (2005) believe that the storage of information on an electronic storage system is useful to streamline paperwork processes, whilst reducing costs for handling information, increasing productivity and
addressing problems quicker. The system is designed to assist employees to access appropriate information sources and databases before making decisions, respond to queries, or find current or historical information easily. A structured database design in such a system makes it easier to access, process, retrieve, update and manage information (Choo, 1995).

However, an automated index system can be developed to store and retrieve text and unstructured information (Choo, 2002). Chen et al. (2005) recommend a specialised information system, which is called an electronic document management system that can be used as an effective tool to capture and manage information. The system architecture operates in a similar method to other information systems and enables storage and retrieval functions. Choo (2002) proposed analytic tools that can be used, for example: (i) to filter data to understand the information for decision making; and (ii) to explore patterns and opportunities to provide strategic insight.

**Information products and services**
In this step the processed information allows employees in an organization to access appropriate information sources and databases before making decisions. The purpose of information products and services is to provide relevant information, add value by enhancing the quality, and increasing the usability of information for users. The function of information services typically provides information that is sought by the user. This is the conversion process from data to information. The activities of information services are typically when quality information is accessed or stored in a database as an end product. The purpose of information as a product is to ensure that data is stored and maintained in an IS database (Choo, 1995). As a result, the IS holds a process of changing quality information that adds value to enhance a product (Kahn et al., 2002). This leads to users that need information to offer responses to inquiries and leads to answers for issues (Choo, 1995).

**Information distribution**
The goal of information distribution is to improve sharing of information (Choo, 1995). Information sharing creates awareness and knowledge regarding difficult problems or situations (Choo, 2002). The distribution of information is dependent on the
elements of the information product and services, which are distributed on an IS. At the same time, the delivery of information provides users with the best information to perform their tasks, while taking into account their work procedures and preferences (Choo, 1995; 2002).

**Information use**

This activity is for the creation and application of knowledge for the decision-making process (Choo, 1995). Choo (2002) contends that the information use process is used to create meaning, and to support understanding how to solve problems with information (Choo, 2002). Detlor (2010) expresses the view that information use is the procedure whereby people use information sources to derive useful knowledge as inputs to make decisions.

The present researcher believes that Choo’s process model can indeed assist to overcome the problems mentioned in subsection 2.5.2, and was keen to investigate this process in the current research study. Furthermore, the researcher believes that ILM is an approach to create and use information by using IT as an enabling tool to manage information, while at the same time it enables people to use systems to locate and use information. The ILM will differ from organization to organization, depending on the nature of the information, the methods that are used to organise it, the level of use and the controls that are used. The next section addresses the lack of an IM policy, which was identified by numerous authors in the reviewed literature as being a critical failure factor, and, which was indicated in the policy category of Table 2.1.

**2.5.3 Policy category**

**2.5.3.1 Lack of an information management policy**

Daum (2007) identified a few significant barriers, which are integral for the adoption of an information management policy. In most organizations, departments are almost independent of each other. Each maintains their information separately in systems that suit their own needs. Ultimately, this places the organization in jeopardy, as their work activities, in relation to records retention, is in violation of regulatory compliance. This results in a decline in employee productivity and affects the cost for records storage and maintenance. Employees claim that they are unaware of their
obligation to manage information, or argue that information management does not apply to their job functions. This perception points to a mismatch between an employee’s daily routine in creating and using information.

An absence of an IM policy shows that there is no clear guidance that is provided to employees with regard to creating, capturing and managing information in order to fulfil organizational, legal and assigned responsibilities across the organization (Cox, 2014). Mancini (2010) states that “without consultation with corporate policy may see critical businesses information inappropriately retained or destroyed, or not even captured which can result in operational, legal and financial risk”.

In order for IM to succeed, organizations require useful policies and procedures, which control their information. As it stands, they do not safeguard valuable information from damage, waste time searching for misplaced information, and hold information for too long. As a result, computer users spend valuable time attempting to find files or lost data, which relates directly to user blunders (Mancini, 2010; Daum, 2007).

According to McKeen and Smith (2007), the purpose of policies and procedures is to provide an environment that is geared towards providing proper information management. The policy should outline the terms of reference for making decisions about information. It should also prescribe the creation and management of reliable and useable information that is capable of supporting organizational functions and activities for as long as they are required. Duam (2006) concurs and notes that procedures will help to change the information management culture by providing employees with the detailed enterprise wide guidelines to implement elements of the policy. The information management policy applies to everyone in the organization. On the whole, the policy provides guidance and direction with regard to the creation and management of information, and clarifies employees and management’s responsibilities and accountabilities, whilst ensuring that the information management function is given priority (McKeen and Smith, 2007).
The importance of IM policies is also reported worldwide, for example, the Hawley Committee Report (Hawley, 1995) first coined the term “information assets”, and disclosed the results of an IM investigation by a group of companies in the United Kingdom. The report suggests the following:

- That suitable information policies and practices are implemented; and
- The policies and practices for information assets should identify the information assets by:
  - category, which refers to the level of importance;
  - information security means that the information should be protected from theft, loss, unauthorised access, misuse and abuse;
  - assessing the risk, which refers to the legal, regulatory, operational and ethical standards, and the employees who are liable to create, access, modify and delete information;
  - information quality, which refers to the information that is provided being sufficient, timely, dependable and stable; and
  - providing employees with computers for automated transmissions and to communicate the costs, benefits and risks that are associated with it (Hawley, 1995).

One of the solutions is the implementation of an information management policy with clear guidance that will help to align information management practices in order to fulfil the requirements of an information governance framework (Logan, 2010).

2.5.3.2 A policy framework

Faria et al. (2013) and Silic and Back (2013) define that Information Governance (IG) is understood as policies, rules, and procedures for IM to support regulatory, legal, operational and organizational risks. Kooper et al. (2011) describe IG as comprising the development of an environment that complies with rules and decisions, as well as rights to access, create, store, distribute, use and control information. They explain that controlling information is the best approach to ensure that rules are followed. A viewpoint, which Hulme (2012) suggests is that IG is a universal method
that uses information in the interest of business that includes information quality, information lifecycle management, compliance and protecting information. However, Faria et al. (2013) and Evans and Price (2014) assert that although Information Technology Governance (ITG) is now widely accepted and is considered by many authors to be a powerful and necessary instrument, which improves the added value of IT investments and manages IT risks at the same time, they argue that it is biased towards technology and focuses on the IT investment.

Kooper et al. (2011) clarify that ITG is not concerned with the way that information is managed to increase value to the organization. Conversely, it concentrates on managing the IT assets that must be managed in order to achieve the organization’s goal with related risks. Along these lines, the uniqueness in the middle of IT and information is the human aspect that is used to understand and translate information, since IT cannot manage the understanding of information and/or utilise this understanding to complete a task.

According to Faria et al. (2013), technology has been the core interest of IM activities; however, information depends on policies that administer and control their use, access, retention and security. Kooper et al. (2011) recommend a governance policy; while Ladley (2012) claims that the policy should be managed by managers to ensure that procedures are adhered to. However, Logan (2010) believes that IG establishes policy to protect information assets, and determines decision rights to enable the process of information lifecycle management (Logan, 2010). Hence, IG is implemented by policies that are defined and applied by people who are considered as the enablers of IG. In the same way, policies and technology provide the tools that support the IG (Faria, et al., 2013).

There are different IG frameworks that were reviewed in the literature and, which have been developed from different aspects based on information governance components. According to Lajara and Macada (2013), a framework consists of value, quality and compliance of information, while a framework that was proposed by Hulme (2012) includes information quality, information life-cycle management, security, privacy and compliance to ensure that reliable information is available. However, numerous scholars (for example, Faria et al., 2013; Samuelson, 2010;
Wang, 2010) support the sentiment that an IG framework is constituted by people, policy, and technology.

Faria et al. (2013) propose an IG framework in the absence of information being addressed in ITG. The IG framework provides a formal way to manage information through the components of people, policies and technology in order to increase information quality, reduce costs and exposure to legal risk and improve performance. Logan (2010) states that IG establishes policy, protects information assets, and determines decision rights to enable the process of ILM. In this study the Faria et al. (2013) model is used as it emphasises the role of policies in managing risk. The framework gives a review of the literature displayed in Figure 2.2.

![Information Governance Framework](source: Faria et al., 2013)

This model is important as it describes the ways in which a policy can assist with managing information. The policy and technology categories that should be addressed by the organization in order to implement an improved IM environment are described in the next section. Culture is then addressed in conjunction with the critical success factor section.
Policy category

The policy category comprises the main part of the model and contains factors that will guide the organization in dealing with information in order to make informed decisions. The following factors can be implemented in a policy to enable effective execution of work processes.

Accessibility refers to allowing the appropriate decision making rights and rules in order to grant access to information in the right form by those users that need it (Ward and Peppard, 2002; Choo, 1995).

Monitoring refers to establishing control measures in order to monitor the availability of information and its management in accordance with standards and procedures (Evans and Price, 2012). Kooper et al. (2011) argue that it is important to monitor and control the day-to-day information activities in the organization. The authors suggest exercising positive controls for the implementation of IM in order to manage information better when used by the entire organization. For example, managers must ensure that daily information activities are guided by policy and procedures, while they also monitor the control of information that is used (Ladley, 2012).

Communication refers to methods, which are used to transfer information by employees across the organization. Grant (1996) proposes that a set of procedures and rules should be established to control the quality of information. In order to control the quality of information, it is necessary to establish a regular programme of meetings, task report backs and task allocation that would lead to effective and productive group performance. Therefore, employees must possess the ability to communicate during tasks discussion and share a common language to express their views that would lead to an increase of participation. However, verbal communication is another method that is used to help with problem solving, decision making, whilst removing misunderstandings and providing relevant information.

Compliance refers to the responsibility of senior managers to comply with and enforce internal and external regulations, which are imposed on the activities regarding information in the organization. These managers must ensure that: (i) the information is in compliance with the rules and procedures of regulations; and (ii) control measures are applied such as granting approvals to access information in
accordance with policies and procedures to prevent or detect errors in order to mitigate risks (Myler and Broadbent, 2006).

*Quality* refers to the information quality that can be defined as being fit for use by users. Experts will perform the analyses and review of information (Choo, 1995). *Formal structures* speak to those governance bodies, which are responsible for creating strategies, policies and procedures, which pertain to the dissemination of information (Evans and Price, 2012; Hawley, 1995). It should be noted that the responsibility of establishing policies and allowing employees to know where to access and store information rests upon board members (Sack *et al.*, 1997). Furthermore, an overall understanding of the importance of information should exist amongst boards of directors (Hawley, 1995). The governance of information is essential and should subsequently be driven from board level. While board members regard information as an operational issue, their focus should be centralized on IM strategy, and the risks of the information asset (Evans and Price, 2014).

*Retention* ensures that proper procedures are followed in the safekeeping of records for legal compliance or historical importance (Bailey, 2011). *Security* refers to how information is evaluated on the level of risk. This should be accomplished by establishing suitable security measures to protect the security and confidentiality of information, whilst making it accessible to authorised users (McManus, 2004; Wang, 2010).

Kanungo and Bhatnagar (2002) report that information is of a high quality if the storage of the information is protected, is in an accessible form, and can be electronically collected and shared. The use of IT significantly increases the ease of access for information. It permits the authentication and authorization of access to information by users who are authorised to have access to particular documents. In order to preserve information effectively, IT provides encryption technology to deal with security, including IT tools and processes, which are used to manipulate the information. Everyone involved with IM must share the responsibility for their physical security and protection (Keen and Smith, 2007). Information must be stored in such a way that they are both sufficiently accessible and safeguarded against environmental damage (Choo, 2002).
According to Baltzan et al. (2008), the following principals should apply as means to manage a good IM plan:

- To ensure that the data is stored on a database that applies rules of integrity;
- To control information access, security and privacy to stored information;
- To perform regularly backup tasks for recovery purposes; and
- To ensure that information is archived or that obsolete data is deleted.

Sharing is the procedure of transparently sharing information amongst employees, both inside or outside the organization (Ladley, 2012; Septer, 2013). Standardisation refers to making information consistent across the organization in a way that makes it easier for information compliancy and auditing purposes. Information standardisation can be achieved through, for example, by giving certain meaning to information; or making sure that information is available in a specific format (Evans and Price, 2012; Ladley, 2010).

Privacy is considered to be an important aspect of information sharing. Taking protective measures where privacy is concerned entails preventing the unauthorised use of personal information (Myler and Broadbent, 2006).

The following are elements that are not in the model, but are discussed in the context of South Africa.

**Legislation in the South African context**

IM policies are of fundamental importance in the South African government context, and are subsequently guided by the principles of South African legislation, which impacts information. The policies should be applicable to those who are users of the South African government’s information and IT assets. Therefore, IM policies should draw its mandate from the following prescripts:

- The Protection of Information Act 84 of 1982, which regulates information password and information protection, disclosure of passwords and information (Government Gazette, 1982);
- The National Archives of South Africa Act 43 of 1996 regulates information retention and disposal processes (Government Gazette, 1996);
• The Minimum Information Security Standards of 1996 (MISS), which deals with information security, and provides guidance as to how security standards should be maintained by government institutions. Furthermore, the policy also prescribes that the head of an organization is responsible for information security. The MISS provides a guideline: (i) on how to classify information, (ii) on training procedures, (iii) on who may have access to information, and (iv) information security audits. It also provides guidance on how to manage information security breaches, security policy and physical security, for example, access control to data centres (Government Gazette, 1996);

• The Electronic Communications and Transactions Act 25 of 2002 regulates all forms of electronic communications, which include information security, document retention, protection and retrieval of critical data, protection of personal data and unsolicited communications (Government Gazette, 2002);

• The Public Service Act of 1994 regulates that the minister for the Public Service and Administration should provide guidelines for the management of information and utilisation of information technology, which are used as a strategic resource in the public sector. The minister and executing authority in this instance, the Premier of the province and the Head of Department, are accountable for information management and information technology policies in the public sector (Government Gazette, 1994);

• The Protection of Personal Information (POPI) Act of 2013 regulates the way in which personal information may be processed; and provides persons with rights and remedies to protect their personal information, amongst others (Government Gazette, 2013);

• The Public Service Corporate Governance of Information and Communication Technology Policy Framework contends that the executive authority, the Minister of Public Service of Administration, is accountable for the department’s strategic plan and for the creation of the organizational structure that executes the strategic plan. The Head of Department is also accountable for establishing the relevant information-related plans for the department. The framework provides direction to implement Corporate Governance of ICT in the areas of accountability, roles and responsibilities and processes.
Furthermore, it provides guidance of how the departments can implement frameworks such as:

- The International Organization for Standardization (ISO), which is responsible for the ISO International Electrotechnical Commission (IEC) 2700 that provides recommendations to keep information assets secure. The recommendations are provided for information security management, risks and controls. This framework also explains how to implement appropriate information security controls according to the organization’s needs;

- The International Organization for Standardization is responsible for the ISO IEC 38500, which provides guiding principles to executive managers in respect of effective, efficient, and acceptable use of IT within their organization. This framework applies to the governance and management processes of IT; and

- The King III Code and Report provides guidance for the ethical leadership, roles and responsibilities of boards and directors, governance of risk and IT, compliance with laws, rules, codes and standards, internal audits, governing stakeholder relationships and integrated reporting and disclosure (DPSA, 2012).

**Technology category**

The third category in Faria et al.’s framework (2013) for IG is technology. Information management is dependent on technology, both for their creation and their storage. Therefore, information must be managed in an effective technology environment (McKeen & Smith, 2007). The technology platform must support a mobile solution and integrated systems to collect, process, store, and distribute information for decision making (Evans and Price, 2012; Wang, 2010; Hicks, 2007).

In recent years’ different technologies were developed in accordance with the evolution of technology. With the introduction of different technologies, information is now preserved in a range of technologies for access at a later stage. Al-Mamary et al. (2014) list systems that can support the organization:

- Transactional systems to support daily routine transactions;
• Process control systems to monitor and control physical processes;
• Management information systems that collect all types of information that managers need for timely and effective decisions for planning;
• Executive information systems to assist managers with strategic and tactical decisions; and
• Decision support systems intended to help managers in decision-making.

These systems are designed to access information assets, gather and produce comparative and projected revenue figures.

According to Turban et al. (2006), any information system that enables or supports the goals and processes of the organization can be thought of as strategic. While the core focus for public sector organizations is enhanced service delivery, and not necessarily competitive advantage, the importance of decision support systems cannot be overlooked.

Mobility is viewed as a significant feature. It enables connectivity and increases employees’ productivity. Effective controls and procedures should thereafter be implemented in order to allow employees to gain access via mobile devices on an organization’s technology platform.

Chitanana and Govender (2015), as well as Burke and Mouton (2013) state that mobility is important as it allows users to access critical information whenever and wherever they need it. Chitanana and Govender (2015) recommend that organizations should take advantage of mobile technologies such as bring your own device (BYOD), which refers to personal laptops, smart phones and tablets of employees that can be used to gain access to the organization’s network while sharing information. BYOD is an arrangement whereby an organization authorises its employees to use personal mobile devices.

BOYD reduces hardware costs, increases productivity and promotes flexible working practices to allow employees to work remotely from home when sharing and accessing information (Al-Khoury, 2013). Most importantly, mobile devices and applications make the practice of information sharing convenient (Mills et al., 2014). Because mobile applications increase information sharing activities, employees are able to interact with peers wherever they are located and can then share information,
perform problem solving, and provide feedback on the status of a project (Ventola, 2014; Denkinger et al., 2013).

