An investigation into the role of Information and Communications Technology (ICTs) in the South African Public Service

Kekana Lucky Mahlatse

22649549

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Dr. Willie Van Wyk

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DECLARATION

I, Lucky Mahlatse Kekana, hereby declare that the mini dissertation for the degree of Masters of Public Administration (MPA) of the North West University has not previously been submitted by me for any degree at this or any other university. This is my own work in design and execution and all the materials contained in this research have been duly acknowledged.

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Ms Lucky Mahlatse Kekana

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ABSTRACT

The South African public service, like many organisation, is embracing information and communication technology (ICTs) and the main aim is to improve and better their services. Frenzel (1999:18) indicates that this is because ICT has the potential to reduce costs, improve internal efficiency, capture economies of scale and bring organisations even closer to their customers and suppliers.

Significant initiatives have been taken in the last couple of years. These include the need to address the coordination of ICT initiatives in the public service, through the establishment of the Office of the Government Chief Information Officers (OGCIO) within the Department of Public Service and Administration (DPSA). The South African public service also established State Information Technology Agency (SITA) responsible for the provision of information technology, system and related services.

However, although ICT has the potential to infuse every area of the public service and improve service delivery, ICT is a management task that should be addressed in the overall context of an organisation and its environment. It is therefore in the best interest of this study to investigate the role of ICT in the South African public service.

A number of aspects of ICT were investigated, including the challenges facing government in the implementation of ICT, critical success factors of ICT and the role of ICT in the public service. Among the challenges indentified include leadership instability, lack of common shared vision and strategy, lack of skills, training and development and poor communication and decision making processes are significant organizational factors constraining the successful implementation of ICT in government. Lack of ICT infrastructure, integration and interoperability issues are cited as technical challenges to successful implementation.

Key findings from the study were that ICTs should integrate service delivery across government. It should also facilitate business efficiency and effectiveness and contribute towards socio-economic development. It is therefore necessary that ICT must be driven by government's developmental agenda, rather than technology. It is recommended that this could be achieved through a sustained shared, common vision across government, adequate resources and strategic partnerships with the business community.

Keywords: Information and Communications Technology (ICT), information technology (IT), information systems, service delivery, public service, knowledge economy, electronic government.

OPSOMMING

Die Suid-Afrikaanse openbare sektor, soos organisasies in die private sektor, omarm inligting-en kommunikasietegnologie (ICT) met die hoofdoel om beter dienslewering en produkte teweeg te bring. Frenzel (1999:18) toon aan dat ICT die potensiaal het om uitgawes in instellings te verminder, interne effektiwiteit te verhoog en dit bring instellings nader aan hul kliënte.

Die afgelope aantal jare is belangrike inisiatiewe in die openbare sektor geïmplementeer rakende ICT. Die inisiatiewe sluit in die verbetering van koördinering van ICT inisiatiewe. 'n Verdere inisiatief is die vestiging van die Kantoor van die Regering Hoof Inligting Beamptes binne die Departement van die Staatsdiens en Administrasie (DPSA). Die Suid-Afrikaanse openbare diens het ook die Staatsinligtingstegnologie-agentskap (SITA) gevestig. Hierdie agentskap is verantwoordelik vir die voorsiening van inligting tegnologie, stelsels en aanverwante dienste.

ICT is 'n bestuurstaak en verantwoordelikheid wat hanteer moet word op 'n daaglikse basis. Dit is daarom van belang dat die ICT in hierdie studie te ontleed en te bepaal wat dit behels in die Suid-Afrikaanse openbare sektor.
In die lig hiervan is 'n aantal aspekte ondersoek, insluitende die implementering van ICT in die staatsdiens en die uitdagings wat die regering het in hierdie opsig.

Uitdagings wat ICT voor die deur van die regering en verantwoordelike amptenare lê, sluit in verskerping van leierskap op die gebied, aanspreek van die gebrek aan een visie en missie, aanspreek van opleidings behoeftes, en verbetering van swak kommunikasie. Daar is ook tegniese probleem wat ervaar word, probleem soos 'n gebrek aan ICT infrastruktuur, integrering van werksaamhede en tegniese probleem.

Sleutel bevindinge voortspruitend uit die studie is dat ICT met ander instellings in die owerheidsektor moet integreer om werksaamhede beter te koördineer. Dit is ook belangrik en nodig dat ICT deel moet vorm van die regering se ontwikkelings agenda. Dit en die sluit van strategiese vennootskap met die openbare sektor sal ICT-dienste in die staatsdiens verbeter.

Sleutelwoorde: Inligting-en kommunikasietegnologie, inligtingstegnologie, inligtingstelsels, dienslewering, openbare diens, kennis-ekonomie, elektroniese regering.

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ACRONYMS

ACRONYM	NAME
BAS	Basic Accounting System
BI	Business Intelligence
BPM	Business Process Management
CEO	Chief Executive Officer
CIO	Chief Information Officer
CobiT	Control Objectives for Information and related Technology
CPSI	Centre for Public Service Innovation
DG	Director General
DoC	Department of Communications
DPSA	Department of Public Service and Administration
e-SI	e-Skills Institute
EA	Enterprise Architecture
ECT	Electronic Communication and Transaction Act
E-government	Electronic Government
ERP	Enterprise Resource Planning
FOSS	Free Open Source Software
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
GDP	Gross Domestic Product
GITO	Government Information Technology Officer
GITOC	Government Information Technology Officer Council
GWEA	Government Wide Enterprise Architecture
HOD	Head of Department
ICASA	Independent Communications Authority of South Africa
ICT	Information and Communications Technology
IFMS	Intergraded Financial Management System

ACRONYM	NAME
IGIS	Inventory of Government Information Systems
IGFR	Intergovernmental Relations Forum
IJS	Integrated Justice System
IKM	Information and Knowledge Management
IM	Information Management
IS/IT	Information Systems and Information Technology
IT	Information Technology
ITIL	IT Infrastructure Library
LOGIS	Logistical Information System
MISS	Minimum Information Security Standards
MIOS	Minimum Interoperability Standards
MPCCs	Multi-Purpose Community Centres
MTEF	Medium Term Expenditure Framework
MTSF	Medium Term Strategic Framework
NGN	Next Generation Network
NGP	New Growth Path
OGCIO	Office of the Government: Chief Information Officer
PAIA	Promotion of Access to Information Act
PERSAL	Personnel and Salary System
PFMA	Public Finance Management Act
PNC on ISAD	Presidential National Commission on Information Society and Development
PPP	Public Private Partnership
PRC	Presidential Review Committee
PSA	Public Service Act
SA	South Africa
SABC	South African Broadcasting Corporation
SAITIS	South African Information Technology Industry Strategy
SALGA	South African Local Government Association

ACRONYM	NAME
SARS	South African Revenue Service
SISP	Strategic Information System Plan
SITA	State Information Technology Agency
SAP	System Application Programming

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CHAPTER 1

BACKGROUND AND ORIENTATION

1.1 INTRODUCTION

The advent of information and communication technologies (here after referred to as ITC) and the ensuing age of information have opened up a new world of opportunities, not only for the private sector, but also for government and its communities. The last few decades have been characterised by a shift from manual information systems to computerised systems. In recent times, almost every business in the majority of business spheres has begun to rely on computerised information systems. The reality is that without the use of information technology and computing, the mere administration of today's large and complex social and economic programmes would simply not be possible (Kamal, 2006:193).

According to Frenzel (1999:10), ICT describes the organisation's computing and communications infrastructure, including computer systems, telecommunication networks and multimedia hardware and software. ICT is at the heart of many businesses today and offers great competitive value and significance for most organisations. Marchand, Davenport & Dickson (2000:5) indicate that companies and consumers spend over one trillion dollars a year on ICT in the USA alone. Frenzel (1999:18) explains that this is because ICT has the potential to reduce costs, improve internal efficiency, capture economies of scale and bring firms even closer to their customers and suppliers, notwithstanding the potential that ICT has as an important catalyst in socio-economic development.

The South African government, like many organisations, has embraced ICT, and the main aim in this regard is to improve their services. According to Farelo and Morris (2006:3), the South African government understands the need to develop an information society and harness the power of ICTs for economic and social development, for the benefit of the country and its citizens. Varghese and Kurien

(2004:277) state that traditionally, technology has been thought of as the centerpiece of any governance strategy, and substantial investments have been made by governments around the world to improve their infrastructure and technology.

In the South African public service, the management of ICT has been assigned to both the Department of Communications and the Department of Public Service and Administration. The Department of Communications manages portfolio organisations such as the South African Broadcasting Corporation (SABC), Telkom, the Post Office and Sentech. It deals mainly with policy formulation for its portfolio organisations, and also focuses on the roll-out of communication infrastructure throughout the country, especially to previously disadvantaged communities. The Department of Public Service and Administration has the task of overseeing the deployment of information technology within the entire public service, and managing the State Information Technology Agency (SITA).

The Office of the Provincial Government Information Technology Officer (PGITO) (2011:4) defines the primary objectives of ICT in the SA public service as follows:

- To facilitate improvement of business efficiency and effectiveness through integrated planning, streamlined business processes and reduced costs of doing business;
- To facilitate integrated service delivery across agencies and jurisdictions to citizens, business entities and communities; and
- To establish a knowledge economy and information society.

Significant initiatives that have been taken by the Department of Communications in harnessing ICT to drive and sustain socio-economic development include, amongst others, the following:

- The establishment of the Independent Communications Authority of South Africa (ICASA) in 2000, in order to regulate communications,

broadcasting and postal services sectors. ICASA provides a regulatory framework for ICT that lowers access costs and increases the efficiency of telecom service provisions.

- The establishment of the Presidential National Commission on Information Society and Development (PNC on ISAD) in 2001, in order to ensure that government initiatives are coordinated, and that there is less wastage of funds and human resources. This gave rise to government's commitment to promoting ICTs, so as to increase the pace of service delivery, economic growth and development.
- The development of the ICT Charter in 2004 to promote and facilitate economic empowerment in the ICT sector. The ICT sector has been recognised by government as being of strategic importance in the future growth and prosperity of South Africa's economy (South Africa, 2004:6).
- The development of the ICT Rural Development Strategic Framework, with the aim of achieving access and connectivity in rural areas, in order to meet people's social and economic needs and facilitate the sustainable development of rural communities.

On the other hand, the responsibility of managing public sector ICTs is assigned to the Minister of Public Service and Administration, and government has addressed the need for a coordination function for IT initiatives, not only across the borders of national departments, but also across different tiers of government, namely national, provincial and local government departments. Progress has been made with regard to the implementation and management of ICT in the public service, and the following are some of the highlights:

- The Office of the Government Chief Information Officer (OGCIO) has been established to serve as an IT coordination and consolidation vehicle within government, with the purpose of improving service delivery and formulating policies, regulations, standards and norms for electronic government.

- The GITO Council was established through a cabinet resolution 38(a) of August 2000, in order to focus on all ICT and information management (IM) issues in the public service. The memo then stated that the GITO Council should leverage the use of information and IT resources for effective and efficient delivery of government services, removal of duplication and sharing of common solutions across departments, so as to take the lead in the promotion of electronic government.
- In addition, all national and provincial government departments are assigned what is called Government Information Technology Officers (GITO), a role equivalent to Chief Information Officer (CIO) in the private sector, and the purpose here is to provide ICT/IS strategic guidance to the department, and for the management of the supply of and demand for ICT services.

The South African public service also witnessed the establishment of the State Information Technology Agency (SITA), formed through an Act of Parliament in 1999 in response to the findings of the Presidential Review Committee (PRC) report of 1998, which indicated lack of interoperability of government IT systems, inadequate security, duplication of work and lack of economies of scale in government IT systems and policy (DPSA, 1999). SITA is an agency of government and is responsible for the provision of information technology, systems and related services, as well as acting as a procurement agency for government in terms of ICT-related services. According to Fraser-Moleketi (2008), the institutional arrangements between OGCIO, GITO Council and SITA are aligned in order to respond to the information technology (IT) requirements of government, optimise IT infrastructure, improve productivity and security, and reduce costs.

In the year 2000, the SA public service, through the Department of Public Service and Administration, developed a policy and framework for electronic government. This initiative was not only intended to position ICT as a tool to facilitate

innovative service delivery to citizens, but also to address the need for an integrated architecture for government information systems. In addition, service delivery initiatives such as multi- purpose community centres (MPPCs) have been established in an effort to improve service delivery to citizens. MPCCs are cooperative efforts among all three spheres of government, as well as non-governmental organisations. They provide access to electronic government services for citizens who are not able to access and use technology in remote areas.

The SA public service has thus put a number of significant enablers in place, which should foster the adoption of ICT and electronic government. These includes the following legislations: the Electronic Communications and Transaction Act, 2002 (Act 25 of 2002), State Information Technology Agency Act, 1998 (Act 88 of 1998), Electronic Communications Act, 2005 (Act 36 of 2005), National Archives of South Africa Act, 1996 (Act 43 of 1996), and Promotion of Access to Information (PAIA) Act, 2000 (Act 2 of 2002), as well as the Public Service Act, 1994 (Act 103 of 1994) and Public Finance Management (PFMA) Act, 1999 (Act 1 of 1999).

Although significant efforts have been made to improve service delivery with the use of ICTs, the implementation of ICTs still represents a very real challenge for the public service. Some problematic areas, such as skills shortages, leadership instability and inefficient business processes, which are largely manual, are a few of the barriers to effective service delivery. The aim of the study is therefore to investigate the role of ICTs in the South African public service. The study will also examine the current ICT environment and recommendations will then be made on how ICT implementation can be improved.