Ventola (2014) calls the risks of using mobile phones in sharing confidential information to mind. He recommends that organizations should ensure that data is safeguarded to ensure the security of information that is shared. Technical solutions, networks and security policies should be implemented to control access and to manage these devices (Chitanana & Govendor, 2015; Al-Khouri, 2013). Mobile Device Management (MDM) software should be implemented to manage, monitor and control mobile devices securely (Burke & Mouton, 2013).

The section, which follows discusses the silo information environment that has been identified by numerous authors in the reviewed literature as a critical failure factor for IM, as indicated in the technology category of Table 2.1: Critical failure factors.

2.5.4 Technology category

2.5.4.1 Silo Information Environment

Silo information environment refers to information, which is hosted in systems that belong to different computer generations. For example, legacy systems, which are a propriety system and would be difficult to integrate in most open integration platforms (Petrides, 2004). Legacy systems may be limited to technical deficiencies and prohibit information sharing, that is, information exchange between database systems to the internal or external environment. However, these systems contain valuable data and support unique business processes in the organization, but the costs and risks, which are associated with replacing or modernising legacy systems are high (Akoramurthy and Priyaradhikadevi, 2015).

Numerous authors (for example, Hendriks, 2012; Chowdhury and Iqbal, 2004; and Themistocleous and Irani, 2001), further note that legacy systems are difficult to maintain in light of the fact that the IT technical experts who are responsible for software development may have left the organization. This results in a loss of expertise and knowledge and poses a risk to the organization. Ultimately, the support and maintenance of aging technologies is costly. The system documentation
is often inadequate and out-of-date, while the functions are poorly understood and difficult to modify and maintain.

In their case study, *Integration of Legacy Systems in Software Architecture* in a public health care organization in the United Kingdom, Mantzana and Themistocleous (2004) reiterate that non-integrated information systems create an environment where sharing and collaborating is virtually impossible. As a result, employees spend valuable time contacting colleagues from within other departments inquiring for information in order to make a decision. Consequently, this leads to unreliable information being made available, while it also hinders productivity and restricts innovation. Information that is stored in different places makes it difficult to respond to client queries. As a result, resources such as time and money are wasted trying to locate misplaced information.

Generally, these systems present numerous problems such as inconsistent and inaccurate information, room for errors, large ongoing staff training costs across the multiple silo systems, time consumption and costly to produce reports, duplication of data entries and lack of security (Cox, 2014; Day *et al.*, 2009). A step forward is to mitigate a silo environment. Hicks (2007) proposes a solution to optimise IM practices and believes that IS that is developed with integration capabilities has the opportunity to maximise the value of information and increase information sharing.

System integration is an IT process that combines different subsystems or components as one large system. It ensures that each integrated subsystem functions as required (Themistocleous and Irani, 2001). If an organization wants to enable itself to make better decisions, it should have an integrated information system in place so that users, products and resources can be shared and accurately assessed (Zutshi and Sohal, 2005). Integration solutions are used to unlock existing information in systems and to share them across various applications and business processes. Integration solutions also enable organizations to create an infrastructure so that applications can interchange and update organizational critical data, no matter where they are hosted (Laudon *et al.*, 2012).
The benefit of an integrated system is to improve business processes. In other words, it decreases administration work, provides employees with more time to deliver a better service to clients, and has important automated work processes, which save time and effort. There are significant advantages of an integrated system that provides a centralised information system that makes information available for users from one location, while it is stored securely and is accessible in real-time, providing accurate reporting and information can be shared amongst employees (Laudon et al., 2012; Mantzana and Themistocleous, 2004).

In addition to the above mentioned new reporting capabilities, the creation of role based, real time dashboard systems is another outcome that one can expect from this new integrated information management system. This integrated system significantly eases the maintenance, upkeep, and troubleshooting, and reduces time and effort, which are used with manually producing the standard reports for the organization (Palmanas, et al., 2007).

The development of a system with integration capabilities will ensure that the information is appropriate, accurate and up-to-date for employees when they access or create it (Bleiholder and Naumann, 2008; Hicks, 2007). Scholars such as Hendriks (2012) and Tamm et al. (2011) explain that an integrated system reduces duplication, outdated information and has a positive effect on improved services and decision making. An integrated system approach eliminates the need to access multiple silo systems to complete a business process for decision making. Generally, these advantages will lead to better information management opportunities.

However, Hicks (2007) recommends dedicated systems to improve the management of information sources. For example, a Record and Database Management System (RDBMS) is developed for archiving and accessing particular types of information, while a Document Management System (DMS) provides the ability to gain access to relevant information, capture and store documents. A DMS provides the functionality of a centralised storage location, access and sharing of documents, version control to provide up to date information, and security control to manage permissions of users to information (Chen et al., 2005). Other systems such as customer relations management (CRM), accounting and payroll systems, as well as inventory systems
can be used for the improvement of IM that supports specific business processes in the organization (Hicks, 2007).

Before an organization can embark on choosing an appropriate solution to replace the multiple silo systems environment, it is important to understand the silo system landscape and the processes that are supported by these silo systems (de Bri and Bannister, 2010).

The identification and confirmation with stakeholders and unpacking of these processes and workflows is an important step that should take place to ensure that there is a clear understanding of the impact that these silo systems will have when one goes through the requirement specifications for the integrated information management system (Meidutė-Kavaliauskienė et al., 2014; Abrahamsson et al., 2010). After completing this identification, confirmation and unpacking of the processes across the silo systems, it is then similarly important to follow the next step to identify any duplicate processes before prioritising the processes that would be included towards building the IM system (de Bri and Bannister, 2010; Abrahamsson et al., 2010).

The above mentioned steps will assist the organization to integrate the existing silo systems by using a combination of Business Process Management tools to assist with the mapping of the business processes (Laudon et al., 2012; do Nascimento et al., 2009) and Enterprise Application Integration (EAI) tools to integrate one system with another. EIA addresses the need to integrate systems inside and outside the organization by providing interoperability between the multiple disparate systems. It links traditional integration technologies (for example, database-oriented middleware, interface-based technologies, and so on) with new application integration technologies (for example, adapters and message brokers) to create a unified view of an organization’s enterprise and applications (Lentner and Subieta, 2007).

The literature suggests that for an organization to consider implementing an integrated information management system, there is always the obvious balance of cost versus benefits standpoint (Suter et al., 2010).

Mapping the integration strategy of silo systems into a more integrated business process, which is driven by an Information Management model is part of the focus of
this research. This should provide the organization with an opportunity to build an Information Management platform that will be sustainable moving forward. The following section addresses information lifecycle management, as it is also an element of IM.

The literature supported classification of the main components, and reveals that people, process, policy and technology are the main components for an IM framework; all of which are tasked with accomplishing organizational goals. After identifying the CFFs that contribute to the failure of an IM implementation and on the basis of the results of these CFFs in the empirical research, the organization can develop an action plan to manage these CFFs efficiently and effectively. The section, which follows provides a detailed discussion, which focuses on the critical success factors for the implementation of an IM initiative.

2.6 Critical success factors (CSFs) for the effective implementation of IM

Critical success factors, hereafter referred to as CSFs, are the “limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization” (Bullen & Rockart, 1981: 7). CSFs can further be understood as those particular areas of a project or organization, which are crucial for its success. Rockart (1979) describes these factors as a ‘guiding approach’, which managers should use in order to define the information needs within organizations, and are the main determinant of success.

It could be argued that identifying and effectively communicating these CSFs will ensure that the organization or project remains focused; and that the time and resources that are awarded to these projects are reached in the most efficient ways. Rockart further describes CSFs as those areas of activity that the management of an organization should pay constant, careful attention to. This can be met by ensuring that managers measure the status of performance and do so on a regular basis. However, it should be noted that this cannot occur without management being able to access or define the CSFs that they may be measuring.

Other authors have since focussed on CSFs and have identified key factors that are essential to achieve the mission, objectives or goals of the organization.
Amid et al. (2012) and Bueno and Salmeron (2008) focus on describing and recommending certain actions and conditions under which success is likely to occur. Most concepts of success factors in the IT literature are described as critical success factors (CSFs). In the area of systems, the use of CSFs is important to support the alignments of new systems with organization objectives. CSFs are these factors that determine whether organizational objectives are achieved (Fortune & White, 2006).

Munro and Wheeler (1980) expanded upon Rockart’s definition of CSFs and suggest that they can, in fact, be used to direct an organization’s efforts to develop strategic plans. In their body of work, Ferguson and Dickinson (1982) argue that boards of directors can similarly use CSFs to establish guidelines, whereby a corporation’s activities can be monitored. Since scholars such as Rockart have defined what CSFs may be, other strategic management authors have assisted the debate in describing certain actions and conditions under which the organization’s success is likely to occur.

The requirements for implementation of IM may differ from country to country, but there are critical success factors that are required for the project to succeed in developing countries. Several key success factors, which are the main determinant of success in IM were identified through a literature study. These key success factors in this study are the basic areas that should be managed in an organization. The CSFs, which are presented in Table 2.2 below, are grouped in three categories that should be managed for the effective implementation of IM. These emerged from the literature, indicated by the different authors, and are discussed in the sections that follow.
### Table 2.2: Critical success factors

<table>
<thead>
<tr>
<th>Categories</th>
<th>CSF Factors</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture (2.6.1)</td>
<td>Information Sharing <strong>(2.6.1.1)</strong></td>
<td>(Calo <em>et al.</em>, 2012; Omar <em>et al.</em>, 2010; Khurana <em>et al.</em>, 2011; Hatala and Lutta, 2009)</td>
</tr>
<tr>
<td></td>
<td>Communication <strong>(2.6.1.3)</strong></td>
<td>(Arif <em>et al.</em>, 2009; Allen <em>et al.</em>, 2007; Rothwell, 2004; Foulger, 2004; Smith, 2006)</td>
</tr>
<tr>
<td>Top Management Support (2.6.2)</td>
<td>Clear Vision</td>
<td>(Septer, 2013)</td>
</tr>
<tr>
<td></td>
<td>Committed management support</td>
<td>(Khurana <em>et al.</em>, 2011; Hatala and Lutta, 2009; Robertson, 2005)</td>
</tr>
<tr>
<td>Strategy (2.6.3)</td>
<td>IM Strategy</td>
<td>(Mungly and Singh, 2012; Baltzan <em>et al.</em>, 2008; Farhoomand and Drury, 2002)</td>
</tr>
<tr>
<td></td>
<td>Change Management Strategy</td>
<td>(Hendriks, 2012; Sello, 2014; Lucas <em>et al.</em>, 2008)</td>
</tr>
<tr>
<td></td>
<td>Communication Strategy</td>
<td>(Cox, 2014, Chen and Zhang, 2009; Smith, 2006)</td>
</tr>
<tr>
<td></td>
<td>Organizational Strategy</td>
<td>(Rumelt, 2011; Steenkamp and Kashyap, 2010; Glazer, 1993)</td>
</tr>
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</table>

The sections that follow present a discussion of the three categories and factors. The first category focuses on organizational culture, which includes the factors of information sharing, change management, communication and training; the second focuses on top management support; and the third on the various strategies that are important for information management.
2.6.1 Organizational culture

Organizational culture is an idea in the field of organizational studies and management, which describes the psychology, attitudes, experiences, beliefs and values (personal and cultural values), rules, observed behavioural regularities and organizational climate of an organization (Martin, 1992; Luthans, 2010). It has been defined as “the specific collection of values and norms that are shared by people and groups in an organization that control the way they interact with each other and with stakeholders outside the organization” (Hill & Jones, 2009:381). According to Rugman and Collison (2012), organizational culture can be described as values that employees within an organization should follow in order to achieve an objective, as well as the standards of behaviour that are employed to do so. Ravasi and Schultz (2006) build upon this notion by contending that once an organizational culture is built, organizational values are then developed and established. They describe ‘organizational values’ as norms or shared beliefs; which govern the ways in which employees within an organization should behave and complete their work. For example, they illustrate how employees create, share, and use information in their working environment (Smith, 2001).

These ‘norms’ then go on to inform the practices and procedures, which are either formal or informal, which are used to achieve organizational goals. Practices are described by various authors. Todnem By (2005) argues that a change management practice and strategy is crucial for the continuous growth of an organization; and enables employees to transform themselves by adopting a change process so that the organization’s objectives are realised (Anderson & Anderson, 2001). Communication practices and procedures, which are either formal or informal, help employees and groups to coordinate activities as means to achieve common goals. Effective communication is important during a change process and is vital for exchanging information (Berger, 2008; Nah et al., 2001). Generally, communication is everywhere and is deemed as an important activity in the organization (Muscalu et al., 2013; Daum, 2007). A practice of effective education and training is essential for employees to understand and adapt to a change, for example, to use information technology. A training program will bridge the gap for those employees who are unfamiliar with a new process, while they will learn how it will fit into their daily workflow (Nah, et al., 2001). Each practice has specific roles and rules that guide
how they are carried out (Berger, 2008). According to Siller (2012), the organizational culture is regarded as being central to success, while the culture influences how willing employees are to share information. A culture with shared values and common aims is conducive to success. The culture is an important link in understanding resistance to information sharing.

The following sections seek to understand the culture of change, communication, and information sharing and training, as these have been identified as important factors and may be elements for the success of an information management initiative.

### 2.6.1.1 Information sharing

Extensive research, which is aimed at identifying barriers of information sharing within an organization, has been conducted. “Information sharing” describes the exchange of information, which enables one person to access information that has been gathered or maintained by another person (Calo et al., 2012). Information sharing proves useful, as it relates to activities of distributing useful information among people, systems or organizational units in an open environment (Omar et al., 2010). Information sharing addresses issues such as “what to share”, “whom to share it with”, “how to share it” and so on; all of which, if properly addressed, minimizes information deficiencies (ibid).

Empirical research has identified three barriers, which hinder information sharing within an organization. The first barrier, organizational factors, refers to elements such as a lack of leadership, lack of appropriate reward systems and lack of sharing opportunities. The second barrier, individual factors, refers to elements such as attitudes and a lack of trust. The third and final barrier, technological factors, refers to elements such as inappropriate IT information systems, and the lack of technology use for sharing information. Interestingly, none of these studies focus on the barriers of information sharing within organizations in developing countries.

This section provides an overview of those barriers, and their solutions, as outlined by scholars who have conducted research in first world countries. Ways are discussed in which those solutions may be compatible with organizations in
developing countries such as South Africa. These barriers have been categorised accordingly and are discussed below.

Organizational factors
Authors such as Khurana et al. (2011), as well as Hatala and Lutta (2009) confirm that there is a lack of leadership and managerial direction. They opine that top management overlooks the importance of information sharing and fail to understand its benefits. As a result, a culture that is favourable to information sharing is not supported.

A lack of transparency by top management exists, as employees are not informed of the status or direction of the organization (Li & Lin, 2006). These managers withhold information, and act and speak inconsistently (ibid). They are also closed-minded and dismiss other ideas of employees, while they are unwilling to listen to other employees’ points of view (Yang & Maxwell, 2011). This prevents building a team that fosters a diverse culture and also blocks innovation (Van den Akker et al., 2009).

According to Khurana et al. (2011) and Hatala and Lutta (2009), an ideal organization should be managed in the following way. Top management should support information sharing culture approaches. Top management has a positive impact on information sharing. When employees become aware that top managers support this approach, their invisible blocks for information sharing begin to disappear.

A relationship between leaders and members is founded on common values in a quest towards building trust. This can be attained by establishing awareness through means of education programmes that endorse the benefits and goals of information sharing (Yang & Maxwell, 2011; Li & Lin, 2006; Gillespie & Mann, 2004).

Yang and Maxwell (2011) and Van den Akker et al. (2009) highlight the need for top management to create a noble vision to work towards, while their honesty and commitment to this vision motivates others. Their integrity should inspire the team to take action. They should cultivate their team’s professionalism and personal development. They invest energy and time knowing that their efforts will bear fruit. They recognise growth and individuals’ efforts, as well as their performance. They encourage their members to develop ideas, work with flair and welcome originality.
They allow measured risks, which allow for a culture of innovation. As a result, team members are constantly transformed for the better.

**Individual factors**

Warren (2006) highlights the “lack of professional trust” as a potential barrier that may hinder the success of information sharing as it influences, which information is shared openly and, which is withheld. It could, therefore, be argued that the lack of professional trust limits information flow.

Information sharing is largely based on relationships that are established amongst colleagues. Studies confirm that relationships that are based on trust and commitment contribute to the success of information sharing (Pilerot, 2015). This kind of relationship is known as an information network and is based on a mutual interest in task duties, support in job adjustments, and similarities in personality and job responsibilities (Hatala & Lutata, 2009).

Self-interest, reciprocity and individual ownership are features that impact an individuals’ willingness to share information (Julibert, 2008; Kolekofsk & Heminger, 2003). Self-interest is displayed by those who knowingly engage in dishonest or deceitful behaviour as means to achieve a goal. This behaviour provokes fear of revenge and blame, should the information that is shared be sub-par. The quality of information may be important when measuring self-interest and reciprocity behaviour. Reciprocity refers to acting (un)kindly towards a person who has treated him/her (un)kindly. Individual ownership is displayed by individuals who are in control of information. They regard information as a symbol of power and see the sharing thereof as losing power and social interest.

Yang and Maxwell (2011) propose the fostering of a culture of information stewardship as opposed to information ownership. This culture enables the organization to improve internal processes, the flow of information and promotes the adoption and compliance of information. They also recommend the appointment of an Information Steward to take overall responsibility for information in the organization in order to eliminate the individual information ownership behaviour of employees. Brown and Mitchell (2010) and Kolekofsk and Heminger (2003) found
that good citizenship (voluntary or ‘out-of-role’ help) is connected with organizational commitment, as well as with closeness of colleagues.

Organizations should, therefore, use different methods to encourage the sharing of information. This can be done through: (i) have regular meetings, whereby employees produce information of interest; (ii) implement well-defined policies and procedures regarding the entitlement of employees work; (iii) obtain a patent for identifying valuable information; and (iv) use technological platforms to ease the sharing of information (Yang & Maxwell, 2011; Khurana et al., 2011; Constant et al., 1994).

A potential pitfall that can be found in the work of Yang and Maxwell (2010) shows a performance based reward system that is designed to measure employees’ performance ability. This pertains to their job function and is not designed to encourage information sharing, but rather to deter information sharing activities. They recommend a bonus system that is designed to support effective information sharing. This will influence the information sharing behaviour of employees and will encourage better performance. Employees will ultimately compete against one another and share quality information. However, scholars such as Israilidis et al. (2015) and Jahani et al. (2013) argue that monetary incentives may have a negative effect on knowledge sharing behaviour.

Technological factors
Studies have demonstrated the complexity of technology as a main influence that affects the adoption of information sharing. Gaál et al. (2015) highlight the challenges of silo systems. Their research focuses on incompatibility technologies and ways in which it negatively affects information sharing. They propose implementation of an integrated system for effective information sharing, and contend that it will increase productivity and organizational performance. Hendriks (2012) describes the shortage of appropriate IT infrastructure as an obstacle for system integration and information sharing. The shortage thereof may be attributed to a lack of budget, absence of awareness, as well as a lack of commitment from top management towards the utilisation of IT within an organization (Gaál et al., 2015; Turban et al., 2011).
Dutta and Bilbao-Osorio (2012) argue that the convergence of information technology and communication technology is a key part of technological innovation. Their work features the use of cloud computing, which has recently become an alternate method of storing, accessing and sharing information. Cloud computing can decrease costs for information based initiatives. A fast internet connection such as broadband will permit systems migration from autonomous platforms to collaboration across an extensive variety of application domains. Furthermore, standardisation abilities in the communication technology can enhance interoperability in information technology.

In this context, being able to effectively use information technology can provide an organization with a strategic benefit, which can positively influence their organizational performance. Several studies recommend the adoption of IT tools, as they provide organizations with valuable information, enhance efficiency, increase information sharing, improve relationships and maintain and deepen collaborating with colleagues.

With the advancement of the World Wide Web, alternative web-based technology tools have been suggested. This includes the use of blogs (Israilidis et al. 2015; Hsu & Lin, 2008), wikis (Turban et al., 2011) and collaboration platforms (Gaál et al. 2015). These technological tools will enable employees to conduct their job responsibilities more effectively, ultimately eliminating the need for managerial mediation (Gaál et al., 2015). This is because these tools are founded on assumptions about human behaviour and ignore factors such as trust and the risks and rewards of information sharing (Hsu & Lin, 2008). The work of Gaál et al. (2015) and Turban et al. (2011) suggest that the benefit of these alternative technological tools will encourage people who may otherwise not need to collaborate.

2.6.1.2 Change management

Ajmal et al. (2012) describe change management as making changes in a planned and managed or orderly manner, which involve people transforming from a current state to (how things are done) a future state (new processes and systems) in order to meet the goals.
Understanding the definition of change management is important to ensure that people will not be confused with the changes that they made with other things. Nickols (2012) takes this definition a step further and points out that change management describes the task of managing change as the first element of change management. The first meaning of managing change refers to making changes in an intended and managed or orderly manner. The purpose is to adequately execute new techniques and systems that are controlled within the organization. The other meaning of managing change suggests the reaction to changes over which the organization practices almost no control, for example, legislation, social and political upheaval, the actions of competitors, shifting economic tides and currents. The author also refers to the following four basic definitions of change management as:

- the task of managing change (from a reactive or proactive position);
- an area of professional practice (with considerable differences in experience and skill set among practitioners);
- a body of knowledge (containing of models, methods, techniques and other tools); and
- a control mechanism (containing of requirements, standards, processes and procedures) (Nickols, 2012).

According to Desson and Clouthier (2010), a culture of change is an important element as it recreates important and intricate work under conditions of constant change. Organizational change can also influence to manage a shift in strategic direction, that is, implementation of a new technology, new organizational processes, involving new methods to knowledge transfer, which are supported by the internal cultural change, including the need for more integrated ways of working and employees. However, the management of the organization can influence change initiatives in strategy, technology, structure and employees (Agboola & Salawu, 2011).

Hendriks (2012) believes that organizations employ a change management approach to minimise potential resistance and disruption to technology change or implementing new processes, while encouraging employees throughout the
organization to embrace the IS projects. The author believes that technological changes are mostly concerned with automation of processes. Scholars such as Desson and Clouthier (2010) concur, and go one step further in identifying 7 elements that contribute to failures within an organizational change initiative. They are:

- Contradicting change initiatives that are not aligned to the overall plan;
- Inability for management to let go of old and existing cultures before adopting any new proposed culture initiatives;
- Senior management not aligning with views or methods of approach to cultural changes. Timetables connected to these views and methods will, therefore, be expressed as being unrealistic;
- The failure to implement new changes in work processes and work procedures will impact the proposed performance standards and any related execution benchmarks;
- Failure to engage, explore, collaborate and effectively communicate;
- Lack of measurement of the progress or ability to quantity and report progress; and
- Lack of change management incentives, recognition and achievements towards the progress of change. Clear consequences of failure to meet the new expectations of the change should also be recognised.

Pfeifer and Schmitt (2005) imply that change success is often hindered by the lack of readiness:

“...the management barrier reflects the problem that the focus of management activities is dealing with daily business, not discussing new strategies. The vision barrier arises when visions and strategies are not communicated to employees in a comprehensible way... strategic objectives are not broken down by means of target definitions on the employee level, with the result that participation of those affected is not achieved. The resource barrier means that resources are not purposefully deployed for the implementation of the strategy. In strategic change, the endeavour to secure acceptance of changes by all employees as a whole usually fails.”
Desson and Clouthier (2010) suggest that “… a formal change management process may help to increase the probability of success, maximize employee and key stakeholder involvement and buy-in at appropriate times, and increase the change competencies in the organization.”

Many people are wary of change. It is important to prepare employees for it and to guide them through the process (Nickols, 2012). According to Kotter (1996), approximately 70% of all major change efforts in organizations fail. The author introduces an eight step process in his book entitled *Leading Change*, which is a useful approach to follow in order to enhance the organization’s ability to successfully implement any change initiative.

Kotter’s first step is to create a sense of urgency around the need for change. This helps to spur motivation in the team to get things moving, while highlighting the threats of not changing, and discussing opportunities that the successful change will offer. It is also important to afford employees an opportunity to ask questions and to become involved in the change process. This will establish a sense of urgency and get consensus within the organization.

The next step is to get together a powerful coalition of people who are willing to show their support for the change idea. This will require individuals to formulate the direction or methodologies that are applied to the change process. Senior managers, experts and stakeholders should be included from across the organization as those who can become highly effective champions and add credibility to the change initiative.

The third step is to develop a strategy to implement the vision for change and explain the values that are central to the process. Here, the change champions can share an inspiring picture of the future that employees want to be a part of.

The forth step is to keep communicating the vision frequently and powerfully and embed it in everything that the leadership does. The change vision should be discussed openly and honestly, and allow employees to express their concerns about the change process that is about to occur. This will allow any misunderstanding about the process that may hinder the change as it is being
implemented. The leaders should do more than talk about the vision. Their actions and behaviour should be guided by the vision statement. They should lead by example to encourage the enhanced change process. Employees can pose a major obstacle to any change initiative.

However, step five suggests that they should be incorporated into the process correctly, and can be developed into agents to enhance the change process to a successful implementation. It is important to recognise and reward employees for making the change happen. The change process has been described as a long, challenging process. Therefore, in step six it is essential that the long term vision of the organization’s future should be broken down into smaller sets of activities that can be duly measured. This will allow the organization to manage the work load and identify problems in the change process as they occur. Attempting change in smaller steps will also make the process more feasible with small term mile stones being reached, and success can then be celebrated, which should give employees a sense of accomplishment. This will ensure that their morale remains high and that the change direction is maintained.

Step 7 generally shows short-term wins for innovation and successful change initiatives, which create a great launching path for the organizations to continue change initiatives. The initial success is to become the foundation for expanded and greater change within the organization. Lessons that are learned from short-term wins and change methodologies, which have been adopted must become institutionalised. Once the benefits of the short-term wins have been consolidated, senior managers (change strategists) and employees (change implementers or recipients) seek to continuously improve on their new found skills. As a result, it enhances their ability to attain their goals that are set out in the organization’s change vision. To encourage continuous improvement and to prevent stagnation, new change agents and senior managers must be regularly added to the organization’s change coalition.

The final step, step eight, implies that the organization should never seek to lose the urgency for the change that was explained in step one. This will ensure that the
employees learn how to implement changes quickly in future, and lead to a culture that embraces innovation. The organization's leadership must set the tone for this vision and 'walk the talk' to change by rewarding employees for their efforts in the successful implementation of the change initiative.

The consistency of communication plays a leading role in change becoming embedded within organizations. Communication is one element, along with training, that is deemed critical for successful change (Agboola & Salawu, 2011).

2.6.1.3 Communication
In the literature, which was reviewed, the term internal communication is widely used interchangeably with employee communication (Arif, et al., 2009) and organizational communication (Allen, et al., 2007). Irrespective of the terminology choice of authors, communication remains the core focus between and amongst employees within an organization for the purposes of a goal towards organizational success and shared benefits.

Rothwell (2004) describes communication as a method by which individuals share meaning through a transactional process amongst two or more parties. It is through the communication process that the sharing of a common meaning from one person to another takes place (Foulger, 2004).

Lasswell (1935), a prominent scholar in the field of communication research, gives another definition of communication as being a rule to understand “who says what, to whom, through which channel, with what effect”.

The above definition explains that the content of the message is coded by a sender; with the message being transmitted through a system; and the result is that the message is received by a recipient after being decoded, which contains communication and a procedure, which is automated.

Hence, the first definition of communication illustrates that the content may be an idea or information that is sent from a sender and reached by a recipient; while the second definition identifies communication as a technique or tool through which information or ideas can be distributed so that it is received.

It is essential for organizations to develop a culture and systems that support communication throughout the organization in conjunction with its stakeholders for
the achievement of organizational objectives and necessary growth (Kirk, 2004). Communication practices and procedures are crucial and help employees and groups to coordinate activities in order to achieve common goals, build trust, while these are also important for decision making, solving problems and change management processes. Procedures are particularly important for the smooth implementation of change (Berger, 2008). Effective communication reduces unnecessary resistance and helps employees to work together cordially so that better performance and high productivity is achieved (Smith, 2006).

As Arif et al. (2009) and Smith (2006) suggest that communication is necessary to ensure that employees are mindful of how the change impacts and affects them with the result that they know their roles within the team and know that they are valued. A view that was taken by Kottler (1996) implies that communication should be two-way, transparent and avoid inaccurate and misleading information. Managers who openly communicate with their teams can foster positive relationships that benefit the entire company (Siller, 2012). It is essential that managers listen and take time to communicate, as it helps to build a culture of trust (Smith, 2006).

A study, which was conducted by Forman and Argenti (2005) on best practice for a corporate communication department, found that there was an alignment between corporate communication’s role and the strategic implementation process that was supported by communication plans. On the whole, the communication department was visible in those organizations that experienced strategic change. However, it was found that their sub-function or responsibility was also to provide internal communication services to the organization. However, two organizations under study revealed that their internal communication was a management communication function. The authors believe that in such a case, managers may not be effective communicators and may not subscribe to the organization’s communication standards.

There are various techniques of communicating within organizations such as memos, reports, meetings, and face-to-face discussions. Other communication activities are increased through the use of IT, for instance, group decision support systems, web sites, e-mail, chat sessions, online discussions and video
conferencing, which all bring employees together to interact (Hendriks, 2012; Arif et al., 2009; Vaghely et al., 2007; Forman & Argeti, 2005; Ramírez & Quarry, 2004).

Coombs (2006) implies that a significant reason why changes fail is because of poor communication. The author places an emphasis on communication as a common reason for failure and states that it should be included in any change management strategy. Poor communication can, therefore, be seen as a failure to change.

The findings of a study, which was conducted by Schaap (2006) show that over 38% of senior managers do not communicate the organization's direction and organizational strategy to all employees effectively. As a result, shared values and attitudes are not adopted. The work of Arif et al. (2009) and Nah et al. (2001) suggest that managers perceive communication as an additional task to their managerial role. This contributes to poorly structured communication, which prevents employees from accurately interpreting messages, and, general, communicating inefficiently. Hence, a lack of understanding of what is being communicated forms as a result.

In considering how communication in organizations can be improved, Hargie et al. (2004) claim that senior managers engage in four types of management activities, for example, planning, organising, leading and evaluating, and communication is involved in all stages. Business educators opine that communication skills are highly valuable assets for employees and organizations alike. Numerous sources within business organizations have reported that not only are communication skills critical for career success, but they are also a significant contributor to overall organizational success (Du-Babcock, 2006).

### 2.6.1.4 Training

In order to institute a culture of learning, the management of the organization should establish an all-round training program to re-skill current IT employees in implementing and supporting the integrated IM environment, which in fact reduces training costs for multiple silo systems. User training is also necessary for those who use the system (Nkohkwo and Islam, 2013; Laudon et al., 2012; Siller, 2012). In this manner it instills confidence in employees to be adequately trained to operate and use the system through well-defined procedures (Hendriks, 2012).
Agboola and Salawu (2011) recommend that the organization should implement policies on human resource development through education and training in order to keep abreast with changes in the organizational environment. As a result, the right education and training programs are made available to employees in order to implement smooth changes in the environment and to meet organizational objectives.

On the whole, change management, communication and training will increase adoption of the new IT system by employees in the organization (Lin et al., 2010; Laudon et al., 2012). Change management will be required to assist employees to deal with the changes of using an integrated IM system by communicating the common understanding for change, while facilitating training of how to use the system, is also important.

The following sections seek to understand top management’s support and strategies, as these are not part of culture, but have been identified by various scholars as important factors for any information management initiative.

2.6.2 Top management support

Management is the art of getting things done through employees in organizations. The role of management is crucial in every change process (Smith, 2006).

A key factor to enable greater information management success is top management’s support by: (i) communicating the vision of the information management strategy (Septer, 2013); (ii) building a culture of trust with their personal attributes to influence employees (McKeen and Smith, 2007); and facilitating and promoting a culture of compliance through strong leadership regarding the Organizational, IM, IT/IS, Communication and Change Management strategy and their relevant policies (McKeen and Smith, 2007).

At the forefront of a successful IM project lies the ‘top management support’ – an area, which has been proven to have a high impact on the success thereof. Top management’s commitment towards the implementation of IS is demonstrated through practices, which are observed by individual employees such as providing training and awareness programs. Senior managers must, therefore, be willing to invest adequate time and ‘push’ to completely comprehend the general ideas and
goals of the IS. These managers must communicate to subordinates how the system procedures will help them and the organization, overall (Robertson, 2005). Top management can settle on suitable decisions and receive different ways to deal with shaping a way of life for their organization with the end goal of IM, since senior management has the power and authority to overcome cultural and hierarchical impediments. Management should also have a strong commitment to use the system as a means to achieve organizational goals. Dedication from senior managers is destined to encourage employees to utilise an IS. Any type of backing from top management may help employees to be included in any IS applications adoption, execution or usage. (Ramlah et al., 2007)

One of the important factors in IT implementation is top management’s support and the role that managerial entities play in the successful implementation of the IT solution (Lin et al., 2010; Zutshi and Sohal, 2005). As was widely purported by the literature discussed in this study, senior managers should inform employees about the vision, purpose of the new system and its importance in advance, and identify the project as a top priority (Averweg and Erwin, 1999).

2.6.3 Strategy
Andrews (1971), a founder of the field of corporate strategy, defines strategy as deciding the goals of the organization and determining the assigned resources and actions that are required to achieve the goals. Rumelt (2011) believes that a strategy is fundamentally simple. The organizational strategy concerns the focus on resources and a good strategy pays particular attention to multiple resources on one objective.

Cox (2014) argues that the development of a strategy contains the integration of actions, roles, and resources across the organization. Evans and Price (2014), as well as Cox (2014) imply that information is an important resource; and is a valuable asset in driving the organizational strategy (Steenkamp & Kashyap, 2010).

Hawley (1995) suggests that IM focuses on the provisioning of information, deriving from the need of the organizational strategy and direction from the organization. Therefore, development and implementation of an IM strategy is important, as these support the organization’s need to enhance the management of information, whilst facilitating the successful exchange of information inside the organization. The key
objective of the information management strategy is to ensure that information-gathering across the organization is carried out in the most effective way in order to improve organizational performance.

Studies by Baltzan et al. (2008) and Farhoomand and Drury (2002) concur. Together, they argue that the IM strategy that includes a plan can improve information management capabilities and support the organization to manage the information environment, and enable improvements through implementation of information management policies.

The management of information can be facilitated by using technology as a key enabler to capture, maintain and share information within the organization. Henderson and Venkatraman (1993) argue that the IT strategy positively influences the development of a new business strategy and improves existing business strategies. The purpose is supported by available IT systems and their relevant functions and capabilities that match the organizational process.