1.2 PROBLEM STATEMENT

Themistocleous and Sarikas (2005:508) indicate that private companies have always continued to take advantage of ICT to improve their business, while

services offered by government organisations have remained deficient over the years. Kamal (2006:193) also indicates that although the benefit of using ICTs to smooth the path of service delivery offers greater choice and efficiency in terms of cost and time, government sector organisations introduce ICT reactively, as compared to private sector organisations.

This is because there are still major service delivery challenges in the public service. These include amongst others the lack of national public service strategy to provide guidelines on how ICTs should be implemented. Lack of integrated planning and coordination at all three levels of government, capacity challenges including the unavailability of adequate ICT infrastructure and skills are some of the problems currently being faced by the South African public service. It is therefore in the interests of this study to determine and analyse the role of ICT in the South African public service. In view of the above discussion, the following research question can then be asked: *What is the role of information and communications technology (ICT) in the South African public service?*

1.3 RESEARCH QUESTIONS

Based on the research question, the following primary and secondary research questions can be asked:

The primary research question is the following:

- What is the role of ICT in the South African public service?

The secondary research questions are the following:

- What are the prevailing theories, principles and best practices with regard to ICT nationally?
- What is the state of ICT implementation in the South African public service?

- What recommendations can be made for improving the implementation of ICT in the public service?

1.4 RESEARCH OBJECTIVES

The primary objective of this study is to:

- Investigate the role of ICT in the South African public service.

The secondary objectives of the study are to:

- Conduct a literature review on prevailing theories, principles, legislation and best practices with regard to ICT;
- Conduct a critical assessment of the state of ICT implementation in the South African public service; and
- Make recommendations on how to improve the implementation of ICT, in order to achieve strategic objectives.

1.5 CENTRAL THEORETICAL ARGUMENTS

Governments worldwide are faced with the challenge of transformation and the need to modernise administrative and management practices, according to Tapscott (1996), as cited by Ndou (2004:2). ICTs sit at the heart of many existing and proposed public service reforms. In the South African public service, government understands the need for the reform and transformation of its core activities, in order to make processes more effective, efficient and citizen-oriented (Farelo and Morris, 2006:3).

This is because ICT has the potential to stimulate growth in the domestic economy by creating jobs, improving market access and enhancing productivity (DPSA, 2007:5). Technology can also be used to build an effective and efficient public service by streamlining of business processes and integrating disparate

organisations to seamlessly share information in order to improve service delivery.

1.6 RESEARCH METHODOLOGY

In order to achieve the objectives of the study, information was obtained from both primary and secondary sources such as literature review and empirical study.

1.7 LITERATURE REVIEW

Secondary data was collected by consulting secondary sources that have already been published, and which are related to the research question. This includes, amongst others, online library catalogues, published articles in journals, relevant textbooks, policies, legislation and government documents, and the Internet.

1.8 EMPIRICAL STUDY

1.8.1 Research Design

A research design is a strategy for a study and the plan by which the strategy is to be carried out. It specifies the methods and procedures for the collection, measurement and analysis of data (Schindler and Cooper, 2003:170). This study conducted an in-depth investigation into the role of ICT in the SA public service, which makes a qualitative and quantitative research approaches more appropriate, using a case study research methodology. According to Leedy and Ormrod (2005:134), qualitative and quantitative research enables a researcher to:

a) Gain new insights into a particular phenomenon;
b) Develop new concepts or theoretical perspectives with regard to the phenomenon; and
c) Identify the problems that exist in relation to the phenomenon.

Qualitative and quantitative research provides a means by which a researcher can judge the effectiveness of particular policies, practices or innovations.

1.8.2 Population

This study investigated the role of ICT within the SA public service. The population of interest included officials in government, ICT Service Providers and ICT experts as follows:

1.8.2.1 Government departments

- Department of Communications – responsible for the coordination of ICT initiatives and infrastructure development;
- Department of Public Service and Administration – responsible for the coordination of ICT in the public service;
- National Treasury – custodian of financial systems for effective financial management in the public service;
- GITOs and IT Managers from both national, provincial and local government departments; and
- Business and Functional Managers from national, provincial and local government departments.

1.8.2.2 ICT Service Providers

- State Information Technology Agency (SITA); and
- ICT Companies.

1.8.2.3 Independent ICT experts

- ICT Consultants in government and private sectors.

The level of participation was limited to senior managers and operational managers in government and at management level in other organisations. This is because they take decisions in their respective organisations, as well as

formulating and implementing ICT strategies and policies. The idea is to solicit input from a diversified level of key stakeholders, in order to obtain some independent confirmation of data, cross-reference data and obtain a range of opinions on the role of ICT in the SA public service.

1.8.3 Sampling technique

The non-probability sampling and judgmental sampling methods are deemed to be the most appropriate type of sampling for this study. Diamantopoulos and Schlegelmilch (2005:14) explain that in non-probability judgmental sampling, sample members are chosen on the basis of the researcher‘s judgment as to what constitutes a representative sample for the population of interest. Thus, potential sample members were screened judgmentally to determine whether or not they should be included in the sample. Leedy and Ormrod (2005:207) suggest that for small populations with fewer than a hundred people, the entire population should be surveyed.

1.8.4 Data collection method

Data for this study was collected using semi-structured, face-to-face interviews and structured questionnaires, in order to eventually answer the research question. The target population of interest for the semi-structured, face-to-face interviews was sixteen and for the questionnaires was twenty.

1.8.4.1 Interviews

Leedy and Ormrod (2005:146) indicate that interviews can yield a great deal of information. In a semi-structured interview, the researcher may follow standard questions with one or more individually tailored questions, in order to get clarification or probe a respondent’s reasoning. Leedy and Ormrod (2005:184) further indicate that face-to-face interviews have the distinct advantage of enabling the researcher to establish rapport with potential participants and therefore gain their cooperation, and such interviews usually yield the highest response rates. Therefore, semi-structured interviews, containing mostly open-

ended questions, was conducted with senior managers in relevant national and provincial departments, as well as all stakeholders, in an attempt to determine and analyse the role of ICT. Participants in the semi-structured interviews were per the sample size.

1.8.4.2 Questionnaire

A questionnaire-based investigation was conducted in order to answer the research question. A questionnaire was developed to address issues relating to the challenges currently being experienced in the implementation of ICT in the public service, critical success factors of ICT implementation and readiness of the public service to deliver. The target population for the questionnaires included ICT managers, functional managers and ICT consultants from various departments.

1.8.5 Data analysis and verification

According to Leedy and Ormord (2005:150), data analysis enables the researcher to categorise, order, manipulate and summarise data to obtain answers to research questions. All the information obtained from semi-structured, face-to-face interviews and structured questionnaires was captured, processed and analysed and, based on the findings, a conclusion was drawn and recommendations were made.

Hewlett (2003:45) explains that one way to ensure that the information collected is reliable and to reduce bias is to use more than one method to collect similar information. Leedy and Ormord (2005:99) indicate that in qualitative research, one approach to ensure that multiple sources of data are collected, in order to support a particular hypothesis or theory, is by using triangulation. The use of multiple data collection methods, such as semi-structured, face-to-face interviews and structured questionnaires in the study facilitated the confirmation of emerging

findings through triangulation. This enabled the researcher to be confident that the conclusions drawn are warranted, based on the data collected.

1.8.6 Procedure followed

- A literature review was conducted on the prevailing theories, principles and best practices of ICT, and on the management and implementation of ICT in the SA public service;
- Semi-structured, face-to-face interviews was conducted with identified participants, as per the target population and sample size;
- Structured questionnaires was sent to the identified senior and operational managers;
- The information obtained from semi-structured, face-to-face interviews and structured questionnaires was captured, processed and analysed; and
- Triangulation was used to verify information for its reliability and validity.

1.8.7 Ethical Considerations

In order to address ethical issues in the study, an informed consent form, which describes the nature of the research project, as well as the nature of participation, was used. The purpose of the research was explained in the consent form during interviews and in the questionnaires, as it was critical to emphasise the importance of the survey and the respondent's contributions in responding to the questions. Anonymity was granted to participants, so that their identity is not revealed. This was done by assigning a code number for each participant, instead of using the participant's name.

1.9 SIGNIFICANCE OF THE STUDY

The importance of ICTs' contribution towards economic and social development is recognised worldwide. The South African government has always faced the challenge of skills shortage, lack of adequate ICT infrastructures and

implementing challenges to fast track the demands of service delivery. Poulton (2011:1) indicates that the revenue of the ICT sector has grown from about R7 billion in 1997 to more than R100 billion in 2009, and is still growing. This is expected to continue, especially with the need to create sustainable jobs and the improvement in living standards. Padayachie (2011:3) states that the ICT sector has the potential to create more than 1.5 million jobs over the medium- to long-term, and this will increase the contribution of the sector to the Gross Domestic Product (GDP).

Although ICT has the potential to improve the performance of government organisations and provide potential benefits to their clients, it is a management task that must be addressed in the overall context of the organisation and its environment. A significant amount of change is required for implementation, as it is likely to challenge existing ways of working, and often requires time and fundamental change in the way in which government operates. Recommendations based on the outcome of the study should provide the basis and a good platform for discussion regarding the role of ICT in the public service and the impact it has on overcoming social and economic challenges within the country.

1.10 CHAPTER OUTLINE

Chapter one provided the reader with an understanding of the background to the study, problem statement, objectives and importance of the study.

Chapter two explored the theory, principles and best practices with regard to ICT in detail, which served as the foundation for the study.

Chapter three extended the literature review presented in chapter two and focus on the management and implementation of ICT in the SA public service.

Chapter four provided an exposition of the research design and data analysis.

Chapter five concluded the study by answering the primary research question regarding the role of ICT in the SA public service. Recommendations were then be made on how ICT can be effectively used to improve service delivery in the South African public service.

CHAPTER 2

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) AS A DISCIPLINE

2.1 INTRODUCTION

This chapter provides theoretical foundation of the study. This has to do with exploring and surveying of the prevailing theories, principles and best practices of the ICT discipline. Various definitions and components of ICT are analysed and this is then followed by the value proposition of ICT and most importantly how ICT strategy is formulated in the organisation. It is also indicated that ICT facilitates communication and improves operational efficiency in an organisation. Through management information systems, organisations can access information instantaneously to facilitate planning and decision making processes.

This chapter also looks at the ICT profession in detail and social challenges associated with the discipline. For example, within the ICT profession, the Chief Information Officer (CIO), the most senior executive, often reports to the Chief Executive Officer (CEO) of the organisation. The role of CIO is to provide strategic leadership in as far as ICT is concerned. It also establishes that, although ICT can assist organisations to gain competitive advantage through the adoption of ICT systems, security and privacy issues are some of the social challenges in the ICT discipline. Marchand, *et al*., (2000: 198) indicates that technological progress, legal remedies and user education are helping to address security and privacy issues. This chapter concludes by providing the relationships ICT has with other disciplines.

2.2 ANALYSIS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

In the next section the evolution of ICT is discussed. It will then be followed by various definitions of ICT found in the literature and components of ICT. This lay

the foundation for theoretical background in as far as ICT as a discipline is concerned.

2.2.1 The evolution of ICT

Frenzel (1999:5) indicates that ICT as a discipline has been growing at an exceptional rate during the last decades. Marchand, *et al*., (2000: 28) indicates that major advances in computer technology were made in the 1940s. He further mentioned that these developments are generally considered to be the beginning of the modern information era. Examples in this regard are the introduction of mainframe computers. Although, ICT played a major role then, computers did not process information with the same degree of sophistication that they can now. For example, mainframes then used punch cards as inputs and stored information on magnetic tapes.

Information systems are now sophisticated enough to deal with large volumes of data while allowing customisation by users. Marchand, *et al*., (2000: 29) indicates that as a result companies business models are undergoing a profound change, with increasing emphasise being given to innovation and the concept of service provision. Frenzel (1999:5) also says that the information technology revolution has significantly affected the work environment of employees, managers and their organisations. Meyer and Barber (1997:5) indicate that computers have moved into society so rapidly that basic computer skills are needed to pursue a career goal in society.

Avison and Fitzgerald (2003:7) mentioned that Information Systems and Information Technology (IS/IT) do not exist in a vacuum. The authors mentioned that IS/IT is developed and operated within an environmental context and the environment is increasingly complex and dynamic. Some of the environmental factors that drive these unprecedented changes that businesses are facing today are increased competition, global challenges, and market shifts together with continuing, rapid technological developments. New information technology

capabilities and many superior information systems create tremendous opportunities and daunting challenges that today's corporate executives must routinely and effectively manage (Frenzel, 1999:12).

2.2.2 Definition of ICT

The terms information and communication technology (ICT), information technology (IT) and information system (IS) are often used interchangeably.

Table 2.1 provides definitions of each one of these terms as defined in the literature.

Table 2.1 Various ICT Definitions

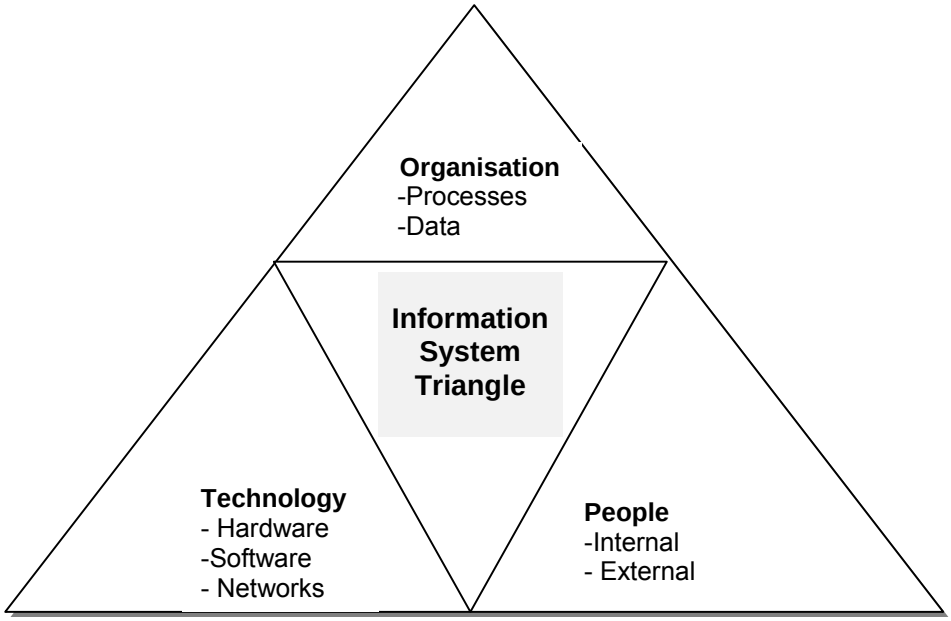
Terms	Definitions
ICT	ICT describes the organisation's computing and communication infrastructure, including computer systems, telecommunication networks and multimedia hardware and software (Frenzel, 1999:10).
Information Technology (IT)	Is a contemporary term that describes the combination of computer technology (hardware and software) with telecommunications technology (data, image and voice networks), (Bentley and Witten, 2007:6).
Information System (IS)	Is an arrangement of people, data, processes, and information technology that interact to collect, process, store, and provide as output the information needed to support an organisation (Bentley and Witten, 2007:6).

Bocij, Chaffey, Greasley & Hickie (2006, 48) indicate that the scope of the terms is different. The stress in ICT and IT is on the technology while IS does not only refer to technology, but also incorporates how it is applied and managed to contribute to the business. Hence for the purpose of this study the definition of Information System as indicated in Table 2.1 above is applicable.

2.2.3 Components of ICT

ICT has interrelated components that work collectively to ensure that input, processing, output, storage and control actions are in order to convert data into information products. These information products can be used to support forecasting, planning, control, coordination, decision making and operational activities in an organisation (Bocij, *et al*., 2006: 46). Figure 2.1 depicts various components of information systems, namely Organisations, Technology and People.

Figure 2.1: Components of the information systems triangle



(Ferreira, Erasmus and Groenewald, 2009: 293).

Components of ICT cannot function in isolation. The effective integration of all the components of the information systems triangle is vital for organisation success. The following section describes each component of information system triangle in more detail.

2.2.3.1 Organisations as a component of ICT

In every organisation, IT managers should have effective management systems and processes to assist them in dealing effectively with day to day operations of the business. To cope successfully with the challenges, effective and efficient business processes and the availability of data are crucial for IT managers. The following section provides definitions of both business processes and data and the importance they have in any business.

- Business processes are defined as predefined activities and operations that an organisation carries out to complete a specific task (Ferreira, *et al*., 2009:295). Information systems automate and support business processes and this could result in cost reductions, improved efficiencies and increased value and profit of an organisation.

- Data is defined as a collection of raw facts in isolation (Ferreira, *et al*., 2009: 295). Data can exist in a variety of forms such as numbers or text on pieces of paper, as bits and bytes stored in electronic memory, or as facts stored in a person‘s mind. Information systems collect raw data by capturing business facts about products, employees and customers. In turn, data gets combined, filtered, organised and analysed to produce information to help managers plan and operate business (Bentley and Witten, 2007:21). Examples of data storages are computer databases, paper files and computer disks.

2.2.3.2 Technology as a component of ICT

Hardware, software and telecommunications networks all form part of the technological component of ICT. The following section defines each one of them.

- Hardware is the physical components of a computer system used for the input, processing, and output and storage work of the information system

(Ferreira, *et al*., 2009:300). Examples are input devices such as keyboards, mouse, scanners, memory, central processing unit, also the cables and connectors, power supply units and output devices such as printer, screen and sound card. Storage devices include DVDs, flash disks and CDs.

- Software is a series of detailed instructions that control the operation of a computer system (Ferreira, *et al*., 2009:301). It consists of two major categories: system software that provides the basic non-task-specific functions of the computer, and application software which is used by users to accomplish specific tasks.
- Telecommunications networks are simply defined as the transmission of a signal by means of a communication channel from a sender to a receiver (Ferreira, *et al*., 2009:303). The signal contains a message consisting of data and information. Emails, Internet and Intranet are examples of telecommunication tools.

2.2.3.3 People as component of ICT

Frenzel (1999:16) indicated that information technology impacts organisations, managers and workers at every level as it alters the nature of work in the industrialised societies. People form an integral part of an information and communication technologies. People include the users of ICT and those who develop, maintain and operate the system called computer professionals. These people apply their professional training to improve the performance, ease of use and efficiency of computer systems.

2.3 THE VALUE PROPOSITION OF ICT

ICTs are vital for businesses. They help businesses reach out and connect with its customers, suppliers and collaborators. The following section provides a summary of key advantages of ICT in organisations.

2.3.1 ICT improves efficiency of business operations

Bocij, *et al*., (2006: 191) indicates that ICTs promote new ways of working and facilitates different approaches to running businesses. For example, through the use of wide area communications technology, it is possible to rationalise the operations of a company that originally operated as separate business units in different geographic locations. Linked business units can use common ways of working facilitated by video conferencing. This mode of communication helps organisations to reduce costs as compared to traditional communications.

2.3.2 ICT improves communications in an organisation

Bentley and Witten (2007:7) indicates that communication and collaboration systems enhance communication and collaboration between people, both external and internal to an organisation. Examples of communication and collaboration systems are electronic emails and office automation systems.

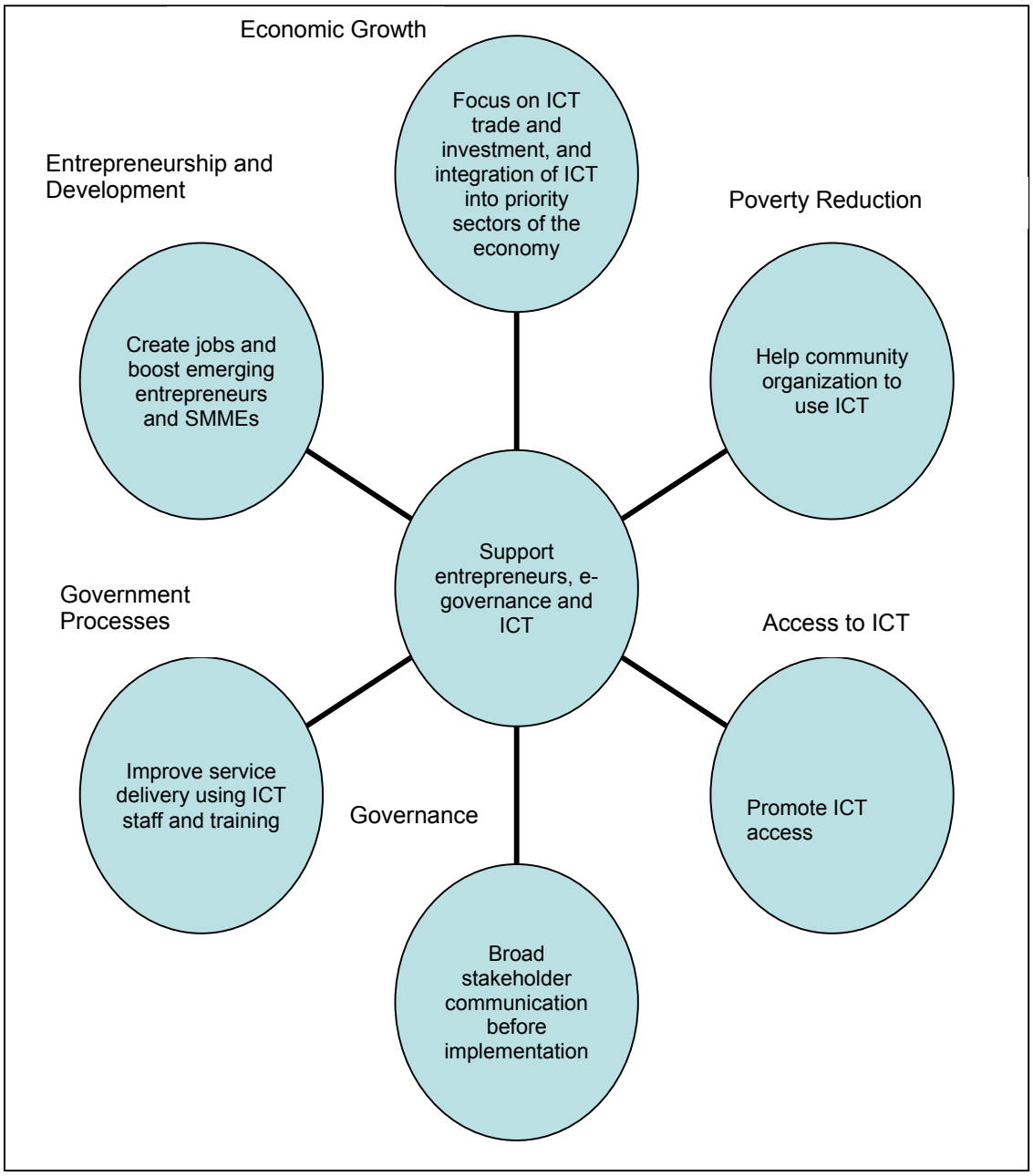
2.3.3 ICT facilitates managerial decision making through MIS

Ferreira, *et al*., (2009: 15) indicates that managers and employees at all levels of the organisation need information to make decisions and solve problems in their daily work. This is facilitated through management information systems that are able to provide management with accurate and timely information necessary for decision-making. Large amount of data can be easily presented in a summarised form that can be presented to both internal and external clients of an organisation.

2.3.4 ICT facilitates socio - economic development

Figure 2.2 demonstrates the examples of the benefits of ICT in facilitating socio-economic development.

Figure 2.2: The benefits of ICT in facilitating socio-economic development.

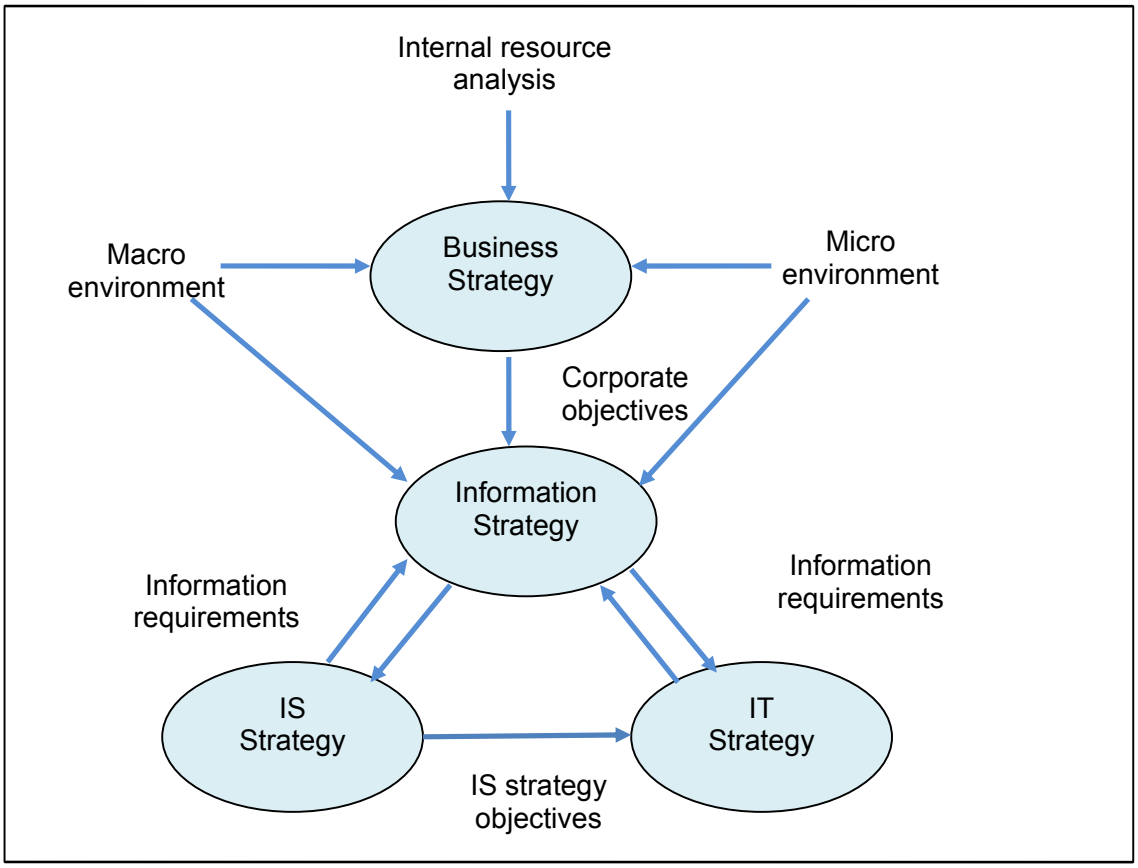


(Radian in Effective E-government, 2008: 121).