Ward and Peppard (2002) assert that IS/IT is an integral part of the organization to provide better services, streamline operations, reduce costs and improve efficiencies. The above authors further explain that IT strategy comprises two parts: (i) an IS strategy explains the organization’s need for a system to help the entire strategy of the business; and (ii) an IT strategy addresses how the use of technology supports IS. Thus, the IS/IT strategy is beneficial in the following ways:

• IS supports the organization’s objectives;
• Improves system integration, which will eliminate duplication, information overload and inaccurate information; and
• All resources work together. There is a mutual understanding between the IS/IT function and the business.

Glazer (1993) argues that the organization must favourably integrate an IM strategy with the organizational strategy in order to concentrate on the information as a valuable source for competitive advantage.

Mungly and Singh (2012) argue that the IM strategy addresses the implementation of technology methods to reduce information overload. Sacks et al. (1997) propose the alignment of an Information Technology (IT) strategy that will be beneficial to drive
and support the systems and processes. Therefore, an IT strategy aligns IT capabilities with the organization’s strategy and requirements. Lucas et al. (2008) assert strategy changes behaviour in the environment. Hence, the change management approach manages the transition of changes in the organization. In order to manage changes, development and implementation of a change management strategy that describes the way in which changes will be addressed in order to improve performance in the organization. It contributes to managing the change journey of employees, while decreasing the resistance and anxiety in their IM implementation efforts (Hendriks, 2012; Sello, 2014).

Kottler (1996) believes that the development of the strategy is to implement the vision for change and to explain the values that are central to the process of change. According to Cox (2014), in order to manage the changes, implementation of a planned communication strategy for the purpose of communicating effectively is a prerequisite for useful feedback and subsequent success. Managers must ensure that the strategy is developed with the co-operation of employees to ensure that adoption of the new strategy has the support of all the relevant stakeholders, including staff and end users. This method will ensure that the communication strategy and execution is aligned, and minimises inappropriate communication (Ramirez & Quarry, 2004).

The objective of the communication strategy is to provide clear informative messages regarding changes by engaging two-way communication, which is planned (Chen & Zhang, 2009). As a result, it will increase awareness, participation and cooperation of employees concerning changes. During the implementation of an IM project, communicating ahead of time will place them in a position to embrace the change and provide feedback with regard to and during the changes (Smith, 2006). In order to do so in advance, a clear understanding of the scope, objectives and activities of the project is essential to improve their trust, performance and productivity (Vaghely et al., 2007; Hendriks, 2012).

Having identified critical failure and success factors in Table 2.3 below, the next step in this study was to identify IM models or theories that can be used to address (optimise) these factors in order to achieve effective information management in an organization. This section concludes in presenting a theoretical model of IM, as tested in the empirical setting of this study.
### Table 2.3: Critical failure and success factors

<table>
<thead>
<tr>
<th>Nr</th>
<th>Categories</th>
<th>Critical Failure Factors</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5.1</td>
<td>People</td>
<td>The role of responsibility for IM</td>
<td>(Cox, 2014; Evan &amp; Price, 2014; McKeen and Smith, 2007)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The absence of a role to take accountability for IM</td>
<td>(McCall, 2015; Evans &amp; Price, 2014; Logan 2010)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The absence of the appointment of an Information Manager</td>
<td>(Ismail &amp; Jamaludin, 2011; Logan, 2010)</td>
</tr>
<tr>
<td>2.5.2</td>
<td>Process</td>
<td>The lack of information lifecycle management</td>
<td>(Cox, 2014; Govil et al., 2008; Short, 2006)</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Policy</td>
<td>The lack of an IM policy</td>
<td>(Cox, 2014; Mancini, 2010; Daum, 2007)</td>
</tr>
<tr>
<td>2.5.4</td>
<td>Technology</td>
<td>Silo Information environment</td>
<td>(Akoramurthy &amp; Priyaradhikadevi, 2015; Cox, 2014; Day et al., 2009; Petrides 2004)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nr</th>
<th>Categories</th>
<th>Critical Success Factors</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6.1</td>
<td>Culture</td>
<td>Information Sharing</td>
<td>(Calo et al., 2012; Omar et al., 2010; Khurana et al., 2011; Hatala and Lutta, 2009)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change Management</td>
<td>(Ajmal et al., 2012; Nickols, 2012; Hendriks, 2012; Desson and Clouthier, 2010)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communication</td>
<td>(Arif et al., 2009; Allen et al., 2007; Rothwell, 2004; Foulger, 2004; Smith, 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Training</td>
<td>(Nkohkwo and Islam, 2013; Laudon et al., 2012; Siller, 2012).</td>
</tr>
<tr>
<td>2.6.2</td>
<td>Top</td>
<td>Clear Vision</td>
<td>(Septer, 2013)</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>Committed management support</td>
<td>(Khurana et al., 2011; Hatala and Lutta, 2009; Robertson, 2005)</td>
</tr>
<tr>
<td>2.6.3</td>
<td>Strategy</td>
<td>IM Strategy</td>
<td>(Mungly and Singh, 2012; Baltzan et al., 2008; Farhoomand and Drury, 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change Management Strategy</td>
<td>(Hendriks, 2012; Sello, 2014; Lucas et al., 2008)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communication Strategy</td>
<td>(Cox, 2014; Chen and Zhang, 2009; Smith, 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IT Strategy</td>
<td>(Ward and Peppard, 2002; Sacks et al., 1997, Henderson and Venkatraman, 1993)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organizational Strategy</td>
<td>(Rumelt, 2011; Steenkamp and Kashyap, 2010; Glazer,1993)</td>
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</table>
2.7 Selection of a model for empirical testing

There is no single IM model that holistically captures all the critical failure and success factors in the literature that was reviewed for the public sector in a developing country, hence the researcher compiled a model for the empirical testing, which is shown in (Figure 2.3: MPS Model (Source: Author)). The process model of IM, which was proposed by Choo (1995) (Figure 2.1: Information Management Cycle adapted from (Choo, 1995) was selected to support the researcher’s research in answering questions from a practical perspective. The model envisages that each process step is planned, organised, coordinated and controlled when information is created by employees in the organization.

However, other models that are observed by numerous scholars (for example, Miller, 2002; Peyrot et al., 2002; and Kahaner, 1997) have common elements and represent a four-phase cycle: (i) planning, to identify the intelligence need of the management team; (ii) collection, to acquire relevant information; (iii) analysis, to link information to identify patterns and trends; and (iv) the dissemination phase, which presents the results for decision making. These phases were a continuous process related to strategic problem solving from the external environment.

Choo’s (1995) process model suggests a step to design “information products and services” that do not appear in the other models, which were discussed earlier. This step is necessary for information that is acquired and for information from organizational memory that is packaged into different information products and services, which are aimed at the organization’s various user groups and information needs in order to support the organizational strategy. The “information and storage” step is not observed in the other models and is key for an IS to increase access to information that is already collected. The final “use” step is not mentioned and the reason is unknown, but it is important for the researcher’s model to assist the organization to understand how information is used as means to make decisions or to solve problems. Choo’s (1995) model also has some limitations; according to Kirk (1999), which include that “information needs and information use” are prerequisites for organizational strategy, while Choo’s (1995) model represents these stages in the process cycle of information.
The IGF in Figure 2.2: Information Governance Framework (source: Faria et al., 2013) was selected as the legal framework to control the information lifecycle, while IM is responsible for putting into practice the specific processes of the ILM effectively, following a legal framework. However, Faria et al. (2013) note that the development and execution of an IG framework is acknowledged as a blueprint, though there is no “one-size-fits-all” solution and will depend on the organization’s maturity level.

The researcher used the proposed model in Figure 2.3 below for the empirical part of this research, which was used for a practical verification of the literature review derived model. The proposed model was used to answer the research sub-question: “What is an effective way to manage information in the Public Sector Department?”

Proposed Model for the Public Sector (MPS)

![MPS Model](image)

Figure 2.3: MPS Model (Source: Author)

Below is a brief description of the proposed MPS Model. The explanation reflects the researcher’s understanding of the reviewed literature from which this model originated.

An organizational need arises from the organizational strategy and direction. The organizational need is supported by managing a significant source of information, along with information systems to provide the information sources, which are required to support the organization’s goals. The purpose of the IM strategy is to
ensure that information gathering across the organization is carried out in the most effective way in order to improve organizational performance. IT strategy addresses the technology that is identified for the organizational needs and defines the technology and system that the organization should use. The implementation of a change management approach supports employees’ behaviour to minimise possible resistance, while encouraging employees to use information technology and systems to improve perform of their tasks, work performance and productivity. The change management strategy is implemented in relation to the communication strategy to help employees to acknowledge the need to implement the change and, therefore, empower them to effect the change.

The information is process driven and places ownership of the information in the hands of individuals in the organization. The information is linked to a process that creates and modifies information throughout the management of a lifecycle. The governance of information is driven through a policy that is the core of the model and describes the guidelines and procedures that outline the actions that are performed. The technology is used as an enabler for the management of information.

2.8 Summary

The majority of the studies, as reviewed in the literature, were conducted in western countries. It is here that the need for an investigation in the IM in developing countries arises. While some policies, as previously discussed, do exist within a South African governmental context, this research study aims to establish the extent to which these policies are implemented or used. This report will further pursue the testing of the proposed IM framework and may be helpful in establishing the present state of IM in an organization, and in determining the necessary changes that should be implemented.

The third and next chapter provides an overview and explanation of the researcher's choice of methodological framework, as well as research design and analysis methods, which were adopted to examine the proposed research questions.
CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the research design and the research methodology that were applied in this research study. The chapter sets out research assumptions and paradigms, outlining the connection between the ontological, epistemological, theoretical and methodological perspectives, which were applied to make sense of the collected data. The sampling design, data collection, data analysis, as well as the research validity and the reliability issues, are then discussed.

3.2 Research assumptions

As stated by Creswell (2008), the research process has three noteworthy measurements: (i) ontology; (ii) epistemology; and (iii) methodology. He goes on to desensitize a research paradigm as a widely inclusive arrangement of interrelated practice and thinking, which define the way of enquiry along these three measurements.

However, Tuli (2010: 99) states that the “… selection of research methodology depends on the paradigm that guides the research activity, more specifically, beliefs about the nature of reality and humanity (ontology), the theory of knowledge that informs the research (epistemology), and how that knowledge may be gained (methodology)”. In this study ontology, epistemology and methodology measurements are considered as focal elements for this research, as they shape the inquiry.

The researcher’s ontological assumptions in this study impacted the topic selection, as well as formulation of the research questions and strategies for conducting the research. Thus, the researcher wanted to understand ways to construct reality in terms of “how things really are” and “how things really work” – in other words, the state of IM in the researched organization and how an organization would make IM more efficient. This leads to the selection of interpretivist epistemology, linking the author and participants from the selected organization to construct knowledge together. Generally, it relies primarily on a qualitative method of in-depth interviews of data collection and analysis.
3.3 Research paradigms

A paradigm impacts the way that knowledge is studied and translated. The choice of paradigm sets down the plan, motivation and desires for the research. Without assigning a paradigm as the first step, there is no foundation for following choices with regard to methodology, literature, methods or research design (Mertens, 2005). In order to choose the appropriate methodology, an understanding of different research paradigms is required. According to Myers (1997), three popular research paradigms exist: (i) positivism paradigms; (ii) interpretivism paradigms; and (iii) critical research.

3.3.1 Positivism

A positivism paradigm puts forth a positivistic philosophy, which advances the thought of an objective social reality, where the object that is contemplated is both noticeable and quantifiable. This paradigm rests on the belief that knowledge is out there and that one must gather, confirm and break down the information to demonstrate or invalidate the hypotheses (Creswell, 2009; Myers, 1997). The methods that are connected with this paradigm incorporate experiments and surveys where quantitative data is the standard. The analogy of this method is by utilizing measurable or numerical strategies and conclusions, which are drawn to give proof to strengthen or dismiss a theory that has been created in the beginning of the research process (Chen and Hirschheim, 2004).

In this study the positivist paradigm does not align with the research issue at hand, as this investigation does not attempt to grapple with any kind of quantitative data, nor does it hope to test any theory.

3.3.2 Interpretivism

Conversely, the interpretive philosophy accepts that knowledge is not just out there holding up to be found, but is established through a person’s lived encounters (Saunders et al., 2009). Interpretive approaches depend on real-life strategies, for instance, interviewing, observing and the investigation of existing texts. These methods guarantee a satisfactory dialogue between researchers and those with whom they associate; bearing in mind that the end goal is to cooperatively develop a meaningful reality.
For the most part, meanings are developed from the research process. Normally, qualitative techniques are utilised (Angen, 2000).

3.3.3 Critical research
Research methods that are utilised as a part of critical research include interviews and group discussions. These strategies take into consideration coordinated efforts and can be conveyed in a manner that stays away from discrimination (Mackenzie and Knipe, 2006). The critical paradigm aims to address issues of social justice and marginalism (Scotland, 2012). Because this specific research does not search for social issues, the critical research paradigm is not suitable for this study.

3.3.4 Locating the study within the interpretive paradigm
This study is situated in the interpretive paradigm. The purpose of this study is to identify factors that might hinder or bolster the information management of a Public Sector Department, and suggest a possible solution for the identified problems.

This research was conducted by gathering information and perceptions through inductive qualitative research methods such as interviews and observations, representing this information and these perceptions from the perspectives of the research participants. Observation and interviews were the key data collection methods that were used for this study. The researcher had direct interaction with the people that were studied within their context.

3.4 Research design
A research design is plan in which certain research techniques and methods are connected together to secure a group of data for empirically grounded investigations, conclusions and hypothesis definitions. In this manner, the research outline gives the research a clear research structure, and controls the routines, choices and sets the foundation for translation.

There are numerous meanings of research design and a few illustrations can be defined that research designs are “… operations to be performed, in order to test a specific hypothesis under a given condition” (Bless et al., 2006:71). Phillips and Burbules (2000) define research design as the procedure of making learning cases
and after refining some of them, the cases are all the more emphatically justified, while Welman et al., (2005) describe research design as the overall plan, according to which the respondents of a proposed study are selected, and as means of data collection or generation.

There are two research approaches, which are deduction and induction, and these can be defined as: “With deduction a theory and hypothesis (or hypotheses) are developed and a research strategy is designed to test the hypothesis. With induction, data is collected and a theory is developed as a result of the data analysis” (Saunders et al., 2009:129).

As indicated by Avgerou (2000), IS research is issue-oriented as opposed to theory driven, which corresponds with an inductive approach. This study is more issue oriented and the focal point is on the single case study to accomplish the motivation behind the thesis, as opposed to hypothesis testing, which takes into account existing theories. In order to appropriately address the research problem and answer the established research questions and objectives, this research was designed as follows:

- The literature review was conducted to determine a “best practice” in IM in order to derive a conceptual model;
- The next step was a selection of appropriate methodology, which was used to:
  - Conduct empirical research, which included:
  - Data collection and analysis; and
  - Compiling the final report.

3.5 Research methodology

The research methodology is the philosophy or general rule, which manages research. The research method is further guided by approaches that are used to gather the data (Dawson, 2007). These approaches include qualitative and quantitative methods, which are explored below.
3.5.1 Quantitative and qualitative methodology
As stated by Fuchs and Hanning (2001), two methods, namely ‘qualitative’ and quantitative’ research methods come into play when conducting research in social sciences. The two approaches can be distinguished, since quantitative methods concern the use of numbers, while qualitative approaches focus on the social aspects of life (or variables that are tested in a study), as well as the meaning that people have attached to it. The choice of approach lies in the type of problem that is grappled with, as well as the type of information, which a study wishes to analyse. Where studies include both numbers and indicators of social impact, it is likely that a combination of the two approaches would be applied.

This study used a qualitative methodology, since the research reason obliges that the phenomenon should be studied in depth. This methodology is suitable because of the way that the research is needed in order to gain a better (more profound) understanding of how an organization may utilise the information management for improved service delivery to the public.

3.5.2 Rationale for a qualitative study
Because this research sought to establish an understanding of the meaning of Information Management, particularly pertaining to factors that hinder the deployment of IM within a Public Sector Department, a qualitative methodology was adopted. Bearing the research question in mind, a ‘case study approach’ proved most appropriate for this particular study. This is owing to the fact that case studies are focused on answering the “how” or “why” questions that are posed. Yin (2003) contends that this approach serves best in instances where the author has little control over events, or when the focus is on a contemporary phenomenon within a real-life context.

3.6 Case-study strategy
As observed by scholars such as Myers (1997), Case Study Methodology (CSM) is proving to be the most common qualitative method, which is used in the research of IS. Yin (1989: 23) and others have gone on to define the case study approach as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidences are used”. The case study
The method is most importantly utilized with a specific end goal in mind: dissecting a phenomenon in its normal setting, while gathering data through means such as direct observations, interviews or document analyses.

The benefits thereof are three-fold. Adopting the case study approach enables to examine a solid data unit, while paying close attention to detail and taking into account individuals' encounters; speculations are permitted; and data can be accomplished for further research work (Baxter and Jack, 2008; Blumberg et al., 2005). Yin (2002) concurs, advocating for the adoption of the case study methodology, but highlighting factors that the researcher should take into account when adopting this approach:

1. The researcher cannot control the conduct of those included in the study;
2. The researcher must seek to answer "what", "how" and "why" - type questions;
3. The limits between the phenomenon and their environment are not always clear; and
4. The researcher may want to cover logical conditions that are appropriate to the phenomenon under study.