2.4 IS/IT STRATEGY FORMULATION PROCESS

Every organisation should formulate an IS/IT strategy that defines how information, knowledge and applications will be used to support business objectives. The formulation of the IS/IT strategy is the responsibility of the Chief Information Officer (CIO) and he/she should ensure that the IS/IT strategy is implemented. Figure 2.3 depicts an IS/IT strategy formulation process and provides the relationship between business strategy and IS/IT strategies (Bocij, *et al*., 2006: 583).

Figure 2.3: The IS/IT strategy formulation process



(Bocij, *et al*., 2006: 583).

The section below describes the IS/IT strategy formulation process as depicted in Figure 2.3:

- IS/IT strategy should be driven by the objectives of the business strategy. IS/IT objectives will then be aligned with the vision, mission, goals and objectives of an organisation.
- An audit of the internal environment is recommended as per Figure 2.3 during the IT/IS strategy formulation process. The process will then indicate the resources currently available in order to ascertain the resources that are required.
- An analysis of the micro environment which includes customer demands and competitors, relationships with suppliers and partners should also be done.
- This should then be followed by an analysis of the macro environment in which the organisation operates including economic development and regulations by government in the form of law and taxes.
- After an internal resource analysis of the micro and macro environment, an information strategy can now be formulated as driven by the information needs of an organisation, where IT and IS strategies will be formulated. IT strategy determines the technological infrastructure of the organisation and IS strategy determines how IT is applied in an organization.

2.5 ICT PROFESSION

Frenzel (1999:6) indicates that the rapid pace of ICT innovation brought unprecedented growth of job opportunities fueled by an ever increasing need for skilled managers. He further mentioned that this demand is driven by the growth of computer applications and by rapid advances in telecommunications such as the growth for electronic commerce and Internet. The following section describes different skills found within the ICT discipline.

2.5.1 The Chief Information Officer (CIO)

CIO is normally the senior executive in an organisation responsible for information management and for delivering IT services (Marchand, *et al*., 2000: 349). Marchand, *et al*., (2000: 346) further indicates critical qualities of the CIO that he or she should have the ability to share the vision with the organization‘s wider management so that IT strategy can be supported and embraced, form a close relationship with senior executives, especially the Chief Executive Officer (CEO), a willingness to pay attention to day to day IT performance and an ability to judge the importance of political and organisational changes in the business.

Deloitte and Touché (2004) offer guidelines for public service CIO and recommend the following factors to be on top of the CIO‘s agenda if ICT is to make a significant impact in the organisation.

- Security and risk as top priorities;
- Procurement processes to be streamlined to accelerate decision making;
- Integration and interoperability emphasise silo bursting and cooperation across government agencies;
- ICT governance to facilitate decision making in the organizations;
- Performance measures to allow effective measurement of IT initiatives;
- Portfolio management to ensure that resources allocated are aligned to the mission and objectives of the organisation; and
- Human Capital as critical to the success of the organisation.

2.5.2 ICT capabilities and related job categories

ICT has created a growing job market and evolving technology has created new career opportunities. Meyer and Barber (1997:96) indicates that the micro computer explosion has resulted in new jobs in repairing computers, installing and building communication links between them and providing user support. The

internet has also opened up new career opportunities. Table 2.2 depicts the ICT functionality with related job categories.

Table 2.2: ICT functions and related job categories

ICT function	Related job category
ICT Governance and Architecture entails the development of ICT standards and governance framework, designing of the enterprise and information architecture and to manage the quality assurance of IT.	Business architecture Information architecture ICT security architecture
ICT Service Management entails the development of service management framework including the management of the ICT help desk center. Service level agreements are also facilitated within this function.	Help desk practitioners Customer relationship managers Vendor and contract monitoring
Information Management entails the management of information for planning, operational and decision management purposes.	Knowledge manager Content manager Record manager Business intelligence officers
Information Systems Development entails the development and management of information systems.	Business and systems analysts Database administrators Programmers
ICT infrastructure management entails maintenance of the network, installation of the computer systems and development of disaster recovery plans.	Local Area Network (LAN) administrators Network engineers

2.6 THE INTERACTION OF ICT WITH OTHER DISCIPLINES

The inclusion of organisational strategies is vital when defining ICT. This indicates that ICTs alone cannot be implemented separately from other functions in the organisations. Hazlett and Hill (2003) mentioned that for technology to be a

true business leader and enabler, technology must support business. ICT should be about increasing choice and efficiency and creating more ways of interacting with public services and this would assist government to achieve its long term objectives. The following section describes the interaction of ICT has with other related disciplines.

2.6.1 Enterprise Architecture (EA)

EA is a complete expression of the enterprise, a master plan which acts as a collaborative force between aspects of business planning, business operations, automation and the enabling technological infrastructure of the business such as computers, operating systems and networks (Schekkerman, 2004:13). Components of EA are business, information, data and technology architectures.

EA integrates business and ICT by aligning business goals and ICT infrastructure in order to accelerate decision making. Business and information systems are drawn together under a common organisational framework. Both the business and IS/IT domains are integrated and visible under a common framework (Gregor, Hart & Martin, 2007:99). Corporate decision makers can then make informed decisions about where to invest resources, where to realign organisational goals and processes and what policies and procedures will support core missions or business functions.

2.6.2 Electronic Commerce (EC)

Turban, Lee, King & Chung (2000:4) define electronic commerce as a concept that describes the process of buying and selling or exchanging of products, services and information via computer network including the Internet. There are three types of electronic commerce transactions, namely: business to business, business to consumer and consumer to consumer.

In relation to ICT, the infrastructure for electronic commerce is network computing which allows users to access information stored in several places and communicate and collaborate with others from remote sites. Customers can shop or perform other transactions twenty four hours a day from almost every location. Electronic commerce through the use of ICT infrastructure can facilitate the delivery of public services such as health care, education and distribution of government social services at a reduced cost and improved quality (Turban, *et al*., 2000: 16).

2.6.3 Information and Knowledge Management (IKM)

Rumizen (2002: 9) defines knowledge management as a systematic process by which knowledge needed for an organisation is created, captured, shared and leveraged. There are two types of knowledge, namely: explicit and tacit knowledge. Explicit knowledge is knowledge that can be readily expressed and recorded within information systems whereas tacit knowledge involves mainly intangible knowledge that is typical institutive and not recorded.

ICTs are used to capture and share information and knowledge in organisations. Knowledge management is also seen as competitive force for acquiring and retaining customers and to ensure that the organisation is able to keep pace with competitors. Business intelligence tools are used to gather and analyse information in areas such as the new advances in technology, market conditions and the actions of competitors.

2.6.4 Business Process Management (BPM)

BPM is a framework of applications that effectively tracks and orchestrates business processes. It allows automation of tasks involving information from multiple systems, with rules to define the sequence in which the tasks are performed, responsibilities, conditions and other aspects of the process (Tibco, 2003).

The benefits of implementing Business Process Management (BPM) are:

- Improved customer focused and service;
- Improved internal efficiency;
- Transparency and control; and
- Availability of management information.

2.6.5 Enterprise Resource Planning (ERP)

ERP systems provide integrated functions for managing business areas such as production, distribution, sales, finance and human resources management (Bocij, *et al*., 2006: 55). The benefits of ERP implementation include integration of all internal and external processes, better sharing of information within the organisation and reduced cost and simplify support and maintenance through a single supplier. System Application Programming (SAP) is one of the providers of ERP solutions. In relation to ICT, ERP is an application that is normally purchased off the shelf.

2.6.6 Business Process Reengineering (BPR)

BPR is the application of system analysis methods and the goal is to dramatically improve business processes of an organisation, independent of information technology (Bentley and Whitten, 2007:166). Potential benefits of BPR implementation are improved organisational effectiveness and smooth implementation of new systems. BPR helps simplify business processes where as ICT automate business processes.

According to Avison and Fitzgerald (2003:57-58) as cited by Davenport and Short (1990), information systems and BPR have a recursive relationship. He indicated that on one hand, the IT usage was to be determined on the basis of how well it supported redesigned business processes and on one hand how BPR was often enabled by information technology and information systems. The combination of

information systems and BPR presented key opportunity to change the way in which business is conducted.

2.7 HUMAN DIMENSION OF ICT

As the use of technology become more widespread, the social environment surrounding technological evolution also present many challenges and opportunities. The growth and complexity of these technologies and the Internet, the threat to personal privacy and confidentiality present significant challenges to both businesses and individuals today. The following section examines the impact of the adoption of ICT's on individuals and businesses.

2.7.1 Growth and Complexity

Frenzel (1999:14) indicates that although the application of modern computer and communication systems greatly benefits organisations, complexities inherent in technology adoption and utilisation raise management challenges to new heights. He indicated that today the development and application of the information infrastructure is the most complex human activities ever undertaken. Avison and Fitzgerald (2003:8) provide an example on how that the digital economy has a significant effect on businesses and society in general and is epitomised by the impact of the Internet and World Wide Web (WWW). Ferreira, *et al*., (2009: 307- 309) indicates that consumers are placing growing pressure on many organisations to take their businesses online. Electronic commerce and electronic business are making use of recent advances in technology, which means that ICT professionals are needed to have understanding of how these technologies work and open to leaning new technologies associated with them.

2.7.2 Collaboration and Partnership

Bentley and Whitten (2007:20) indicated that collaboration and partnership are significant business trends that are influencing information systems applications. Bocij, *et al*., (2006: 263) stated that employees can continue to communicate and

work on joint projects even when they are in different locations or in different time zones. One example of a collaborative tool is groupware. Bocij, *et al*., (2006: 263) indicates that groupware has become a useful business tool in that it can be used for collaboration within and between companies when face to face contact is impossible.

Advancement in technology has also made companies realise that alliances with other companies can be beneficial. For example, administrative work related to physical delivery, especially across international borders can be reduced significantly. This indicates that the cost of delivering information to customers is also reduced.

2.7.3 Security and Privacy

Bentley and Whitten (2007:19) indicates that as the digital economy continues to evolve, citizens and organisation alike have developed a heightened awareness of the security and privacy issues involved in today's economy. Stair and Reynolds (2008:583-591) as cited by Ferreira, *et al*., (2009:307-308) also indicated that administrative professionals and other individuals in the organisation need to guard against computers becoming the objects of crime. He identified the following:

- Illegal access and use: hackers gaining access to computers;
- Data alteration and deletion: computer programs that contain viruses can cause the loss of data;
- Information and equipment theft: illegal access of information system with the intention of stealing data and information;
- Software and Internet privacy: illegal duplication of software for personal use or distribution for profit;
- Computer related scams: get-rich-quick scams sent via email, where personal banking details are asked; and
- International computer crime: using computers to commit cyber-terrorism.

2.8 CONCLUSION

This chapter has laid the foundation of the study. This has been achieved by looking at the evolution of the ICT discipline, the components of ICT by defining ICT, the value proposition of ICT as well as IT/IS strategy formulation process. Some of the advantages of ICTs are that they are fast, reliable and accurate. ICTs can store massive amounts of information and run in and out without failure.

The ICT profession and in particular the role of CIO in an organisation were looked at in greater detail. The chapter concluded by looking at various disciplines related to the field of ICT and the human side of ICT. It was discovered that although ICT's are used productively to gain access to valuable information in an organisation, they can also be used to gain access to organisation's information illegally.

The next chapter assesses the status of the implementation of ICT in the South African public service. A number of efforts have been made by the SA public service to improve their service through ICTs. This includes the establishment of the Office of the Government Chief Information Officer (OGCIO) located within the Department of Public Service and Administration to ensure that the implementation of ICT's is coordinated within the public service. The development of the e-government strategy to provide guidelines on the implementation of ICT projects highlights some of the achievements so far. Through the Department of Communications, the SA public service has developed the ICT empowerment charter and ICT rural and development strategy. This will ensure that ICT is accessible to everyone including to the previously disadvantaged communities.

CHAPTER 3

INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE SOUTH AFRICAN PUBLIC SERVICE

3.1 INTRODUCTION

In the previous chapter, various fundamental issues on the topic of ICT were introduced. Chapter three extends on the foundation laid in chapter two and focuses more on in-depth issues regarding the importance and implementation of ICT in the public service. This is achieved by studying the existing priorities of government and the progress made in the implementation and management of ICT. Chapter three will then answer the research question on the assessment of the state of the implementation of ICT in the public service.

The chapter further looks at various roles played by the Department of Public Service and Administration, National Treasury, Department of Communications and State Information Technology Agency (SITA). It states that steady progress has been made in setting out an enabling environment through the formulation of policies and governance structures to regulate the ICT industry. Rollout of Government Wide Enterprise Architecture (GWEA), Minimum Interoperability Standards (MIOS) and Electronic Communications Act, 2005 (Act 36 of 2005) are further evidence of this.

Some of the national initiatives such as the Home Affairs National Identification System (HANIS) and e-Filing system by South African Revenue Service (SARS) in facilitating electronic government clearly demonstrate the integration of ICT within the boarder context of public administration. It is then acknowledged that ICT has the potential to stimulate growth in the economy by creating jobs, improving market access and enhancing productivity (DPSA, 2007:5). .

3.2 THE IMPORTANCE OF ICT IN THE SA PUBLIC SERVICE

The SA government has embarked on the journey to improve its service delivery to citizens through transformation of the public service through the use of IT. The previous minister of the Public Service and Administration, Fraser Moleketi (2003:1) acknowledged that the key focus of electronic government is enhancing service delivery and ensuring value for every tax rand, as it strives for the economic and social transformation of the nation.

Although the SA government has over the years experienced difficulties to improve its quality of service to its citizens, it has to be acknowledged that a number of government initiatives have been started to address these challenges. The study conducted by Bridges.org in 2002, a nongovernmental organisation on ICT research, indicates that the South African government has recognised the potential benefits to be gained from harnessing the power of ICT. It is also working to create a technically literate workforce that can contribute to a dynamic economy that participates in the information society. Programmes such as South African Information Technology Industry Strategy (SAITIS) are further evidence that the SA government wishes to improve services to its clients. The SAITIS project was a bilateral project between the South African government and Canadian government and aimed to further the development of the ICT sector. The intention was to be complementary to and supportive of broader socio-economic development goals, with emphasis on social upliftment and empowerment (Bridges.org, 2002:1).

SAITIS had four fundamental objectives which are:

- To create a robust, growing and sustainable ICT sector;
- To increase the use of ICT as an enabler of socio-economic development;
- To create a knowledgeable and growing ICT workforce; and
- To create a world class culture of ICT innovation.

There is also a clear understanding that improvements in service delivery to citizens cannot be realised without introducing radical changes that will improve internal efficiency in order to improve back end government processes. In order to achieve this, the South African public service has made a significant progress in ensuring that ICT contributes to the strategic goals of government.

The following section assesses the progress made and the different roles played by key departments, namely: Department of Public Service and Administration, National Treasury and the Department of Communications.

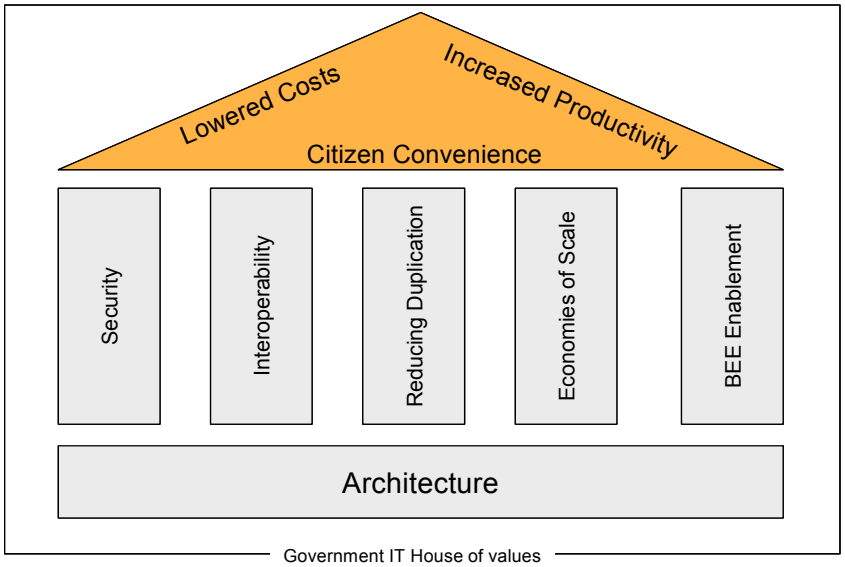
3.3 DEPARTMENT OF PUBLIC SERVICE AND ADMINISTRATION

The mandate of the department is to promote and manage the use of ICT, in the design and delivery of citizen-centered services. They should also ensure that ICTs are used as enablers in ensuring that the internal administrative operations of the public service are as efficient and effective as possible (ITWeb, 2010:62). A key aspect of the department's commitment has been the implementation of the recommendations made in 1998 by the Presidential Review Committee (PRC) on the reform and transformation of the public service in SA. PRC revealed a lack of clear roles and coordination, incompatible systems and of skills development on ICT in the public service (DPSA, 2003:72).

To address these challenges, it was realised that ICT should bring value to government service delivery and there should be a universal understanding of the role of ICT in the public service. Guidelines on 'Government ICT House of values' were then developed by the State Information Technology Agency (SITA) to guide the various government departments on the implementation of ICT.

Figure 3.1 depicts the Government ICT House of Values. The values are to be embraced by government departments in order to reduce ICT costs, improve government's efficiency and effectiveness and ensure that government services are accessible via different channels of communications (DPSA, 2003:72).

Figure 3.1 Government ICT House of Values



ITWeb (2006:16)

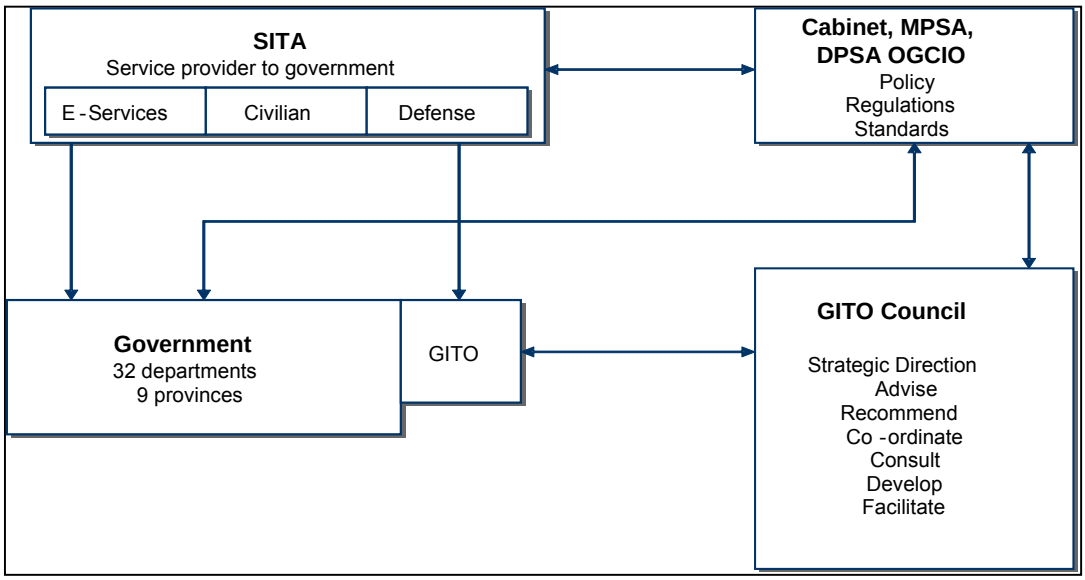
The ICT house of values indicates that in order for government to achieve its IT goals, its ICT environment must *firstly* adhere to the following pillars: (ITWeb, 2006:16)

- Relevant security measures must be in place to access information and this must be standardised across government departments;
- Information, enabling systems and IT processes must be interoperable across all spheres of government;
- Eliminate unnecessary duplication of government IT resources by streamlining IT systems, processes and operations across government;
- Leverage economies of scale in acquisitions of IT products and services, and service delivery; and

- Ensuring that the previously disadvantaged are empowered.

Secondly, an ICT governance structure was institutionalised to ensure that there is proper management and coordination of Information Technology (IT) and Information Management (IM) within the public service. Figure 3.2 depicts that SITA, OGCIO, GITO Council and the GITO function within departments effectively constitute the institutional arrangements through which the Department of Public Service and Administration (DPSA) can ensure that ICT's are leveraged as a strategic resource to enable government to improve service delivery.

Figure 3.2: ICT Governance Structures in Government



DPSA (2003:74)

The following section describes the role of each of the components of the structure in detail:

3.3.1 State Information Technology Agency (SITA)

SITA is the primary service provider of ICT services for the public service. SITA was established through the State Information Technology Agency Act, 1998 (Act 88 of 1988) to achieve the following objectives:

- To improve service delivery to the public through the provision of information technology, information systems and related services in a maintained information systems security environment to departments and public bodies; and
- To promote the efficiency of departments and public bodies through the use of information technology.

In delivering its objectives, SITA will assist government in achieving the following objectives:

- That government will get value for money through ICT procurement;
- Effective utilisation of expensive ICT resources such as consultants;
- Integrated ICT solutions across government; and
- A rationalised IT infrastructure.

3.3.2 Office of the Government Chief Information Office (OGCIO)

The OGCIO is located within the DPSA and its responsibilities are: (DPSA, 2006:18)

- To serve as an IT coordination and consolidation vehicle in government with the purpose of improving service delivery,
- To monitor the impact of ICT on the overall government programmes,
- SITA oversight, e-government project coordination and management and provision of secretariat services to the GITOC, and
- The formulation of IT/IM policies, regulations, standards and norms for e-government.

3.3.3 Government Information Technology Officer Council (GITOC)

The mandate of the GITO Council as derived from the Cabinet resolution 38(A) of August 2000 is as follows (DPSA, 2005:3):

- To develop recommendations for overall government information and IT resources management, policy, procedures, norms, standards, guidelines and best practices;
- To improve quality, management and usage of information and IT through sharing experiences, ideas, including work processes redesign and the development of performance measures;
- To identify opportunities, make recommendations for, and sponsor cooperation within government and between the public and private sector in providing access to and using information and IT resources;
- To leverage the use of information and IT resources for effective and efficient delivery of government services;
- To remove duplication in government by promoting common solutions for common requirements across the department; and
- To ensure that SITA is capable of and does leverage information technologies to support government service delivery initiatives within a proper information security environment.

3.3.4 Chief Information Technology Officer (GITO)

The purpose of the GITO function in government is to provide ICT/IC strategic guidance to the department and management of demand and supply of ICT services (GITOC, 2007:1).

The primary responsibilities are:

- To develop and implement the master information system plan as an ICT/IT strategy. These include the alignment of the IT strategy with departmental strategy, management of the implementation as per government plans and priorities;
- To ensure good governance of deployment and use of ICT/IT solution in the departments;

- To ensure the security of information and information systems in government departments. This include the provisions of systems and procedures that will assist the departments in ensuring the integrity of information and information systems; and
- To render user community support to ensure that departments, supported for effective service delivery, using ICT systems.

The South African public service has also made significant progress in the National Treasury in ensuring that ICT contributes to the strategic goals of government.

3.4 NATIONAL TREASURY (NT)

The South African public service, through National Treasury, currently houses a number of transversal financial systems such as Basic Accounting System (BAS), Personnel and Salary System (PERSAL), Logistical Information Systems (LOGIS), Vulindlela and Integrated Financial Management System (IFMS).

The following section briefly describes each of the system (DPSA, 2007:22).

3.4.1 Basic Accounting System (BAS)

BAS is an accounting system used to record all income and expenditure transactions in different national and provincial departments. The system provides detailed analysis of transactions, including the history of transactions and allows for production of management information reports.

3.4.2 Personnel and Salary System (PERSAL)

PERSAL is a human resources system with fully integrated human resources and payroll functionalities. The system has interfaces with other systems in other institutions such as educational, financial, medical and other public service institutions.

3.4.3 Logistical Information System (LOGIS)

LOGIS is a supply chain management system and has procurement, asset management and inventory management functionalities.

3.4.4 Vulindlela

Vulindlela is a management information system and aid managers in the decision making processes. The system is used to extract reports related to expenditures and financial information in government departments.

3.4.5 Integrated Financial Management System (IFMS)

IFMS is a programme that is implemented to replace the current transversal financial systems. The need to replace the systems came largely from functional shortfalls provided by current financial systems. The current financial systems environment is unable to adequately deal with the requirements of the financial management legislation and guidelines, such as Public Finance Management Act (PFMA), 1999 (Act 1 of 1999) and Supply Chain Management Framework.

As a result, National Treasury saw a need to implement new financial management systems in order to address these challenges. A Cabinet memorandum 16 of 2005, was then issued and IFMS programme was proposed to address the current transversal system problems and shortcomings in terms of functionality, business systems integration, support interoperability and cost effectives (National Treasury, 2008:7). The main objective is to enhance the integrity and effectiveness of financial management, human resource management, supply chain management and performance reporting in order to improve service delivery.

IFMS encompasses the following functionalities (SITA, 2010:7):

- Human resource management;
- Financial management;
- Integrated supply chain management; and
- Business Intelligence (BI), Audit and Decision Support system,

The following are the envisaged benefits of IFMS implementation (SITA, 2010:7):

- Streamlining and eliminating of inefficient manual processes;
- Elimination of disparate stand alone systems such as BAS and PERSAL;
- Provision of integrated, enterprise wide common tools, processes and systems that can be shared among government departments;
- Integration and increased control of budgeting, planning and financial management processes;
- Provision of enterprise wide reporting and decision support;
- Presents opportunity for reengineering with industry best practices; and
- Ensures that the system adheres to legislative requirements as required by the public sector.

The role of the Department of Communications in ensuring that ICT contributes to the strategic goals of government is discussed in the next section.

3.5 DEPARTMENT OF COMMUNICATIONS (DoC)

Information and communication technology (ICT) is a vital catalyst for social change and economic development that is increasingly seen as an essential tool for developing countries (Bridges.org, 2002:1). DoC is responsible for ensuring that ICT initiatives are coordinated, and ensures that various government departments are aware of the initiatives of other departments in order to provide the necessary support in a structured and timely manner. Its mandate is to create a vibrant ICT sector that ensures that all South Africans have access to affordable and accessible ICT services in order to advance socio-economic

development goals and support on the African Agenda and contribute to building a better world (DoC Website, no date).