**3.6.1 Categories of case studies**

Once the researcher has chosen to adopt the case study approach, he/she should consider the sort of case study that will lead to answers, and hence be fitting for the research question (Baxter and Jack, 2008). According to Yin (2002), three types of case study methods exist (explanatory, descriptive and exploratory research), all of which are divided into three broadly useful categories for the completion of the study at hand.

1. Explanatory research proves valuable in understanding reasons and symptoms. When this approach is adopted, the researcher aims to recognise factors, which together cause or trigger a certain phenomenon (Fuchs and Hanning, 2001).
2. Descriptive research describes a particular problem that often serves as the precursor to an explanatory or exploratory kind of study (Saunders et al., 2009). The objective of this type of research is to offer the researcher a profile
of the phenomenon, or to reveal parts of the phenomena that portray an individual, organizational or industry-arranged point of view (Sekaran, 2003).

3. Exploratory research endeavours to identify the relationships between variables within a particular problem. Variables are more easily understood as ‘measurable factors’ or ‘units’ (Yin, 2002). When this method is adopted, the researcher seeks to understand the relationship between these variables – ultimately answering the ‘what’, ‘how’ and ‘why’ - type questions.

Myers (1997) expresses the importance of choosing the correct research method, as the research method choice ultimately controls the path in which the researcher gathers data. Kumar (2005) supports this view, and adds that the choice of methodology is further informed by the reason for the study, how variables are measured, and how the data is dissected. Having taken the work of both Myers and Kumar into account, the research at hand adopts the descriptive research method. This is owing to the fact that the research seeks to establish an understanding of the meaning of IM within a workspace and to identify possible components that make up the IM concept.

3.6.2 Limitations in the qualitative case-study method

One of the fundamental criticisms of the case-study method is that the results of the study are context-specific and, therefore, cannot be said to be generalizable. More simply put, the researcher will never know whether the case that has been investigated is representative of a broader population of “similar instances” (Dawson, 2007). Scholars such as Yin (2003) have also critiqued the case-study method for its apparent lack of rigour, particularly in light of the influence that the researcher has on data collection and analysis (Darke, et al., 1998).

In light of these impediments, this study is aware of its own restrictions and attempted to employ substantive data to this end. As previously stated, the case study method was adopted in order to identify critical success and failure factors that might hinder information management in South African Public Sector Departments. This was accomplished by analysing the views of chosen government officials who utilise information for decision making. Because a single case was used in this study (a limitation of qualitative research), it should be noted that the findings are only
relevant to the particular branch in the Public Sector Department in South Africa brought under study. It cannot, therefore, be said that the findings of this study are representative of other Public Sector Departments within South Africa, nor of IM in organizations, in general. Since public service organizations generally are organized and managed along similar lines, the findings and recommendations can likely be applicable to many other public organization departments.

3.6.3 Case-study design in this research

General trends in IS research indicate that interest has shifted from investigating technical issues to investigating organizational ones (Zott, et al., 2011). It is for this reason that the case study research method proves most useful. The rationale behind this proposed methodology is the ability of CSM to consider and present a contemporary fact within its real context.

The researcher of this body of work has chosen to utilise a single CSM, and has collected data by interviewing people who rely on information for decision-making within IM systems. This research is most concerned with the relevant understanding, which relate to the implementation, effects and consequences of IM, along with its challenges and key success issues. To this end, a predominantly inductive approach, paired with a qualitative researched method, will be undertaken to satisfy the motivation of this study.

3.7 Sampling design

Purposive sampling, also known as judgmental, selective or subjective sampling, is a type of non-probability sampling technique. As one of the most well-known sampling strategies, purposive sampling tests ‘information rich’ cases, which can be studied in depth about issues of focal significance to the motivation behind the research (Patton, 2002). The purposive sampling approach, which is used in this study aims to identify a Public Sector Department by using IM in the South African Provincial Government.

In this study the researcher adopted a purposive-sampling approach, with a specific end goal to choose a representative sample of the total population. This technique was used to identify participants based on the following principles: (i) Working in the relevant department directly involved with information for decision making; (ii) holding senior, middle management and supervisory positions; and (iii) having at
least one year's working experience in the present position. All participants were employed in the particular branch in the Public Sector Department. It was assumed that the people who had met all requirements for these three principles would have the capacity to provide significant information.

3.8 Data collection

This study made use of interviews to obtain data. These sources of data were collected from primary and secondary sources. Primary sources are usually those data sources, which have been collected from individuals, organizations and unpublished sources. Secondary sources refer to any materials, which have already been distributed such as books and articles (Saunders, et al., 2009; Myers, 1997).

The most popular way in which primary information is obtained is through interviews. Interviewing has been defined as any person-to-person interaction, which is initiated with a specific purpose in mind (Kumar, 2011). Scholars such as Burns (2000) have built upon this definition to include a verbal, face-to-face interchange. He also references telephonically conducted interchanges, where an interviewer elicits information, beliefs and the opinions of another person, telephonically (Burns, 2000). Sekaran (2003) offers a liberal approach to the interview technique and regards an interview as any form of questioning, which takes place through personal, direct contact, via telephone, computer-assisted interviews, electronic media or text message.

The study at hand made use of primary data, which was gathered through interviews that were conducted with respondents. The rationale behind this was to obtain full and detailed information of the experiences under study (Creswell, 2009). The information was then supplemented with secondary data sources from internal documents within an organization.

The interviews that were conducted were semi-structured in nature. Saunders et al., (2009) refer to this form of interview as starting off with particular inquiries that permit the interviewees to offer their own thoughts at a later stage. When a semi-structured interview was conducted, the researcher produced questions that had been discussed with the respondents. As a result, the respondents answered the questions with the opportunity to offer their own input, leaving room for further
inquiries that were made. The qualitative perspective of this study cannot be overstated. The ultimate aim was to discover how people view their reality, ideas and encounters. From here, a holistic view and understanding of IM was achieved.

3.9 Data analysis

Scholars such as Merriam (2009) have defined data analysis as the process of making sense of, and constructing meaning of collected data. Bogdan and Biklein (2003) concur, and go on to define qualitative data analysis as working with, organizing and breaking down data into manageable units, synthesizing it whilst searching for patterns and discovering what should be learned.

This study made use of interviews as a means to obtain data. Data, as well as information, was collected from both primary and secondary sources. Primary sources are usually those data sources, which have been collected from individuals, organizations and unpublished sources. Secondary sources refer to any materials, which have already been distributed such as books and articles (Saunders et al., 2009; Myers, 1997). Scholars such as Marshall (1996) have conducted research by using sample groups of a similar size, namely 15 participants, and have found that this sample size serves that research, which aims to develop an understanding and an interpretative framework best. It is for this reason that a sample group of a similar size was utilised.

The content-analysis technique approach was used to analyse the textual data, which was transcribed from the interviews. The interview data was recorded on audiotapes, and then transcribed onto paper. This was then followed by an “open coding” approach to begin the data-analysis process that created the categories (Creswell, 2009).

In an earlier study, Miles and Huberman (1994) tabularized a three phase qualitative data analysis methodology. The methodology comprises of the following phases:

1. Data reduction;
2. Data display; and
3. The interpretation phase.
The first phase, namely data reduction, is concerned with simplifying, summarising and converting written data. It is during this phase that coding, categories and themes are created in accordance with the research questions.

Data display is the second phase, and involves the presentation of reduced data in organised and understandable forms. This allows the researcher to draw conclusions concerning research issues. The presentation of data during this phase is synonymous with flow charts, tables and graphs in an effort to systematise the information.

The final phase, which is the interpretation phase, allows for descriptive patterns in the data to be uncovered. The research is then able to draw conclusions from this phase by evaluating patterns, which emerged from the first and second phases (Miles and Huberman, 1994).

3.10 Research evaluation: trustworthiness, validity and reliability

Validity and reliability are two main components that indicate the usefulness of a study (Dawson, 2007). Validity concerns how accurately the researcher embraces the phenomenon under study. Two types of validity exist, namely internal and external. Internal validity assesses the correlation between the findings of an empirical study and the theory that informs it. External validity measures the degree to which the findings of an investigation can be used under different circumstances and is controlled by individuals who perform under those specific circumstances (Merriam, 2002; 1995).

To this end, the researcher at hand asked open-ended, semi-structured questions whilst listening to respondents and probing for further information, where necessary. Dawson (2007) draws attention to the correlation between validity and the need to listen carefully, and to have it made known that you are listening – another technique that the researcher here applied throughout. Other ways to ensure validity include to provide as much information as possible by formulating an interview guide with the questions that were asked during the interview. Once the interview was conducted, the researcher sent summation notes of the interview back to the respondents for any amendments, ultimately allowing them to include more information, which may have been missed during the interview; a technique, which is noted by Merriam (1995).
Reliability concerns the findings of the research. Research that can be repeated is said to be reliable research. More simply stated, reliability measures the extent to which conclusions can be drawn and reiterated should the investigation be repeated (Yin, 2002; Merriam, 1995). According to Yin (2002), the goal of reliability is to minimise errors and biases in a study. In this study, however, the author attempted to clarify the procedure of the research and hence produced practical details of the interviews, as well as each chapter as it was completed, and presented a draft report that was reviewed by a supervisor (Dawson, 2007; Merriam, 1995).

3.11 Ethical considerations
The researcher gained full ethics approval from the University of the Western Cape before embarking on the study. Permission to undertake a research case study at the potential department was authorized by the acting Deputy Director General. The author sought permission from the potential participants in the pertinent unit within the department. This permission was approved by means of e-mails. The researcher provided details of the research before interviews were conducted, while an interview instrument was sent to the participants to give them a chance to withdraw from the research in the event that they felt uncomfortable with the questions.

Participants were informed of the research purpose and the voluntary nature of their participation. Their input was requested and they were assured that their confidentiality would be respected throughout. In order to ensure anonymity, all participants are referred to as ‘respondents’. Furthermore, participants were made fully aware that they were free to withdraw from the study at any stage. The researcher committed to provide the findings of the research to the participants, should they so wish. The following chapter presents the case study findings and results, and covers aspects such as critical failure and success factors, and an effective way to manage information in a Public Sector Department.
CHAPTER 4: CASE-STUDY FINDINGS AND DISCUSSION

4.1 Introduction

This chapter used the theoretical model, which was presented in Chapter 2 (see Figure 2.3: MPS Model (Source: Author)). The goal of this study was to identify factors that might impede or support the information management of a Public Sector Department, and to suggest possible solutions for the identified problems. The data that was required for this study was obtained from semi-structured interviews, while the documents were analysed, according to the literature review, which were extracted by using a content-analysis process to create the categories. The findings that emerged during the data analysis phase are presented in direct quotes in some areas.

4.2 Organizational characteristics

The researcher obtained the data that has been used in this study from a South African Public Sector Department in the Western Cape. The organization, which was involved in this study, was a particular branch in a Public Sector Department. The core function of this branch is to provide human resources support, corporate assurance, legal, communication and IT services to eleven departments in the Provincial Government of the Western Cape.

4.3 Background of participants

The findings in this qualitative case study are based on the perceptions of the participants within the particular branch in the Public Sector in the Western Cape. A total of fifteen (15) participants were invited and all agreed to participate in the research study. All participants are employed in the particular branch under study. The participants comprised a fair blend of senior and middle managers, and a supervisor. To protect their confidentiality, each participant was given a code. However, for the purposes of analysis, all data that was collected was anonymised, hence no individual respondent can be identified from the results.

Table 4.1 below provides a profile of the participants according to the branch/unit in which they work within the particular branch, and the position that they hold there.
### Table 4.1: Background information of participants (Source: Author)

<table>
<thead>
<tr>
<th>Code</th>
<th>Branch</th>
<th>Position</th>
<th>Number of years in the Public Sector</th>
<th>Number of years in current position</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>IT Services</td>
<td>Middle Manager</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>IT Services</td>
<td>Supervisor (lower-level manager)</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>C</td>
<td>IT Services</td>
<td>Senior Manager</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>D</td>
<td>IT Services</td>
<td>Middle Manager</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>E</td>
<td>IT Services</td>
<td>Senior Manager</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>IT Services</td>
<td>Middle Manager</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>G</td>
<td>IT Services</td>
<td>Acting Senior Manager</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td>H</td>
<td>IT Services</td>
<td>Middle Manager</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>I</td>
<td>IT Services</td>
<td>Acting Senior Manager</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>J</td>
<td>IT Services</td>
<td>Senior Manager</td>
<td>37</td>
<td>7</td>
</tr>
<tr>
<td>K</td>
<td>IT Services</td>
<td>Senior Manager</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>L</td>
<td>IT Services</td>
<td>Senior Manager</td>
<td>11</td>
<td>2.5</td>
</tr>
<tr>
<td>M</td>
<td>People Management Services</td>
<td>Middle Manager</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>N</td>
<td>Legal Services</td>
<td>Senior Manager</td>
<td>18</td>
<td>2.5</td>
</tr>
<tr>
<td>O</td>
<td>People Management Services</td>
<td>Senior Manager</td>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

The information that is provided in the above table indicates that all the chosen interviewees hold relevant positions in the Public Sector Department. The participants that were under study had long years of work experience, a confirmation that they are, therefore, well informed about the public sector, and have a good understanding of the department’s information management characteristics. Most participants have more than three years’ experience in their current position in the various areas in the particular branch. This implies that they are established in their position, and have a level of maturity, insight and knowledge pertaining to their area of responsibility. As a result, the participants had a good understanding of the content of the questionnaire (see Appendix A: Interview instrument) and the key concept that was being discussed, and were able to adequately respond to the interview questionnaire, as required. Their contribution to this study can be seen as valuable and relevant. Therefore, the data that was gathered allowed the researcher to understand the factors that may influence information management in their area. The next section discusses the participants’ findings.
4.4 The role of information in the organization

In order to determine the importance of information, the first objective of the study that the researcher set out to determine, was the participants’ understanding of the role of information in their environment. The objective was to answer the research sub-question: What is the role of information in the organization? (See section 2.3, Chapter 2).

During the interview process it was found that the department uses information mostly for decision making: “in your day to day use, you are going to use that information, to make strategic decisions you are going to use that information or maybe a combination of information to help you to get to a decision, an informed decision”, stated Interviewee C. Other participants, for example, Interviewee L, added that: “we will provide Line Function Managers with advice as to how they should take decisions”, and Interviewee F said that: “we use information to solve problems and make decisions”.

There is a belief amongst a minority of the interviewees that information should be considered as a valuable asset in the organization, as reported by senior managers. For example, participant Interviewee (N) said: “people need to understand that information has value …the organization must see information as an asset”. Another participant, (Interviewee C), added that: “the culture of the organization of realising that information is actually an asset”.

This also correlates with researchers who argue that, like any other resources that are valuable assets of an organization such as financial assets, human assets, and physical assets, information as a resource must be seen as an asset that is valuable for the organization (Evan and Price, 2014; Khatri and Brown, 2010; Ward and Peppard, 2002; Wilson et al., 2000).

Based on the responses participants, the researcher observed that the participants are unaware of the importance of information, and that the value of information in not managed within the department. The key issues according to this study are that information is not managed by a governance framework of policy, processes and
procedures for continuous improvement of information throughout the department. This gave the author a guideline to continuously investigate and analyse if there are basic issues regarding the management of information.

4.5 Critical failure factors of IM at the Public Sector Department

This section analysed the critical failure factors. The objective of investigating the critical failure factors was to answer the research sub-question: What are the critical failure factors of IM at the Public Sector Department? (See section 2.5, Chapter 2). The factors were grouped in four categories, namely people, process, policy and technology, which impede the effective implementation of IM. This emerged in the reviewed literature that was discussed in Chapter 2 by the different authors.

Amongst the critical failure factors that were commonly discussed were the role to take responsibility for IM (Cox, 2014; Evan & Price, 2014; McKeen and Smith, 2007); the absence of a role to take accountability for IM (McCall, 2015; Evans & Price, 2014; Logan 2010); the absence of the appointment of an Information Manager Ismail & Jamaludin, 2011; Logan, 2010); the lack of information lifecycle management (Cox, 2014; Govil et al., 2008; Short, 2006); the lack of an IM policy Cox, 2014; Mancini, 2010; Daum, 2007); and a Silo Information Environment Akoramurthy & Priyaradhikadevi, 2015; Cox, 2014; Day et al., 2009; Petrides 2004).

In the following section the findings of this study on the topic regarding factors in the people category are presented as discussed in subsection 2.5.1 in Chapter 2.

4.5.1 People category

The researcher set out to determine the accountability and responsibility roles of people who managed information in the Public Sector Department as describe in subsection 2.5.1 in Chapter 2.

4.5.1.1 The people who are held accountable for Information Management

In determining the roles for accountability in managing information in the department, the majority of the respondents referred to the role of the Director General (DG), who is the Head of the Department of the Premier, and the Deputy Director General (DDG), who is the head of the branch, as the persons who are accountable for information.
This is explained by the response of a senior manager (Interviewee I) who opined that: “... the DG’s accountability or the HOD’s accountability or managing information in his department however it is not as simple as that, because within his department his got various Deputy Director Generals ...... our DDG would be accountable for information related to IT. It is sort of delegated to him .... because the DG is not a subject matter expert on IT that is why he has the DDG so the DDG’s accountability would be ensure everything within his portfolio are managed”.

In terms of enterprise risk management, another participant, a senior manager, (Interviewee E), said that, “it will be the DG accountable for information management. Of course if we go down the list, the DDG is accountable”.

According to a middle manager, Interviewee A, “the Head of the Department who is currently the DG he should be accountable for IM even when audits are being created his the first person to get the audit report”.