In order to achieve the above mentioned mandate, a number of initiatives have been started by the Department of Communications. The following highlights some of the initiatives:

3.5.1 The formation of Presidential National Commission of Information Society and Development (PNC on ISAD)

PNC on ISAD plays a key role in ensuring the inclusion of provincial and local government in the planning of national ICT initiatives. This recognition led to the formation of the 24 member Information Society and Development (ISAD) Intergovernmental Relations Forum (IGFR), chaired by the Minister of Communications. Participants included the Minister of Public Service and Administration and 18 provincial representatives, made up of two members of the provincial executive councils from the nine provinces, SALGA and a member from the House of Traditional Leaders (ITWeb, 2008:179). PNC on ISAD also developed a plan around which all stakeholders will be rallied for the building of an Information Society to ensure that activities, initiatives, projects and programmes are aligned, coordinated and integrated (DoC, 2008:1).

The 10 pillars of the ISAD Plan are the following (ITWeb, 2008: 177):

- Ensuring that there is an investor friendly, progressive and enabling policy and regulatory environment;
- Provision of access to ICT infrastructure and services at affordable prices thus enabling meaningful participation in the economy and society;
- Development of a national content strategy and ensuring that the Information society in the country reflects the imperative of building a national identity and diversity;

- Increasing the awareness of the benefits of ICT's to all, especially vulnerable groups such as people with disabilities, women, youth and children;
- Restructuring of the education curriculum to address the needs of the knowledge economy as well as to develop the skills necessary for a vibrant and sustainable technology sector;
- Development of a sustainable, science, technology and research sector and increasing employment and growing knowledge intensive industries for competitive advantage in the knowledge economy;
- Harnessing efforts of across government structures in all three spheres of government with all stakeholders to realise Information Society and national development objectives;
- Ensuring that investments by both government and private sector are made so that basic infrastructure is financed adequately;
- Adopting greater coordination and strategic synchronisation across government to ensure that ISAD policies, programmes and initiatives are sequenced and driven in concert towards a shared vision through a series on institutional arrangements that enable planning, alignment and coordination; and
- Development of an indicator system that supports monitoring, evaluation and impact assessment, development planning, budgeting, forecasting and decision making processes regarding the development of the Information Society in South Africa.

3.5.2 Deregulation of the Telecommunication Industry

Through the Department of Communications, the SA government saw the commencement of ICASA Amendment Act, 2006 (Act 3 of 2006) and the Electronic Communications Act, 2005 (Act 36 of 2005) in 2006. This is part of the converged new regulatory framework of ICT which is intended to lower access costs and increase efficiency of telecoms service provision in the country. The information, telecommunications, broadcasting and electronic industries, once

governed by a fragmented body of legislation, are now replaced by ICASA Amendment Act, 2006 (Act 3 of 2006) (ITWeb, 2008:123).

3.5.3 The development of the ICT Empowerment Charter

The Department of Communication, together with the Department of Trade and Industry, constituted a working group comprising of different stakeholders in the ICT industry to develop an ICT empowerment charter. The following primary objectives of the charter help to promote and facilitate economic development in the ICT sector (ICT Charter, 2004:15):

- Enabling meaningful participation of blacks in the growth of the ICT sector;
- Achieving a change in the gender and racial composition of ownership, management and control structures;
- Increasing the extent to which black women, communities and disabled persons and the youth participate in all areas of the sector;
- Facilitating access to ICT by black people, both in rural and urban as well as marginalised groupings; and
- Provisioning of skills development and training and thereby increasing access to, and participation in, the national economic activity.

3.5.4 The development of the ICT Rural Development Strategic Framework

One of the objectives of the Department of Communication is to use ICT to accelerate social and economic development. To achieve this, the department has developed an ICT rural development strategic framework. The framework provides guidelines to ensure that the deployment of the infrastructure is accelerated in rural communities, there is an adequate ICT skill, and to ensure that the development of business in rural communities is enhanced in order to foster local economic development and improving the living standards of rural

communities (DoC, no date). The strategy is also linked to the New Growth Path (NGP).

In order to facilitate the implementation of e-government, the SA government developed an electronic government framework to provide guidelines to government departments. The following section describes the purpose of the framework in detail.

3.6 ELECTRONIC GOVERNMENT POLICY AND FRAMEWORK

The SA government, through the Department of Public Service and Administration, recognised that ICT is a powerful enabler for service delivery to the public and developed a policy and a framework for electronic government. Turban, *et al*., (2000: 345) defines electronic government as the use of information technology in general, and electronic commerce in particular, to provide citizens and organisations with more convenient access to information and services to provide delivery of public services to citizens, business partners, and those working in the public sector.

The framework recommended that electronic government should essentially embrace the following three main domains:

3.6.1 Government to Government (G2G)

Turban, *et al*., (2000: 346) defines government to government as an e-government category that includes activities within government units and those between governments. It is a one stop portal containing information to be exchanged online, between government departments and agencies.

3.6.2 Government to Business (G2B)

Government to business refers to e-commerce in which government sells to business or provides them with services, as well as to business selling products and services to government (Turban, *et al*., 2000: 347). The benefits include working more closely with business and sharing the risks, assist government to procure services and products more cheaply and to build partnerships with communities and third parties.

3.6.3 Government to Citizen (G2C)

Turban, *et al*., (2000: 346) defines government to citizen as an e-government category that includes all the interactions between a government and citizens that can take place electronically. This enables citizens to quickly obtain service on line, while improving responsiveness and consistency across government departments. This category provides initiatives geared entirely towards improving the relationship between government departments and citizens by streamlining processes, improving services and focusing on convenience.

3.6.4 Progress on the implementation of e-government to date

Progress on the implementation of e-government can be measured in the following phases (ITWeb, 2010:49):

- The first phase of the e-government was the release of Government Wide Enterprise Architecture (GWEA) framework to guide future electronic government systems implementation to avoid duplications and ensuring interoperability through standards and specifications for business architecture, application, data and technology architectures (ITWeb, 2010:49). The objectives of GWEA are increased productivity, citizen convenience, economies of scale, digital inclusion and interoperability.

- Secondly, phase one of e-government was also aimed at allowing greater public access to information. This has been delivered through the Batho Pele gateway project, which has provided a single point of entry for access to government information as reflected in the www.gov.za website (ITWeb, 2008:134). Opportunities include cost reductions and efficiency as services are available 24 hours a day.
- The second phase of e-government implementation is to develop the prototype platform in order to automate the following services as offered by government, namely: application for an identity document, application to register birth, foster care grant application, old age pension application, application for a maintenance order and the application to give notice of death (ITWeb, 2008:134). All these services will be available on line ensuring citizens's convenience when accessing government services.

The following section describes some of the electronic government projects implemented so far and the main aim is to improve the quality of services through the use of information technology.

3.7 ELECTRONIC GOVERNMENT PROJECTS

The Department of Public Service and Administration conducted an inventory of government information systems (IGIS). The primary purpose was to provide appropriate information to guide planning to enhance public service delivery (Bridges.org, 2002:1). A database was then created for all systems running in government and information is made available to all government departments. The database is also used to track current and planned e-government projects to identify synergies to eliminate duplications. The following section lists some of the electronic projects currently running in government.

3.7.1 Home Affairs National Identification System (HANIS)

HANIS is a national identification system led by the Department of Home Affairs. The system contains about 30 million fingerprints and provides functionality for

checking of duplicates on Identity Documents (ID) applications. Previously, the department manually checked the applications against the records stored in multiple locations, and this process was cumbersome and labour intensive. Currently, the HANIS centrally manages and stores all fingerprints and demographic data, and electronically cross-reference other fingerprints stored in the database during application.

3.7.2 Electronic filing system implemented by SARS

The e-filing project is an initiative by the South African Revenue Service (SARS). The system makes provision for a secure electronic tax return and submissions services offered and it is also aimed to reduce manual tax returns. Not only can the users submit their returns via the Internet, but can also make secure tax payments online and amend their details.

3.7.3 Cape Gateway

Cape Gateway is an initiation led by the Western Cape provincial government. The Cape Gateway provides citizens with access to government information via an online portal through channels such as walk in centers and call centers. The portal provides single point of access for all government information in the province and in the three languages of the province: Afrikaans, English and Xhosa.

3.7.4 Integrated Justice System (IJS)

The Department of Justice and Constitutional Development is implementing an Integrated Justice System (IJS) in collaboration with National Prosecuting Authority (NPA), the South African Police Service (SAPS), Social Development and Department of Home Affairs. The main aim is to integrate all processes from reporting of a crime until the processes of rehabilitation is concluded. Once the IJS is completed, there should be greater improvement in the responsiveness of the entire criminal justice system resulting from shorter case cycle times, fewer

withdrawals of cases and lost case files, as well as a greater number of convictions, including crime intelligence gathering and improved information flow between internal and external stakeholders (ITWeb, 2010:128).

3.7.5 Meraka e-Skills Institute (e-SI)

Meraka e-Skills Institute, launched by the Department of Communication is a programme of government focusing on developing ICT skills in the country. One of the major problems faced by the local ICT industry is that the output from universities is unable to meet the demand of the industry (Dr Harold Wesso, Acting CEO of Meraka e-Skills Institute). For example, many graduates are not often job ready when they leave universities and employers often recruits employees who have experience. The objective is then to collaborate with existing institution and private sector organisations to build partnerships that will enable the development of frameworks that will assist universities to produce ICT skills.

3.7.6 Thusong Service Centers

Thusong Service Centers, formerly known as Multi-Purpose Community Centers (MPCC) are an initiative to bring services closer to citizens. According to ITWeb (2008:164), these are cooperative efforts among all three levels of government as well as non-governmental organisations. They provide access to e-government services to citizens living in rural and poor communities. There are about 120 service centers in the country so far.

3.8 ICT GOVERNANCE AND REGULATION

The detailed planning, implementing and managing ICTs in the public service is guided by the following industry best practices and guidelines issued by the Department of Public Service and Administration (DPSA, 2007:14).

- Minimum Information Interoperability Standards (MIOS) is a handbook developed to provide guidelines for seamlessness and interoperability for government departments;
- Minimum Information Security Standards (MISS) is an information system security standard endorsed as a code of practice for information systems security;
- Control Objectives for Information and related Technology (CobiT) is adopted as a generally applicable and accepted standard for information technology (IT) for security and control purposes. CobiT provides guidelines for auditing and control of the IT environment; and
- IT Infrastructure Library (ITIL) is an industry best practice framework for service management. ITIL has been adopted by the SA public service and is concerned with delivering and supporting IT services that are appropriate to the business requirements of the government agencies.

The next section examines progress made with regard to the development of infrastructure in the SA public service. The development is in line with the mandate for government to leverage information technology as a strategic resource for government service delivery.

3.9 ICT INFRASTRUCTURE DEVELOPMENT

The Department of Public Service and Administration, through SITA, has built the next generation network and policy for free open source software that will enable the delivery of electronic government services to all citizens.

3.9.1 The implementation of Next Generation Network (NGN)

SITA have in the past four years replaced the previous legacy common core network for the public service. SITA services around 3100 government sites, providing wide area networked services that enable government and public services such as the emergency services, schools and colleges, and hospitals to function (ITWeb, 2010: 64). The previous network, Government Common Core

Network (GCCN) was unreliable and could not keep up with the demand posed by the growth of the public service. The current network has the potential to accommodate the expansion of government services into underserviced areas and allows video services such as video conferencing, allowing staff the option of holding virtual meetings, saving time when it would take to physically attending meetings.

3.9.2 The adoption of Free Open Source Software (FOSS)

The South African public service has made significant progress in its focus in the adoption of Open Source Software (OSS). OSS refers to any software that is developed and tested collaboratively and distributed freely to anyone who wants to use or customise it (ITWeb: 2008:184). A policy on free and open source software was enacted in 2007 in an attempt to guide government departments to adopt open source solutions, instead of procuring proprietary technologies.

The major benefits accruing from OSS implementations are the following:

- Reduction in costs. OSS has a lower total cost of ownership as government can reduce their dependency on imported technologies and skills. For example, instead of paying software licensing fees like Microsoft in dollars, local people can be educated and employment can be created by developing locally;
- It is affordable because it is available free of charge. The departments only incur maintenance and labour costs;
- It makes provision for universal access because it is cheaper and there are no costs for licensing which means that there are no restrictions on how many people can have access to the system; and
- There are no barriers to sharing information across government department and agencies. Propriety software comes with restrictions and different data formats, which makes it difficult to share information.

Chapter three focused on the practical issues of ICT implementation in the public service. It has been acknowledged that ICT plays a significant role in improving the services provided by government.

3.10 CONCLUSION

In conclusion, some of the strategic priorities evolving for ICT in government include customer service improvement, improving the ability of frontline departments and staff to render public service through the use of ICT, infrastructure optimisation, a reduction in ICT costs and security improvement as well as adopting an ICT governance framework for the public service (ITWeb, 2010:63). This can only be achieved through various governance structures such as GITO Council, OGCIO and SITA to ensure that ICT is coordinated effectively and efficiently across government.

A discussion on the role played by the Department of Public Service and Administration, Department of Communications and National Treasury gave an insight on the significant of the role of ICT in the public service. For example, the Department of Communications has put in place a legal framework upon which e-government project rests. The passing of the Electronic Communications Act, 2005 (Act 36 of 2005) which legislated for convergence and paved the way for affordable and near-pervasive telecommunications across all spheres of government, highlight some of the significant efforts made by the department (ITWeb, 2008:156).

On the other hand, National Treasury, through SITA is currently implementing the Integrated Financial Management System (IFMS). In improving governance issues across government, the Department of Public Service and Administration rolled out the Minimum Interoperability Standards (MIOS) and national blueprint Government Wide Enterprise Architecture (GWEA) guidelines as an approach towards reducing duplication, driving interoperability and improving national ICT alignment. The chapter concludes by assessing progress made by SITA in terms

of upgrading the ICT infrastructure and efforts made in reducing the dependency by government agencies on propriety software with the adoption of free open source software.

CHAPTER 4

EMPIRICAL FINDINGS

4.1 INTRODUCTION

The previous chapters dealt with the orientation of the research study, the foundation of the study and the status with regard to the implementation of ICT in the South African public service. These chapters thus provided the foundation and the purpose of the study, as well as the theoretical point of departure. This chapter provides the research design and the methodology for the study. This includes the target population and sampling, the data collection methods and procedure followed for collecting data. The findings of the empirical study will also be presented by means of diagrammes and discussions.

The researcher used both questionnaires and interviews as methods of data collection. The target population for questionnaires was ICT operational managers whereas the interviews were for senior management. Functional managers, ICT managers and independent ICT consultants also participated in the study. The reason why a mixed method approach was used was to enhance the validity of the evaluation findings through results from different data collection methods.

4.2 RESEARCH METHODOLOGY

The research methodology is the general approach the researcher takes in carrying out the research project (Leedy and Ormrod, 2005:12). The following section describes the data collection methods, target population, the sampling techniques, the procedure followed for collecting data and how the data was analysed.

4.2.1 Target Population and Sampling

The target population of the research is the employees of national, provincial and local government departments, ICT service providers such as SITA and ICT consultants in the public service. The researcher used non probability sampling and judgmental sampling methods for the study. Sampling is a process of selecting units from the total population of interest so that by analysing or studying the sample a picture of the total phenomenon can be determined (Leedy and Ormrod, 2005). The researcher can use the results from the sample to make generalisation about the entire population only if the sample is truly representative of the population.

The researcher randomly selected participants for both questionnaires and interviews on the basis of the researcher's judgment as to what constitute a representative sample for the population of interest. The researcher's targeted sample was twenty participants for the questionnaire and sixteen for the interviews. The interviews targeted senior managers to gather a detailed analysis of the ICT challenges facing the public service. The questionnaires targeted the operational managers to balance the possible optimism of the senior managers with actual on-the-ground information at an operational level.

4.2.2 Data Collection Methods

The researcher used, as mentioned, both questionnaire and formal interviews as methods of collecting data. This is also called the mixed method approach where both qualitative and quantitative methods are collectively used to collect data. The mixed method approach generally produces more comprehensive coverage and more valid findings that is either qualitative or quantitative design alone would generate (PALAMA, 2010:45).

The questionnaire was divided into three sections, namely:

- Background information of the participants;
- The participant's ICT knowledge in the public service; and
- The status of the current implementation of ICT.

The questionnaires have fifteen closed ended questions and this offered a standardised way of answering the questions and of gathering the responses for the researcher. With regard to interviews, six structured questions were prepared to facilitate the discussions. Both the questionnaire and interview questions are listed as annexure to this research report.

4.2.3 Procedure for Data Collection

The questionnaires were physically sent to the participants together with the letter of consent as an introductory letter. The purpose of the research is explained in the introductory letter, as the researcher found it crucial to emphasise the importance of the survey and that their contributions in responding to the questions are very important. Participants were requested to acknowledge a consent form to indicate that they voluntarily participate in the study. Anonymity was granted to participants to keep their identity unknown.

Regarding semi structured interviews, most of the participants preferred that the questionnaires be electronically mailed to them. The researcher telephoned the participants before the questions could be sent and introduced the purpose of the exercise. The participants were assured that the information provided would be used for research purposes, however anonymity would prevail and the general content of the exercise would be kept confidential. The researcher sent an acknowledgement on all the responses received by thanking the participants for accepting to take part in the study.

4.2.4 Data Analysis

As indicated earlier, the researcher used both questionnaires and interviews as data collection methods. After the questionnaire data was collected, the data was coded and entered into an Excel spreadsheet for analysis. With regard to open ended questions for the interviews, the researcher went through each and every response and categorised each response into a small set of broad categories as follows:

- Leadership and management styles;
- Communication and decision making processes;
- Human and financial resources;
- Technical challenges; and
- Other issues.

Tables, bar charts and pie charts are then graphically used to display the results.

4.3 RESEARCH FINDINGS AND ANALYSIS

The following section shows the results of the study for both questionnaires and interviews. The results are presented in the form of tables and figures and are aligned to the primary objective of the study which is to determine and analyse the role of ICT in the South African public service.

4.3.1 Questionnaires

Questionnaires were divided into three mentioned sections, namely: background information, knowledge of ICT in the public service and implementation of ICT in the public service. The aim of the background information was to determine the background information of the participants (Section A) to ensure that the right participants are participating in the study. The background information section serves as a foundation of the other two sections. Section B was to assess the knowledge the participants possess with regard to the implementation of ICT in

the public service and the final section (Section C) was to determine the progress with regard to the implementation of ICT in the public service. This included what the participants view as challenges and critical success factors during ICT implementation.

4.3.1.1 Section A: Background Information

Section A had three questions where the intention was to solicit participants' background knowledge in terms of the organisations working for, the role they play in the organisation and the number of years they have spent in an ICT environment. The results are presented and analysed as per each question asked in the questionnaire and interview as follows:

- Question 1.1: Which organisation are you working for?

Figure 4.1 The kind of organisation at which the participants work for

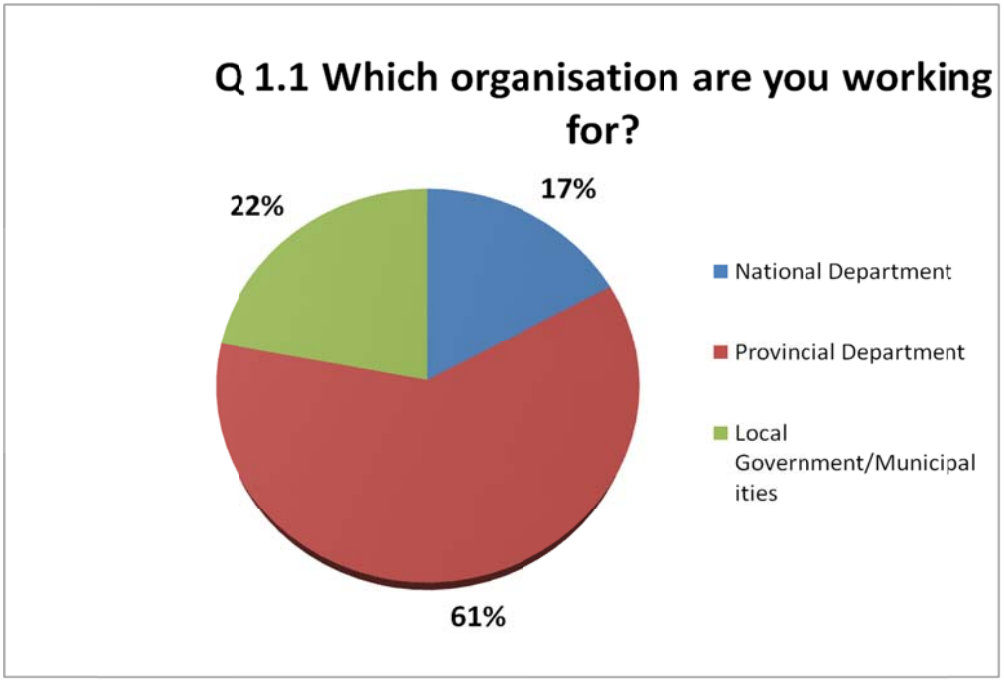


Figure 4.1 depicts that out of eighteen participants responded to the questionnaires, 17% are working at a national level, 61% are at a provincial level

and 22% are at a local government level. The results of the study reveal that the majority of the respondents are located at a provincial level. Two participants could not respond to the questionnaires on time.

- Question 1.2: What is your role in the organisation?

  Figure 4.2 Role in the organisation

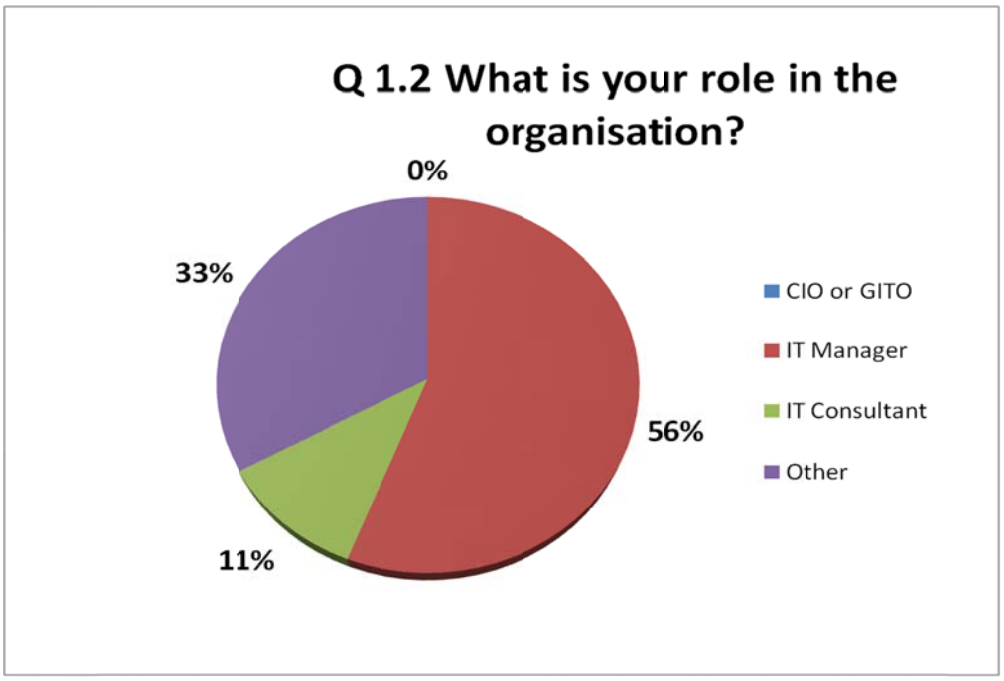
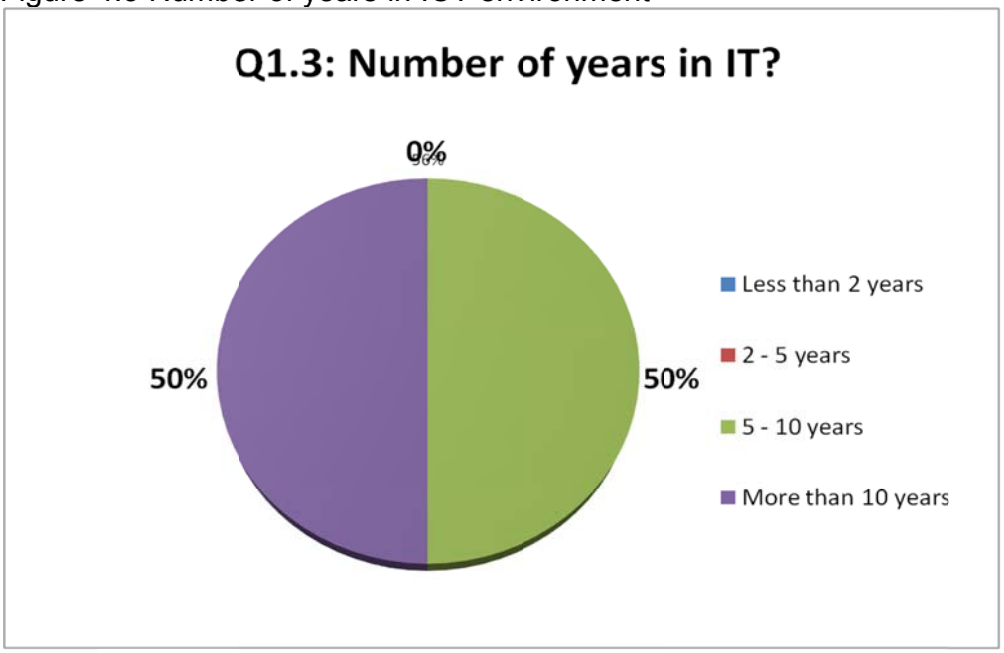


Figure 4.2 presents the responses in terms of the roles the participants play in their respective organisation. Out of 18 responses received, 56% are IT Managers, 11% represented IT consultants and 33% play other roles in the organisation. None of the participants indicated a CIO or GITO role function.

- Question 1.3: Number of years in IT?

Figure 4.3 Number of years in ICT environment



According to the results, as presented in Figure 4.3, 50% spent 5 to 10 years and 50% more than 10 years within the ICT environment respectively. None of the participants indicated that they spent less than 5 years in ICT. The results indicate that most of the participants are fairly knowledgeable about ICT in the public service.