The findings of this topic support the legislation in the context of the South African Government, and under the authority of various legislation and regulations, for example, the Public Service Act of 1994, the Minimum Information Security Standards Act of 1996, and others, the Head of the Department (HOD) is accountable for the management of information for a specific provincial department. In the context of the South African Government, the Premier, who is the head of the Provincial Government, Director General (DG) who is responsible for provincial departments and his/her Deputy Director General (DG) who is responsible for a branch in a provincial department fulfil this obligation. They are accountable for their actions, decisions, policies and administration, and have an obligation and responsibility to report and explain information to the public (see subsection 2.5.1.1, Chapter 2.

The researcher observed that the participants were aware of the role of accountability for information management in the department. However, there were hardly any discussions regarding accountability to establish an IM strategy for information. Neither did the participants discuss that this role should establish
measures to manage information in accordance with the department’s compliance, standards and policies, as discussed in Chapter 2 (section 2.5.3). The findings indicate that the department has not realised the importance of information and information management. Conversely, senior managers may be concerned about the inability to correctly implement an information management project, as it may fail.

With the current roles for accountability in managing information identified, the researcher sought to identify roles for responsibility in the management of information and what the differences were, if any.

4.5.1.2 The people who are held responsible for Information Management

The interviews with middle managers and particularly with senior managers revealed that they believe that information is everyone’s responsibility. According to a senior manager, Interviewee N, “first of all we work from the basis that everyone is responsible for information that is in his or hers possession”.

Another participant (Interviewee A) went on to state that: “information management is everyone’s responsibility it should be in place for all the role players in the department because information lies everywhere and it supposed to be everyone’s responsibility”.

The above findings are in support of Cox (2014) who states that everyone has the responsibility to consider the effects of their actions. Therefore, employees at all levels must take responsibility for information, as discussed in subsection 2.5.1.2, Chapter 2.

The majority of respondents referred to the role of the Chief Directors and Directors, who are senior managers and middle managers, and their teams in the branch as the persons who are responsible for information: “there are various Chief Directors each directorate is responsible for their information. The Chief Director and line manager, responsible for information and the teams”. Another participant, a senior manager (Interviewee J), stated that: “in my space I’m primarily responsible for the operational side the operational delivery of IT Services”.

The researcher observed that the general response from participants was that they are aware of the roles of responsibility for information management in the
department. However, there was a limitation regarding the total responses from participants in relation to the responsibility of senior managers who provide oversight of the IM strategy. This included the responsibility to ensure that the information policies and standards were adhered to, as well as other responsibilities, as indicated in Chapter 2. The findings were the same regarding the responsibility of middle managers and their teams, hence there was hardly a discussion of their responsibility towards information, as discussed in subsection 2.5.1, Chapter 2. It would appear that there is improper planning around information as means to achieve the organizational objectives, while there is also a lack of cooperation amongst employees, as they are not rewarded for the management of information.

4.5.1.3 The Information Manager

However, there was a unanimous response from participants who stated that they do not have a dedicated person for the role of an Information Manager who is overall responsible for the management of information in the department: “We don’t have dedicated Information Managers. However, we do have people in their normal job function they’ve got a role to play as far as information management is concern for their space” said a senior manager, (Interviewee J). (see section 2.5.1.3).

The above finding supports the reviewed literature, as Ismail and Jamaludin (2011) went some way to problematize this by contending that because the correct professionals are not in place, the present record personnel are unable to demonstrate a body of knowledge to identify, describe and make the relevant facts and data available (section 2.5.1, Chapter 2).

Another participant, (Interviewee C), had a similar opinion and stated that: “there is not a title of Information Officer, Data Steward or anything like that. … but in our branch there is no dedicated information officers”.

It is also evident in the reviewed literature when Logan (2010) argues that the root cause of the problem with the management of information is the lack of accountability. The organizational structure excludes the role of an Information Manager to support the appropriate management of information (see section 2.5.1, Chapter 2).
However, the majority of participants stated that the Information Manager should be in a separate unit to manage all the information in the department. Interviewee H said: “… some of them has information management units and those information management units are already accessing and analysing information within the department. Our department still needs to do that”.

There was also a similar view from participant, (Interviewee C) who said: “But within my branch there isn’t specific but I’m not sure in the IT branch whether there should be a component for information management. I would rather say from a business perspective in the whole of ……. there must be a component from my perspective not within IT Services”.

Among the important skills, which were highlighted in the reviewed literature, the participants stated that the role of an Information Manager should possess specific skills: “This person should be a good communicator. The person needs to understand a little bit at a high level you know how technology works”, said Interviewee E.

The above finding is in support of Hill et al. (2011) who states that the Information Manager should possess various skills such as communication skills, the ability to work in a team, being able to ascertain clients’ needs, and IT skills in order to understand the development of systems (see section 2.5.1, Chapter 2).

One participant, (Interviewee M), said that some employees’ performance is measured on the management of information: “… the management of information has been written up as a performance Key Result Area (KRA) for all our Senior Management Service (SMS) members”.

The finding is in support of Atkinson & Shaw (2006) who state that the management must use performance agreements to define employees’ performance expectations regarding the management of information, and to ensure that these align with their daily operations to achieve organizational goals.
It was interesting to note that only one unit in the branch used their employees’ performance agreements to measure the management of information. It may be that this particular branch deals with sensitive information and, therefore, it was articulated in the senior managers’ performance agreement.

In summary, it strongly indicates that in the absence of an information management strategy, this particular branch in the department is not ready to introduce the management of information into its environment.

4.5.2 Process category
This section presents the findings of the process category, as described in subsection 2.5.2, Chapter 2.

In order to obtain an understanding of the information life cycle management process that is used in the department, the researcher sought to enquire about this by asking participants the following question: *What process do you use to manage information when using information systems?*

The responses that were received show that there is no sufficient understanding of an information process. The participants reported different opinions with regard to processes that were used in the organization. For example, one participant, (Interviewee H), remarked: “*On the information systems we store, share, reporting, access, I might think of something later*”; Interviewee C pointed out: “some of the steps, gather, need for strategic information, store, backup and archive”; Interviewee L replied: “*collect, collate, summarise, store and disseminate*”; and Interviewee D indicated: “*so various processes are being used to manage it, there is no one process that is being used*”.

During data analysis the researcher observed that the findings show that there was a general lack of understanding amongst the participants of an information process.

The literature, which was reviewed concurred with this finding, since organizations struggle to process information in order to facilitate its flow amongst and use by employees. This contributes to the lack of understanding of the value of Information
Lifecycle Management (ILM) and how it can assist to actively manage information during the time from creation and use in supporting the organization, to improve performance through better service delivery or customer relations (Short, 2006).

There were participants that understood the process. Interviewee A explained: “There is not a formalised approved and endorsed information process in place to manage the life cycle of information”, while Interviewee C said that “it fits into our software development lifecycle”.

This also aligns with Cox (2014) who asserts that there is no standard process to manage information exchange, content and the creation and maintenance of information. Generally, it hinders the accessing, sharing, quality, availability and usability of information.

From the responses, as to whether the need, creation, storage, access, distribution, and use of an information process is important, it was determined that most of the department’s participants emphasised that the process was important for the management of information.

One participant, (interviewee A) said: “it’s very important it’s a step in the right direction because at least you will know you have a process in place to compliment the management of information”.

The above was also supported by another participant, (Interview 13): “It is very important. We actually follow almost all of these not through an integrated system”.

However, one participant, (Interviewee E), stated that another step should be included in terms of when information is no longer needed, and said that “…there is one step the end step that is probably missing there is how do you get rid and disposed of that information. How do you retire that information? Evaluate and retire information. Because there will probably come a time where that information might no longer even be relevant…..”.

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The researcher observed that the participants do understand the importance of the process. Hence, they showed their willingness to discuss each step of the process in detail.

### 4.5.3 Policy category

This section discusses the findings of the policy category. There was evidence that shows that there is a lack of an IM policy in government. The empirical investigation around this subject was based on the literature review findings, which were outlined in subsection 2.5.3, Chapter 2.

Some of the obstacles were confirmed by participants in this study. For example, one respondent, (Interviewee H), stated that: “we are just creating information or we just storing it we not actually doing anything effective with it.”

It is also evident from the reviewed literature that the absence of an IM policy shows that there is no clear guidance that is provided to employees with regard to creating, capturing and managing information in order to fulfil organizational, legal and assigned responsibilities across the organization (Cox, 2014).

The same participant holds that: “everybody has their own area of information”. The finding is also in agreement with Daum (2007), who identified a few significant barriers, which are integral for the adoption of an information management policy. In most organizations departments are almost independent of each other. Each maintains their information separately in systems to suit their own needs. Ultimately, this places the organization in jeopardy, as their work activities in relation to records retention, is in violation of regulatory compliance.

The vast amount of evidence, which has been presented here shows that a key issue that prevents effective information management, is indeed the lack of an IM policy. The majority of participants reported that their department does not have such a policy. Table four (4) below captures the participants’ perception on the absence of an IM policy.
Table 4.2: Participants’ perceptions of the absence of an IM Policy

<table>
<thead>
<tr>
<th>Participants</th>
<th>Perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant A</td>
<td>“We don’t have a specific policy”</td>
</tr>
<tr>
<td>Participant B</td>
<td>“We don’t have an Information management policy”</td>
</tr>
<tr>
<td>Participant C</td>
<td>“I don’t know if we have an Information management policy but there are bits and pieces in some of the policies that we already have that you can use”</td>
</tr>
<tr>
<td>Participant D</td>
<td>“We don’t have a specific information management policy”</td>
</tr>
<tr>
<td>Participant E</td>
<td>“information management policy might be embedded in other policies”</td>
</tr>
<tr>
<td>Participant F</td>
<td>“To be honest I don’t know of a specific information management policy”</td>
</tr>
<tr>
<td>Participant G</td>
<td>“There isn’t an overall information management policy, because I believe that overall information management is underpinned by lots of different other policies”</td>
</tr>
<tr>
<td>Participant H</td>
<td>“Not per say for the information management”</td>
</tr>
<tr>
<td>Participant I</td>
<td>“I’m not aware of an information management policy”</td>
</tr>
<tr>
<td>Participant K</td>
<td>“We don’t have an information management policy”</td>
</tr>
<tr>
<td>Participant L</td>
<td>“So policies still needs to be developed”</td>
</tr>
<tr>
<td>Participant M</td>
<td>“We don’t have a specific policy that deals with Information Management”</td>
</tr>
<tr>
<td>Participant N</td>
<td>“We don’t have a policy”</td>
</tr>
<tr>
<td>Participant O</td>
<td>“Information management policy, not that I am aware of, no”</td>
</tr>
</tbody>
</table>

However, this finding came unexpected; only one participant, a senior manager (Interviewee J), stated that there is an IM policy in the organization, as he stated that “in the province there is an information management policy”.

This result contradicts the earlier finding that a policy was not in place in the department, which may indicate that the participant did not want to reveal that such a policy does not exist, or that there is a policy and it has not been communicated to the rest of the team, or he simply did not understand the question.

It is interesting to note that in the absence of using an IM policy, the findings show that the participants responded by stating that the department is guided by the principles of South African legislation for information management practices (see subsection 2.5.3, Chapter 2).
For example, a participant, (Interviewee A), stated: “we leverage on other policies within government for information management such as your MISS … and your National Archive Act …”. Another interviewee, (Interviewee I), confirmed the above and pointed out that: “we draw from various legislation we have to because those sort of things guide us”.

However, it was encouraging to note that a number of senior managers were engaged on this topic and suggested additional legislation that guides the management of information in government. For example, one participant, (Interviewee N), said that: “the Provincial Archives and Records Services of the Western Cape ACT is a concurrent competency. So you can have National Legislation, but you can also have Provincial Legislation that will be applicable to us in Province”. Another participant, (Interviewee E), said: “the POSI, Protection of State Information that is the new thing that is going to come in now and the MIOS, The Minimum Interoperability Standards for Government Information”.

During the interviewee process the elements within an IM policy that was described in the policy category of the MPS model, were presented to the participants. There was a positive attitude among participants in this regard, and they demonstrated a strong interest as each element was discussed in detail. Most respondents accept that an IM policy, which encompasses the elements of a policy that was described, can be used in their environment.

One participant, (Interview M), said: “there are elements of these things that we are doing”, while the same respondent maintained that: “…if this is a requirement for the policy then I think we are well on our way to formalise it.

Another participant, (Interviewee C), iterated that evaluation should be included in the monitoring step in order to monitor and evaluate the performance of information, and said “monitoring and evaluation, monitoring for performance. I would say monitoring and evaluation”.

The importance of the IM policy was also discussed and confirmed by participants, as evidenced by a participant, (Interviewee A), who stated: “…. a policy is important.
A policy should be in place to guide how the information must be managed and safe guided”, which corresponds with McKeen and Smith’s (2007) suggestion: “.... the policy provides guidance and direction on the creation and management of information ....”.

Another participant, (Interviewee F), raised a key point of the policy and stated: “an information management policy is important to ensure the governance pertaining to information”, which is explained by Logan (2010) who argues that one of the solutions is the implementation of an information management policy, which provides clear guidance that will help to align information management practices in order to fulfil the requirements of an information governance framework.

After closely analysing the participants’ feedback, generally, the researcher’s impression in this regard was that it was clear that the majority of the participants accept that their department does not have an IM policy and that it is important to have a policy in order to manage information effectively, and that they are aware that information management is guided by the principles of South African legislation.

4.5.4 Technology category

This researcher set out to determine systems that have been established to support and deliver information, as discussed in subsection 2.5.4, Chapter 2. Mantzana and Themistocleous (2004) reiterates that non-integrated information systems create an environment where sharing and collaborating is virtually impossible (see subsection 2.5.4.1, Chapter 2).

During the investigation these obstacles were certainly confirmed by the study’s participants. For instance, Interviewee (D) stated that “we have silo of systems yes and they not integrated”. The same respondent maintained that: “I can get specific information from (AD) and some from the Performance Management Information System (PERMIS) people from Human Resource (HR) I can get some information from Boulette Moores Cloer (BMC) Remedy Action Request System. But I need to take all that various systems and put that information together to get me to that point ok now I have it”.
This was also the opinion of another participant, (Interviewee F), a middle manager, who believes that it is difficult to support and sustain thirteen departments if the information is not available. He said that: “We draw information from various sources to come to a conclusion … formal and informal information so we draw from both at this point … it’s unfortunately the only sources we have. We don’t have a system that we can extract information from a department”.

Another issue, which is associated with legacy systems was identified by a senior manager, Interview (C), when he said that “there are various systems within the area but they are not integrated …. but to make sure the information is integrated that is maybe where the challenge is”.

Petrides (2004) concurs with this finding by stating that legacy systems, which are a propriety system would be difficult to integrate to most open integration platforms (see subsection 2.5.4.1, Chapter 2).

There is evidence that shows that there are technical deficiencies with legacy systems within government. One participant, (Interview M), stated: “…… our systems within government I mean we working with a lot of legacy systems. Personnel and Salary System (PERSAL) is a legacy system. And so you cannot just extract information like that”.

According to Akoramurthy and Priyaradhikadevi (2015), legacy systems may be limited to technical deficiencies, while they also prohibit information sharing, and information exchange between database systems to the internal or external environment (see subsection 2.5.4.1, Chapter 2).

However, it is surprising to note that one participant, a senior manager, responded that their organization has a number of systems in the environment, as (Interviewee I) stated: “… we are talking about … 400 systems. And each of these systems performs a specific function. Some … may be duplicated functions”. Interviewee J added that there were numerous information systems, which range from transversal systems that are used by everyone to department-specific decision making support systems in government.
The overall findings of this topic show that there are many silo based information systems that multiple departments depend on for their daily use in respect of decision making. These silo systems force people to use inefficient methods and processes to access information, and then confirm and re-confirm whether the information that they have is accurate and a true reflection of what they need. Conversely, the functionalities of the silo systems are often in use to serve the same needs.

A review of the available literature, which dealt with the technology factor in Chapter 2, indicates that there is a shortage of appropriate IT infrastructure or a lack thereof, which causes system integration and information sharing problems.

There is evidence that shows that this is not the case in government. During the investigation one participant, (Interviewee 4), had a different view on this topic and stated that “… one thing that we not short of in the Western Cape Government (WCG) is the technologies so we have good technologies in place”.

This view was echoed by another participant, a senior manager, (Interviewee J), who explained in some detail that “our strategy is primarily around information management technology. So we provide the technology and the systems on which information management can… effective … take place. So we’ve got the appropriate systems. We have also encouraged departments to have their own management information …. that is unique to their departments …. in fulfilling their roles. We have then created a data warehouse where there is a common platform, common technology that stores the different datasets”.

The findings in this study are hence not supported by Hendriks (2012) who describes the shortage of appropriate IT infrastructure as an obstacle for system integration and information sharing (see subsection 2.6.1.1, Chapter 2).

During the interview process it was clear that there is efficient planning and a budget process in place to accomplish department’s objectives. Interviewee J asserted: “… at the same time you also get your funding for your technology and
projects your operations …. for these things to happen. … not only for new things that come in but, also to be maintained and supported …. So we got this parallel process taking place. So you got a strategic planning taking place with an operational planning process matching with the corresponding financial and resourcing planning process. So that you have an alignment between what you want to do from a strategic point of view. One is operationalise for a particular year. It is match by the appropriate resources and finance ….. I have to continuously keep my technology up to date from a technology trend …. and innovation point of view”.

The finding here is not supported by Gaál et al. (2015) and Turban et al., (2011), as they suggest that the shortage of IT may be attributable to a lack of budget, the absence of awareness, as well as a lack of commitment of top management towards the utilisation of IT within an organization (Gaál et al., 2015; Turban et al., 2011) (see subsection 2.6.1.1, Chapter 2).

In summary, there is a commitment from senior management to do things differently and to explore new technology in order to create better products and services, which should make a difference to service delivery in government.

Interviewees in this study confirmed that cloud computing is a focus to cut costs in government. Interviewee 9 suggested that “… the intent and the strategy speaks about moving to cloud. So we are going cloud. And given this difficult financial climate that we are in we are looking for opportunities that is going to help us optimise our cost, provide better ways of getting a service at a cheaper rate for example, because maintaining your own datacentre and having to refresh hardware every three years it’s a huge capital expense for this organization. So we are going cloud with the intent to see how we can use applications or infrastructure that is going to make our life easier both from an operational perspective both from a cost perspective, typically move our capex and operational expenditure one of the benefits of that” (see subsection 2.6.1.1, Chapter 2).

Another participant, (Interviewee 7), suggested that mobile communication technology will also be included in cloud computing and said: “the cloud strategy that we moving towards, the reason why we moving towards the cloud strategy, because
we are accepting we are aware that services need to be rendered in the cloud space which will be rendered on the mobile space”.

The findings in this study are supported by Dutta and Bilbao-Osorio (2012) who argue that the convergence of information technology and communication technology is a key part of technological innovation. Their work features the use of cloud computing, which has recently become an alternate method of storing, accessing and sharing information. Cloud computing can decrease costs for information based initiatives.

Dutta and Bilbao-Osorio (2012) state that fast internet access such as broadband will permit systems migration from autonomous platforms to collaborate across an extensive variety of application domains. In addition, the standardisation abilities in the communication technology can enhance inter-operability in information technology.

Throughout the empirical investigation this view was supported by the responses of numerous participants.

One participant, (Interview J), considered broadband as an important piece of infrastructure to increase internet connection speeds to devices and stated that “... in the Province with the roll out of broadband, we .... provide public Wireless Fidelity (Wi-Fi) hotspots … so if you don’t have the broadband, you don’t have the basic building blocks, one of the key basic building blocks to provide (Wi-Fi) access, to provide internet access at huge speeds, because included in the broadband is the internet pipes that we require. Again, massive pipes, low cost, massive speed, massive capacity. So the broadband is key to all that stuff. If we don’t have it we wasting our time”.

Another interviewee, (Interviewee D), pointed out that “broadband is a massive game changer ....... it’s changing the way we do things, its change the things that we are now capable of it’s just changing a whole lot of stuff”: A similar response was gauged from a participant, (Interviewee I), who said: “broadband is an enabler like putting down the road that you drive on but it is not the car. Broadband is the
mechanism for you to get from point A to point B … broadband is part of the infrastructure that needs to be in place for all the services to run on”.

Mobility introduces potential for the department to achieve key operational efficiencies. The majority of participants indicated that mobility is important to access and share information for government in this study (see subsection 2.5.3.2, Chapter 2).

For example, one participant, (Interviewee J), maintained that: “… one of our areas that has immerge … is the whole thing of mobility of information. So information should be access from anywhere by anybody through any means by any means…. so that’s basically the philosophy”.

The importance of mobility was supported by another participant, (Interview E), who stated that “mobility is very important. Especially in this day and age … people need to make decisions at the spur of that moment”.

The above was also supported by another participant, (Interviewee N), who said that “it is exactly that the convenience that you can access information from anywhere basically these days”.

Another opinion was offered by Interviewee G: “in my view it’s not the importance …. it’s where the technology is going … from a worldwide perspective in 5 years’ time, 7 years’ time there won’t be a need for a laptop. It will all be a mobile device”.

The above finding supports the literature review, which revealed that mobility is important as it provides for users to access critical information whenever and wherever they need it (Chitananana and Govender, 2015; Burke and Mouton 2013).

As means for employees to access information on the government network using personal devices, it was explained by one participant, (Interviewee J), that they are currently busy with BYOD: “At this stage with BYOD we don’t give access, but we are busy putting in the infrastructure to be able to do it. So that anybody can come in and bring their own device and authenticate it and there are security policies that we
have already develop for that. We are busy building the infrastructure in fact all the hardware, all the software, all the tools around it has been bought and has been rolled out already”.

This is in support of Chitanana and Govendor’s (2015) recommendation that organizations should take advantage of employees’ mobile technologies such as bring your own device (BYOD), which includes personal laptops, smart phones and tablets that can be used to gain access to the organization’s network and hence be in a position to share information.

In order for personal mobile devices to access the network, the government department has invested in software to securely manage the devices (see subsection 2.5.3.2, Chapter 2).

A participant, (Interviewee I), stated: “We are moving towards mobile device management and we have procured tools”. Another participant, (Interviewee C), supported this opinion and said that “we are looking at Mobile management … policies and the software… so that we can at least monitor the security of that device”. Interviewee F had a similar view and said that: “we are busy geared up a mobile device management system which will be managing access, securely to specific information systems or systems per department”.

Using mobile device management software to manage devices, as suggested by Burke and Mouton (2013), mobile device management software should be implemented to manage, monitor and control mobile devices securely, as was supported by participants in this study (see subsection 2.5.3.2, Chapter 2).

In summary, the purchase or acquisition of the software will provide a security mechanism for BYOD to access and share information on the network.

Ventola (2014) and Denkinger et al. (2013) suggest that mobile applications increase information sharing activities, while employees are able to interact with peers wherever they are located, and can then share information, perform problem solving
and provide feedback with regard to the status of a project (see subsection 2.5.3.2, Chapter 2).

This view was shared by a senior manager participant, (Interviewee J): “… we also starting to build mobile apps so in the Geographic Information System (GIS) space for example I can now view quite a bit of information …. I can now download to my Samsung or my Apple phone”. Interviewee L noted the above view, and stated that “… we’ve developed a mobile capability for BI.”

With the advancement of the World Wide Web, alternative web-based technology tools have also been suggested in this respect. This includes the use of blogs (Israilidis et al., 201; Hsu & Lin, 2008), wikis (Turban et al., 2011) and collaboration platforms (Gaál et al., 2015) (see subsection 2.6.1.1, Chapter 2).

The above assertion is supported by a participant, (Interviewee F), who acknowledged that technology tools are used to share information effectively, when he said that: “… we also utilise SharePoint as a kind of a WIKI … where we also share information with the relevant people …. fulfil our operational obligations”.

However, another participant (Interviewee L) stated that: “the Electronic Content Management (ECM) is the formal that is the document record management archive stuff so there it is collect, create, store, archive, retaining, disseminate, so it got collaborate capabilities”.

It was further clarified by Interviewee C that the department is moving towards a centralised (ECM) system for the purpose of storing structured information that should be shared.

The above findings are in support of Hicks (2007) who recommends that dedicated systems improve the management of information sources. For example, a Record and Database Management System (RDBMS) was developed for archiving and accessing particular types of information (see subsection 2.5.4, Chapter 2).
After closely analysing the participants’ responses, the researcher deduced that suitable technologies are in place within government to support information management activities. There is a strong focus on improving existing technologies and implementing new technologies, while the department has a clear idea of technologies that will support information management initiatives. However, silo systems do exist in the environment and should be integrated.

4.6 Critical success factors of IM in the Public Sector Department

This section analyses the critical success factors, as discussed in subsection 2.6 in Chapter 2. The objective of investigating the critical success factors was to answer the research sub-question: What are the critical success factors of IM in the Public Sector Department?

The factors were grouped into three categories, namely: culture, top management support and strategy, which were identified as important elements for the effective implementation of IM. This emerged in the reviewed literature that was discussed in Chapter 2.

4.6.1 Organizational culture

As indicated in subsection 2.6.1 in Chapter 2, the reviewed literature revealed that organizational theory suggests that an organization’s culture influences how willing its employees are to share information (Smith, 2001). The success of information sharing depends on changing the way that information is exchanged and accepted, which is guided by change management, communication and training practices as means to utilize information technology to achieve a common goal (Berger, 2008; Nah, et al., 2001; Anderson & Anderson, 2001).

4.6.1.1 Information sharing

This section of the study presents findings around the topic of information sharing, as discussed in subsection 2.6.1.1, Chapter 2.

During the interview process there were a few problems that were raised by participants regarding information sharing in this study.
From an organizational factor perspective, one participant, (Interviewee F), opined that colleagues do not create a transparent work environment, which would improve information management practices, and specifically foster information sharing practices so that everyone can be productive and know what is expected. Hence, Interviewee F said that: “about the culture that is not there, there is no openness and no transparency…. everybody needs to know where they fit into the chain and how they add to the information and knowledge of the branch”.

The literature review also revealed that there is a lack of transparency on the part of top management, as employees are not informed about the status or direction of the organization (Li & Lin, 2006). These managers withhold information, act and speak inconsistently (ibid). This prevents building a team that fosters a diverse culture and also blocks innovation (Van den Akker et al., 2009).

From an individual factor perspective, a number of problems were raised. According to Julibert (2008) and Kolekofsk and Heminger (2003), individual ownership is displayed by individuals who are in control of information. They regard information as a symbol of power and see the sharing thereof as losing power and social interest.

This problem was certainly confirmed by participants in this study. For instance, one participant (Interviewee F) reported that there is a problem with colleagues who are reluctant to share information and stated that: “…. changing that organizational culture of non-sharing where you have to kind of protect your empire or kingdom or whatever you want to call it by not sharing your transferring knowledge” the same participant maintained that “you get people that hide information that really becomes a problem because you can’t learn from it … means you are inevitably going to repeat that mistake potentially that you have made and your branch can’t grow”.

The above was also confirmed by Interviewee M who stated that “we have a different kind of culture where we become very selfish over the information that we have at our disposal …”, and another participant, (Interviewee D), who maintained that “the culture for IM people doesn’t completely share information”.

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Interviewee M said that there is a need for information flow in order to deliver consistently on compliance matters and to provide advice, but the sharing of the information is a problem “…… because there is suspicious and trust issues around how the data will be used”.

Similarly, the above response supports Warren’s (2006) view, as he highlights the “lack of professional trust” as a potential barrier that may hinder the success of information sharing, as it influences, which information is shared openly and, which is withheld. It could, therefore, be argued that the lack of professional trust limits information flow.

Furthermore, one participant, a senior manager, (Interviewee J), stated that selected employees are rewarded because they regularly go beyond their job description to get the work done “in managing people one of the key elements is their performance you got to manage their performance and you also got to reward the top performers. In rewarding the top performers, we got a few ways in rewarding them the one is to increase their salary within the framework that we have the other one is to give a financial bonus”.

With regard to this specific topic, a potential pitfall that can be found in the work of Yang and Maxwell (2011) shows that a performance based reward system is designed to measure an employee’s performance ability. This pertains to their job function and is not designed to encourage information sharing, but rather to deter information sharing activities.

The findings show that information sharing is influenced by trust levels within the team and that there are no rewards, which are offered to encourage information sharing activities in the department.
4.6.1.2 Change management

The findings of this study with regard to the above topic are presented here, as discussed in subsection 2.6.1.2, Chapter 2.

Desson and Clouthier (2010) state that a culture of change is an important element; it recreates important and intricate work under conditions of constant change. Organizational change can also influence by managing a shift in a strategic direction, that is, by implementing new technology, new organizational processes, and involving new methods to knowledge transfer, which are all supported by internal cultural change amongst employees, including the need for more integrated ways of working.

Concerns were raised by a number of the interviewees during the interview process regarding change management. Almost all of the participants provided identical responses here as they agreed that there is lack of a change management process in their department.

Interviewee B mentioned that there is a problem with change management, which relate to information in the Service Desk area. Another participant, Interviewee (H), stated that change management is lacking and perceives that changes are not effectively managed in the environment. One participant, (Interview H), believed that there are problems with change management in the department, and said: “Change Management …… is something that is probably most questionable. …. but I do know in terms of change management we have also been struggling in the environment a lot.”

The findings support Pfeifer and Schmitt (2005) who argue that change success is often hindered by the lack of readiness: “…. the resource barrier means that resources are not purposefully deployed for the implementation of the strategy”.

However, Hendriks (2012) believes that organizations employ a change management approach to minimise potential resistance and disruption to technology change, or to implement new processes while encouraging employees throughout the organization to embrace the IS projects. This view was not supported by
Interviewee N who said: “but it is that change management, not everybody was happy with doing that. A lot of people used the old manual way and they want to stick to that.”

Desson and Clouthier (2010) concur with the above view, since they argue that failure to implement new changes in work processes and work procedures will impact the proposed performance standards.

Furthermore, there was a certainty that changes are effectively managed in the environment from one participant, a senior manager, (Interview J), who maintained that: “So we got a change management framework or a change control framework and there is lots of stuff that gets approved there. And there are processes as to how you implement change, technology change ...and all that other stuff”.

The above result contradicts the earlier findings that showed that there is a problem with change management in the department.

There was a suggestion from one participant, (Interviewee L), that a strong change management approach should be considered when new information technologies are introduced into the environment: “if you bringing in new systems, new information products a strong change management capacity in order to get the organization on the same page” Similarly, this response supports Desson and Clouthier (2010) who suggest that “…a formal change management process may help to increase the probability of success, maximize employee and key stakeholder involvement and buy-in at appropriate times, and increase the change competencies in the organization.”

Here the researcher observed that there is no ideal change management process in place to support changes for information management within the environment.
4.6.1.3 Communication

This section presents the study’s findings regarding communication as an organizational culture, as discussed in subsection 2.6.1.3, Chapter 2.

Arif et al. (2009) and Smith (2006) suggest that communication is necessary to ensure that employees are mindful of how the change impacts and affects them, hence they know their roles within the team and that they are valued.

During the interview process one participant, (Interviewee B), who is a supervisor, was not well informed with regard to changes that were made in the environment and said that: “changes from the various Change Advisory Boards (CAB) are not always communicated to the Service Desk as there is a lack of communication in our environment”. The same participant stated that: “we are the first point of contact but sometimes are the last people to know there is a change or update regarding specific information”.

One participant, (Interviewee H), said something similar to the above: “communication that is lacking ... people is doing their own thing as such”.

The above findings show that this particular issue was confirmed by Coombs (2006), which implies that a significant reason why changes fail is because of poor communication. Hence, the author places an emphasis on communication as a common reason for failure, and states that it should be included in the change management strategy. Poor communication can, therefore, be seen as a failure to change.

The interview with a middle manager, (Interviewee A), confirmed another reason for the failure of communication: “there is a lack of communication by management as they don’t communicate the direction for information management practices. This is not a good practice as the IM/KM strategy is not driven by them”.

According to Schaap (2006), over 38% of senior managers do not communicate the organization’s direction and organizational strategy to all employees effectively.
There was also the opinion of the interviewed participant, (Interviewee C), a senior manager, who stated that the department is not geared for information management practices, and explained: “we not mature in that space for taking responsibility for information management and I think we still need to work on the culture”.

The above was also confirmed by another participant, a middle manager, (Interviewee M), who explained: “when it comes to culture and ethics that should be fostered by managers. I think there should be a high regard for responsibility when it comes to managing data”.

After closely analysing the participants’ feedback, it was clear that there are inadequate communications amongst colleagues, which can create uncertainty, while the department may struggle to improve organizational performance. Based on the participants’ responses, on the whole, it would seem that the department has not yet reached a state of IM readiness.

4.6.1.4 Training

The findings of this study regarding the topic of training follow below, as described in subsection 2.6.1.4, Chapter 2. During the investigation there were overwhelming positive responses from participants around this topic.

One of the interviewed participants, a senior manager, (Interviewee J), mentioned how important training is for departmental employees: “people can go on courses they can go on formal post graduate education or even graduate education and eventually you will have to go on specific technology courses on specific courses relating to a particular area that you are involve in or a particular technology that you are involve with. So training and development ….. we quite big on that and our budget are pretty big for that as well. We got a specific budget for training and development it’s quite substantial.” Another participant who is also a senior manager, (Interviewee N), did not elaborate on this topic, but responded that: “we do training”.

The above finding is also evident in the reviewed literature; Agboola and Salawu (2011) recommend that the organization should implement policies, which deal with human resource development through education and training to keep abreast of
changes in the organizational environment. Hence, the right education and training programs are made available to employees to implement smooth changes in the environment, and to meet organizational objectives.

A number of interviewees, particularly middle managers, (Interviewee A, D), stated that they have completed skills training courses, which relate to the job function, which corresponds with Laudon et al.’s (2012) suggestion that “….. the organization should establish an all-round program to re-skill the current IT employees, in implementing and supporting the integrated IM environment”.

The investigation clearly shows that real efforts have been made in training initiatives to build confidence in employees, improve productivity and create a better work environment.

Furthermore, there was an idea that information management training should be introduced during the on-boarding process of employees in the department. One participant, a senior manager, (Interviewee C), explained: “training needs to be provided maybe during induction courses”.

The overall impression of this researcher in terms of developing human capacity is that the department should consider skills training and staff development as being important. Funding for training is typically included in the annual budget. This demonstrates that an investment is made in employees’ skill sets that influence the long term sustainability of the department regarding information management.

**4.6.2 Top management support**

The researcher sought to determine the support of top management towards information management in the department, as discussed in subsection 2.6.2, Chapter 2.

A supervisor participant claimed that top management support is important for a successful information management initiative: “there is not a vision and mission for IM currently by our DDG and it is not driven as such” reported by participant, (Interviewee B).
The reviewed literature in Chapter 2 also concurred that top management support is key, and with the sentiment, as portrayed by Interviewee L, who said that “you need to have executive buy-in and buy-in from the top. If you don’t have executive buy-in you not going to get much done”. Interviewee E had a similar response and added: “Sometimes it doesn’t necessarily work from bottom up you got to take the drive from the top down. And that is critical”.

Another participant, (Interviewee A), mentioned that “there is no top management support for IM for now. As the focus for this financial year is game changers determine by the mandate”.

After closely analysing the participants’ feedback, it was clear that there was no definite information management strategy available when the interviews took place, and that an information management initiative is not high on the department’s agenda. The researcher observed that the participants knew about the significance of top management’s support.

4.6.3 Strategy
The researcher sought to determine what strategies are in place in the department to support the effective implementation of information management when using information systems, as discussed in subsection 2.6.3, Chapter 2.

The majority of participants acknowledged that their department’s organizational strategy is aligned with their IT strategy, and that such strategies were in place: “Organizational strategy must be aligned to meet the goals. The technology strategy must be aligned to meet the technology capabilities”, said Interviewee C. Another participant, (Interviewee A), had a similar opinion and said that “… our strategy needs to draw from the business strategy because we are driven by the business in terms of what we need to achieve so we have an Information Communication and Technology (ICT) Strategic Plan aligned to the business strategy that makes us to actually implement the business goals and objectives”.

The findings in this study support Sacks et al. (1997) who propose that the alignment of Information IT strategy will be beneficial to drive and support the systems and
processes. Therefore, an IT strategy aligns IT capabilities with the organizational strategy and its requirements.

Most of the participants confirmed that IM and a communication strategy were not in place in the department. The participants all recognise the need and importance for such strategies, and when that are established, they should be aligned with both the IT and organizational strategies.

Interviewee D explained that “… to be honest from where I sit I didn’t see any information management strategy”. This indicates that an information management strategy is not in place, which was confirmed by another participant, (Interviewee C), who that stated that, “… the focus has not been on an IM strategy for the directorate” the same participant stated that: “The IM strategy must be aligned to get quality information and to fulfil the organizational goal.

Other participants explained the importance of an information management strategy. Interviewee D said: “It is crucial for information management to provide a guideline of how to implement and execute the right information and make it available”. Interviewee F stated: “It is important to have an IM strategy. It sets the objective of how you going to manage the information within the environment. You will have a clear direction for uniformity, accountability and responsibility”.

Thus, the development and implementation of an IM strategy is important as it supports the organization’s need to enhance the management of information, whilst facilitating successful exchange of information inside the organization (Hawley, 1995).

Another participant, (Interviewee D), indicated: “There is no communication strategy document for Information Management but it is important to communicate for example about awareness, advisory notes or if IT services are not available”.

This finding supports Smith (2006) who implies that the importance of a communication strategy will increase awareness, participation and cooperation of employees concerning changes. During the implementation of an IM project,
communicating ahead of time will place them in a position to embrace the change and provide feedback during the changes (Smith, 2006).

Interviewee H mentioned: “if you going to having something with information management and something that has to change you need to get the person’s mind change first before you can do anything else…. that is something that we also need… this is lacking”.

Similarly, the above response supports Pfeifer and Schmitt (2005) who argue that change success is often hindered by a lack of readiness: “...the management barrier reflects the problem that the focus of management activities is dealing with daily business, not discussing new strategies.

The findings reveal that the participants are aware of the need for information management, communication, and change management strategies, and have a clear idea of the importance of strategies in their department. Their responses through the entire interview process indicate that their IM capabilities demonstrate that the department has not yet reached a state of IM readiness. This assertion points out the need for a better understanding regarding the importance of information. The information content is increasing and the lack of strategies for the management of information may lead to problems in future.

4.7 Effective way to manage information in the Public Sector Department

This section considers the sub-question: “What is an effective way to manage information in the Public Sector Department”, as presented earlier in subsection 1.3 in Chapter 1. In answering the sub-question, the researcher also answered the main question. Both questions were considered empirically, while the researcher has proposed a solution in this regard.

The MPS model (see Figure 2.3: MPS Model (Source: Author)), which was used for the empirical investigation in this qualitative case study was updated to reflect the participants’ responses during the interview process. The “evaluate and retire” step in the process category was included in order to manage information that is no longer in use; “evaluation” was added to the “monitoring” step of the policy category.
to ensure that the performance of information is evaluated; in the technology category “integrated systems” was included to ensure that information is created, accessed, stored, shared across all platforms and is supported by “broadband and Wi-Fi” technologies.

The model shown in Figure 4.1 below is proposed as being appropriate for information management in the public sector in South Africa. The model is discussed in the next section.

New Model for the Public Sector (NMPS)

Figure 4.1: NMPS Model (Source: Author)

4.7.1 Strategy category

The effectiveness of information management is achieved with the implementation and support of the organizational, IT, information management, change management and communication strategy to strengthen service delivery and to support goals in the public sector department. The organizational strategy sets the goals and is supported by the information management strategy, which improves the management of information to ensure that accurate information is timeously available. This is supported by the IT strategy to enhance the capability of IT systems to create, store, access, distribute, use, evaluate and retire information. In order for changes to be made, the change management strategy is important to plan an approach for information management changes and to assist employees to embrace changes within the environment. The implementation of the communication strategy ensures that clear messages are communicated.
4.7.2 People category
The role of the Deputy Director General is that he/she is accountable for information management in the branch of the public sector department. This role drives the vision of all the strategies with regard to the effectiveness of information management, and should be supportive and committed to the information management initiatives. He/she is also responsible for risk management and audits pertaining to information management.

The role of a Chief Director (CD) that manages various directorates and a Director that manages a directorate who are senior managers and middle managers and their teams are responsible for information management in their unit. The senior managers must encourage information sharing activities as a means to build trust amongst employees and to ensure that employees are rewarded for the management and sharing of information. It is management’s responsibility to include tasks that are required to manage and share information into the employee performance agreement. The change management strategy underpinned by open communication is a key expectation of the management team.

An Information Manager is responsible for the management of information in the department of the public sector. This role is headed up by a dedicated unit that manages the department’s information. This manager should be supported by a dedicated team that manages information for the department. This role requires a champion to manage information through the life cycle process, while he/she should be driven by a policy and possess IT skills in order to implement the appropriate technology to meet the organizational objectives.

4.7.3 Process category
Information is managed as an asset through the need, create, access, distribute, use, evaluate and retire life cycle management process.

4.7.4 Policy category
Information is managed through an information management policy that consists of accessibility, communication, compliance, formal structure, quality, retention,
security, sharing, standardisation, privacy and monitoring and evaluation elements. The policy must include legislation and regulations that relate to the management of information in the South African Government.

4.7.5 Technology category
Integrated systems are developed and implemented to create, access and share information across all platforms. Data is stored in a data warehouse in a centralised database to make accurate and reliable information available. High-speed broadband and Wi-Fi technologies are used to access and share information on integrated systems and the internet. The technologies are extended to enable mobile users to take advantage of the Wi-Fi, which is supported by the broadband networks to gain access to information through wireless hot spots or the local area networks.

There is an Enterprise Content Management system that includes wiki capability to capture and share information for employees to maximise the continued information building environment. In addition to the ECM environment, there is also a well-supported business intelligence system, which enables accurate reporting for management.

4.8 Participants’ discussion
Once the interviews were concluded, the researcher posed an overall question to allow the participants to provide additional information that may not have been covered during the interview process. The participants were in support that information should be managed in their environment and pointed out the willingness to introduce information management in the public sector department.

Interviewee E responded by saying: “I think information management is quite an interesting process. This discussion has helped me realise how we need to focus more on information management how we need to get those elements that we need to get into place quickly.”

Interviewee A realised the gaps and said that: “From my side I do hope that the analysis of this will actually have a good impact to everything that is currently not in place. I’m hoping as you know you have identified a lot of gaps”.
Interviewee C mentioned that a unit is required for information management and stated: “We need to get a group of people that is going to implement information management in a structured way, standardisation, policies, and governance”.

Interviewee D responded: “I think you have covered it all. I think you have covered the whole spectrum…. and this will make our life just so much easier. If we can have a centralised information management system and it just feel so right so well done there is nothing more that I want to add”.

Interviewee F stated: “To be honest I think its covered most of the basis you know that we have been toying around with as well that types of things that we would like to implement even in our small. I don’t find anything missing to be honest”.

Interviewee G iterated that everything was covered during the interview process, but realised that there are ownership issues and stated: “There are two entities that we need to look at and that is from a departmental data ownership perspective… there is no guidance on what the overall information management policy should be …. And then secondly from a departmental ownership perspective departments are not taking enough ownership yet of their data of the information.”

Interviewee J realised that IM is important and said that: “Moving into an austere environment that we moving into I think having the information management processes and the relevant tools in place and perfecting that even better is absolutely crucial, because that is when you need evidence based information that you can plan better”.

Interviewee M believes that information management should be assessed in government and said that: “… I would suggest that we similarly looking broadly at Information Management and its growth path within government. Anchoring those in terms of the practices that we have and how we fulfil all those practices”.

Interviewee N believes that a culture change is important before the implementation of information management, and hence said: “I think the main thing maybe is just that we will have to get to a point where we will have to change the culture about
information. For me that is important. People will have to stand up and take ownership of policies and we will have to then ensure implementation”.

4.9 Summary

This chapter dealt with the qualitative analysis of the research according to the methodology that was outlined in Chapter Three. A total of 15 participants were interviewed during the data collection phase. Their responses to the interview questions were recorded, transcribed, coded and presented in the form of categories, which conveyed their views.

This section concludes the findings of the study and answered the main research question and sub-questions. The literature was used in order to answer the questions regarding the definitions of information and information management. The reviewed literature was used partly to answer the question on the role of information and was also answered by participants. To understand information management in a Public Sector department, this researcher tested the MPS model (see Figure 2.3: MPS Model (Source: Author)) for the Public Sector, according to the reviewed literature, and discussed the questions.

Results show that the department does not have an information management, communication and change management strategy in place that impacts an Information Management project success. A closer look at the categories, however, suggests that there are interrelated parts such as roles and responsibilities, organizational culture, underpinning information sharing, change management and communication that influence each other. The findings further highlight that information management is not recognised as being important and has an impact on reaching the department’s goals. The findings underpin factors in the strategy, people, process, policy and technology categories, which tend to suggest that a more disciplined approach may be needed to deal with change.
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This section concludes the entire research study by revisiting the research objectives, which were identified in Chapter 1. The research questions are briefly discussed based on the findings that emerged from the data analysis phase of this study. The contributions of this study, limitations, recommendations and future research are also presented and discussed.

5.2 Research objectives revisited
The main objective in this study was to identify factors that might hinder the information management of a public sector department and to suggest possible solutions to the identified problems. This objective was achieved by achieving the research sub-objectives:

- The first sub-objective explored the challenges that are associated with the implementation of information management by identifying the need of effective information management (IM). Investigation of the critical failure factors and critical success factors was split into two main parts. The first one centred on reviewing the literature, and identified groups of categories and factors. The second one tested these groups and factors of Table 2.1: Critical failure factors and Table 2.2: Critical success factors in Chapter 2, using the MPS model in (Figure 2.3: MPS Model (Source: Author)) Chapter 2 that was developed for the empirical setting of this study.

- The second sub-objective explored and sought to understand IM models, processes and technology that were employed in the management of information in order to suggest an appropriate solution to the identified problem. The process model for IM proposed by Choo (1995) (see Figure 2.1: Information Management Cycle adapted from (Choo, 1995) in Chapter 2 was selected, as each process step is planned, organised, coordinated and controlled when information is created. Faria et al. (2013) proposed an IG framework in Figure 2.2: Information Governance Framework (source: Faria
et al., 2013) was used as it describes the ways in which a policy can assist people to manage information when using technology.

- The third sub-objective determined an effective way to manage information in the Public Sector Department and proposed an appropriate model. There was no single IM model that captured all the factors in the literature that was reviewed for the public sector. Hence, the researcher compiled an MPS model (see Figure 2.3: MPS Model (Source: Author)) for the empirical testing, which was modified by the participants and a new model was developed NMPS (see Figure 4.1: NMPS Model (Source: Author)) in Chapter 4 for the Provincial Government.

- Suggestions for implementation of the final model in this study are given in the next section.

5.3 Recommendations for the NMPS Model implementation

The MPS model (Figure 2.3: MPS Model (Source: Author)), as discussed in Chapter 2 was used to investigate an effective way to manage information, as explained in last chapter. This study showed that the department has made significant investments in information technologies and training. However, information management awareness and training is an important component for implementing a successful information management program. For example, employees require training to understand the department’s expectations, as outlined in appropriate information management policies. Training should cover a number of issues as a means to educate employees to use systems and mobile devices to be able to manage risks that include, but are not limited to: (i) access, use, store and retain information; and (ii) mobile administration.

From this study it can be recommended that the senior management of the department should revisit the management of information before investing and implementing new information technologies in the environment. It is the responsibility of senior management to recognise the value of information to reach their organizational goals and to take the required action to create an environment and a
program to effectively manage information as an asset to deliver accurate and reliable information that will support service delivery to the public.

This can be achieved by developing and implementing: (i) a change management strategy to ensure that intended changes are managed in an orderly manner; (ii) a communication strategy to reduce unnecessary resistance and that helps employees to work together cordially, hence better performance and high productivity is achieved; and (iii) an information management strategy to support the department’s need to enhance the management of information and facilitating successful exchange of information inside the department. Senior management should clearly demonstrate commitment and support when implementing these strategies in a clear and transparent manner to employees in order to obtain their ongoing support.

It is recommended that an Information Manager should be appointed to be entrusted with the responsibility of managing information and overseeing it as an asset of and for the department. If the department decides to move forward with Cloud technology, BYOD and a MDM program, it is advisable to pilot the solution, prior to rolling it out. The department should ensure that a standard information life cycle management process, an appropriate information policy and guidelines are developed to bring together all of the requirements and standards that are applicable to managed information. This will give direction to employees when using and sharing information amongst colleagues. In order to have continuous support from employees for the management and sharing of information, it is recommended that employees should be appropriately rewarded. This can be achieved by measuring their performance for the management of information if it is stipulated in their performance agreement.

5.4 Recommendation for further research

Future research could expand the scope of this study to include local government and public entities in order to obtain a comprehensive view of information management in South Africa. It could be interesting to investigate how the NMPS model (see Figure 4.1: NMPS Model (Source: Author)) applies, for instance, to a local government’s perspective in order to identify if the categories that are
underpinned by the various factors in the model, which was used for the empirical testing are also visible there, or if new additions emerge. It is also recommended that this study should be repeated in the eight other provinces in South Africa in order to increase the generalisation of the findings of this study, and to increase the effectiveness of information management nationally within government.

5.5 Contribution of this study
The contributions of this study are seen as twofold: academic and practical. The model that was compiled in this study comprises of strategy, people, process, policy, and technology used for effective information management, which comprises the main academic contribution based on the literature review and the findings from the empirical research, in the field of information management in the studied Provincial Government in South Africa. This model can be used as a foundation by different academics and researchers to test and potentially develop it further, which may well add to the body of knowledge in this field.

The application of this model to test effective ways to manage information in the Public Sector Department is seen as a practical contribution of this study. The recommendations, which are provided in this chapter, could assist managers in the Provincial Government to satisfactorily prepare their organization to obtain the value of information management.

5.6 Limitation of this study
This study focused on a particular branch in a department in the Public Sector in the Provincial Government of the Western Cape. Therefore, the findings from this study are only appropriate to this particular branch and exclude the other branches in this particular department. However, this limitation was not seen as an element that affected the trustworthiness and findings of this study.

5.7 Conclusion
This study has evaluated the scores of literature available within the field of information management and the empirical findings. It reported on the effective use of information in a public sector department and demonstrated that there are critical
failure and success categories that are underpinned by factors that impede the management of information. It is strongly recommended that government decision makers should take into consideration the categories, namely strategy, people, process, policy and technology for the effective management of information. This study has provided guidance that is expected for such matters. The researcher hopes that this study can initiate a basis for discussion around Information Management with regard to the importance of what it is and can involve.
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APPENDICES

Appendix A: Interview instrument

1. What is your understanding of information management in the department?

2. What strategies are in place to support the effective implementation of information management when using information systems? Please elaborate and provide some examples.

3. How are these strategies aligned to support the effective use of information?

4. Who is accountable for information management and what are their roles?

5. What culture and ethics should be fostered by managers to create an environment of good information management practices when using information systems?

6. What are the roles of the people who are responsible for information management?

7. What are the desired skills, which are required for the information management personnel?

8. What process do you use to manage information when using information systems? Please elaborate.

9. In your view, how important is the following process: determining the need, creating, storing, accessing, distributing, and using information, for the management of information when using information systems in the department?
10. What policies are currently in place to provide direction to manage the information management environment?

11. Do the policies include any or all of the following categories, and what is the importance of these categories: accessibility; monitoring; communication; compliance; formal structure; quality; retention; security; sharing; standardisation; and privacy?

12. Which of the following legislation or regulation relates to the management of information in government: Minimum Information Security Standards (MISS); The Protection of Information Act; POPI Act; The National Archives of South Africa Act; The Electronic Communications and Transactions Act; The Public Service Act; and The Public Service Corporate Governance of Information and Communication Technology Policy Framework?

13. What information systems do you have in place to support and deliver the requested information?

14. In your view, what is the importance of mobility for information management?

**Overall Question:** What influences do you see as being necessary or important for successful information management implementation, using information systems in your department?