4.3.1.2 Overall analysis of Section A: Background Information

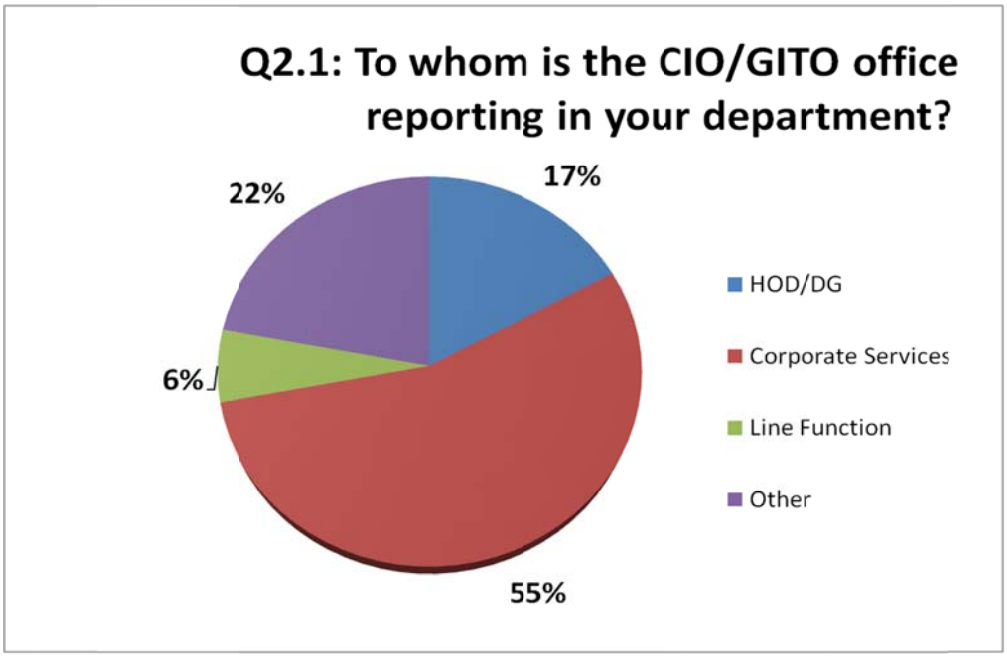
All of the participants respondent to the questionnaires are in the public service, 67% are at an operational level as both IT managers and consultants respectively, with over 5 years ICT experience in government. The results should sufficiently lay the foundation to provide the answers to the primary objectives of the study which is to determine the role of ICT in the SA public service. In brief quality information can be expected from the respondents taking part in this research.

4.3.1.3 Section B: Knowledge of ICT in the public service

The intention of Section B of the questionnaire was to assess the participants' background knowledge of ICT in the public service. The section has nine questions and the questions were related to the role and importance of the ICT in the departments. Other questions were about ICT initiatives that were introduced in the public service to ensure that ICT is implemented in a coordinated and structured manner. The following section provides the results of each question asked and an overall analysis of Section B is provided at the end of the section.

- Question 2.1: To whom is the CIO/GITO office reporting in your department?

  Figure 4.4 Reporting location of CIO/GITO office in the department



  As presented in Figure 4.4, the majority (55%) of the participants indicated that the office of the CIO/GITO reports to corporate services. This is due to the fact that GITO/CIO office is a support function. 6% indicated that the office report to line function, 17% indicated to HOD/DG of the department and 22% indicated that they report to other sections in the department.

- Question 2.2: Do you have a Strategic Information System Plan (SISP) in your department?

Figure 4.5 The availability of Strategic Information System Plan (SISP)

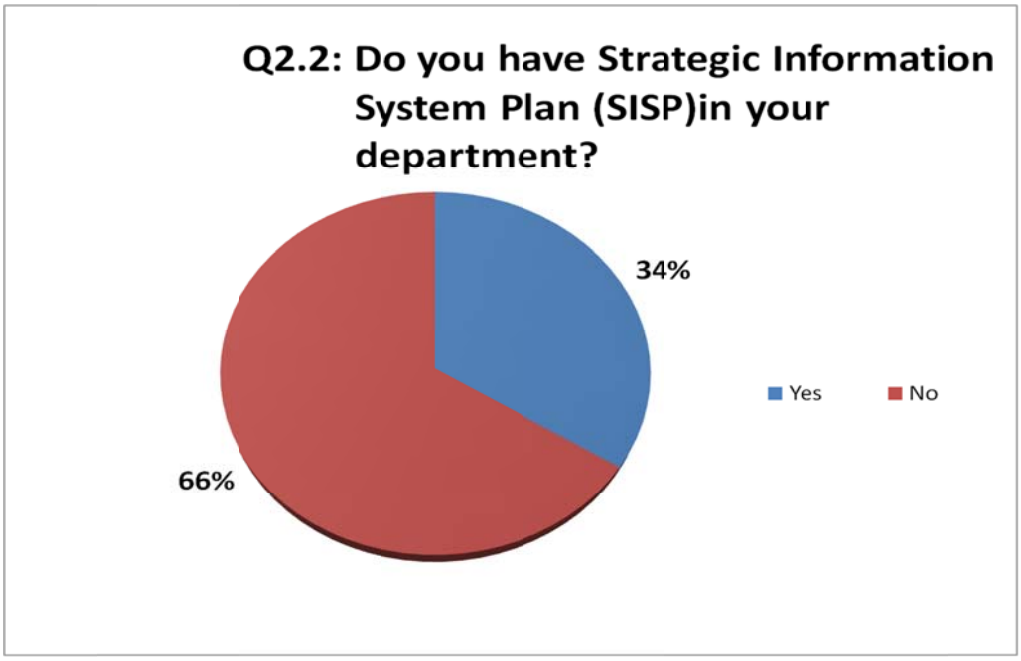
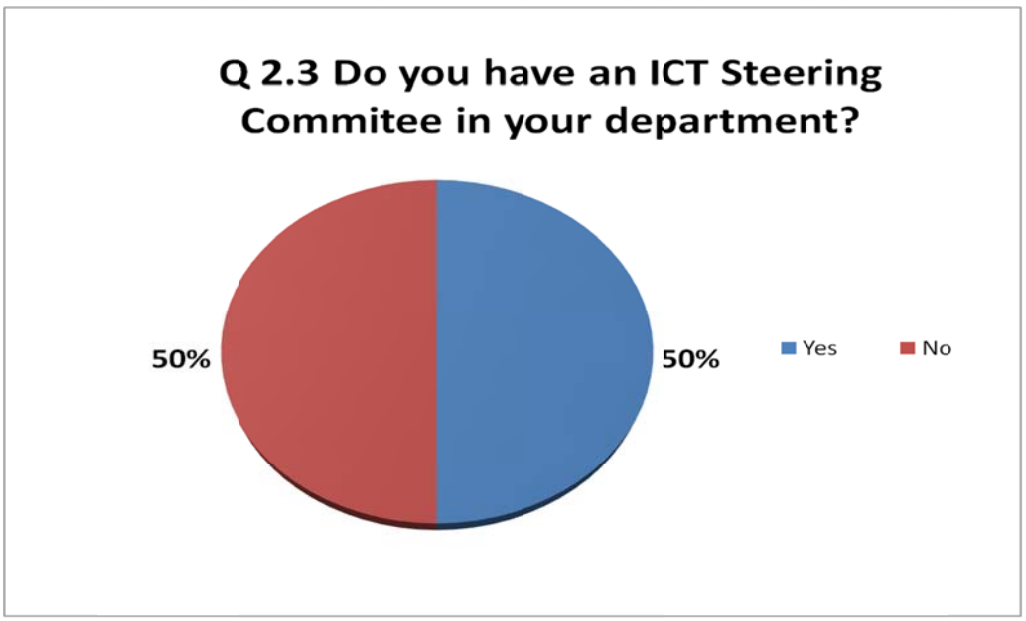


Figure 4.5 indicates that 66% of the departments are without SISP where as 34% has. SISP is a master plan document that is used by the departments to strategically position the role ICT in the departments. SISP should be able to align the objectives of ICT to the objectives of the department. Department of Public Service and Administration mandated every department to develop SISP if ICT is to be implemented effectively in the public service.

- Question 2.3: Do you have an ICT Steering Committee in your department?

Figure 4.6 ICT Steering Committees



Half of the respondents indicated that there is an ICT Steering Committee in their respective departments and the other half said no as depicted by Figure 4.6. Although is not a mandate for the departments to have ICT Steering Committee in place in the departments, the availability of ICT Steering Committees facilitates decision making processes and ensures that ICT investments are centrally managed.

- Question 2.4: Do you have ICT policies, procedures and guidelines?

Figure 4.7 ICT Policies, Procedures and Guidelines

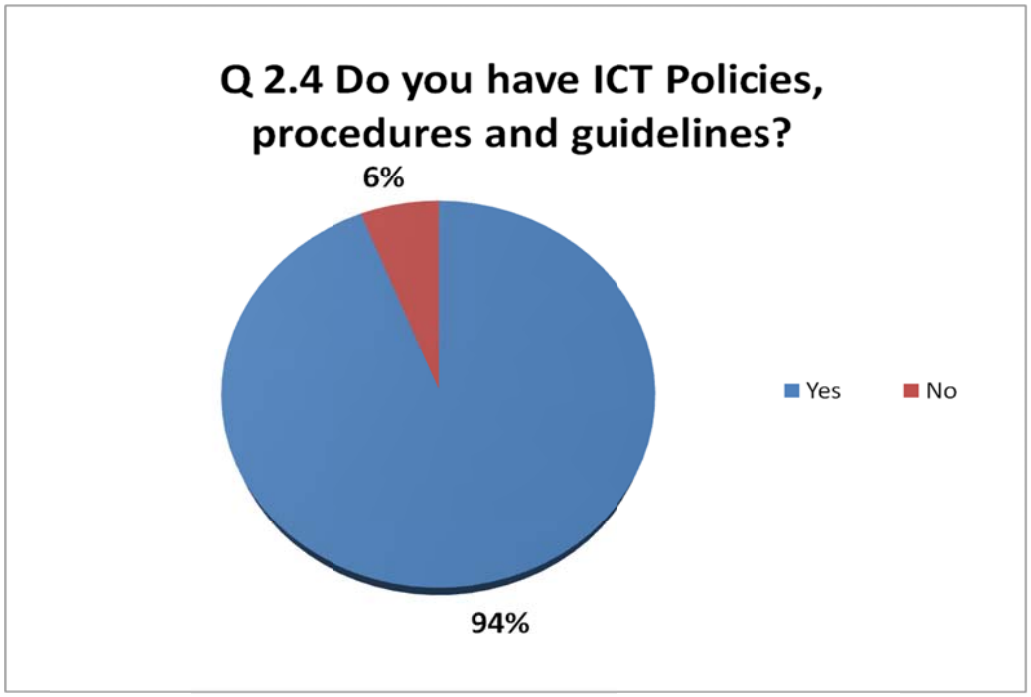
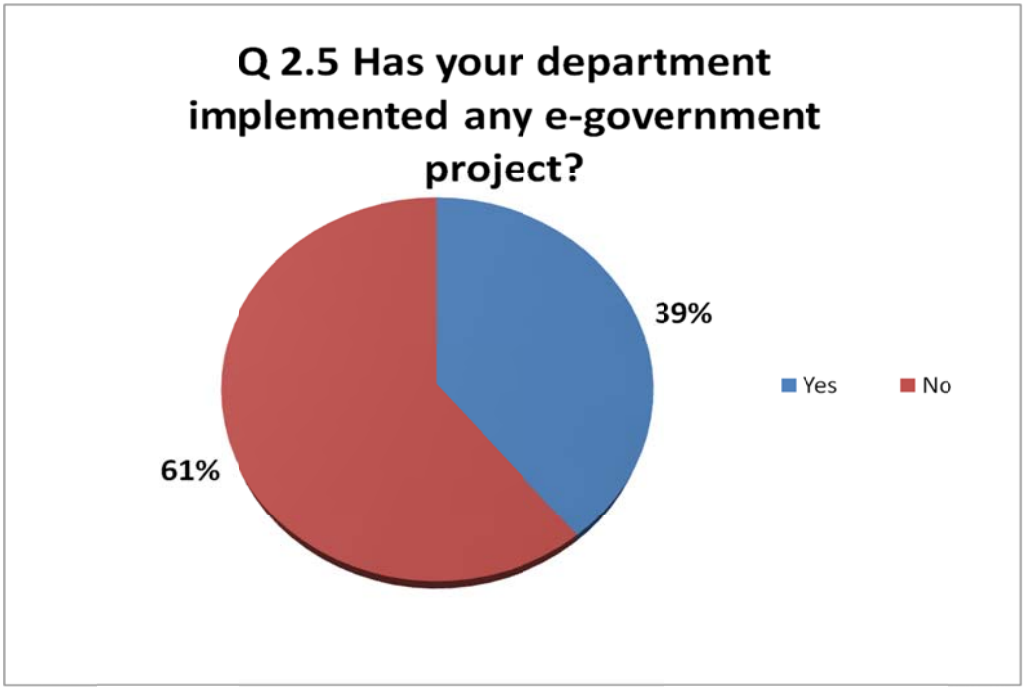


Figure 4.7 indicates that 94% of the participants indicated that they have ICT policies, procedures and guidelines in their respective departments with regard to the usage of ICT. Very few (6%) indicated that they do not have policies.

- Question 2.5: Has your department implemented any e-government project?

Figure 4.8 Implementation of e-government projects in the department



According to the results as presented in Figure 4.8, 61% indicated that they do not have any electronic government projects implemented in their departments while 39% claim to have. This reveal that the implementation of ICT in the majority of the departments has not as yet being given first priority as it should.

- Question 2.6: Which one of the following ICT governance framework or policies did you adopt in your department?

  Figure 4.9 ICT governance framework or policies adopted in the department

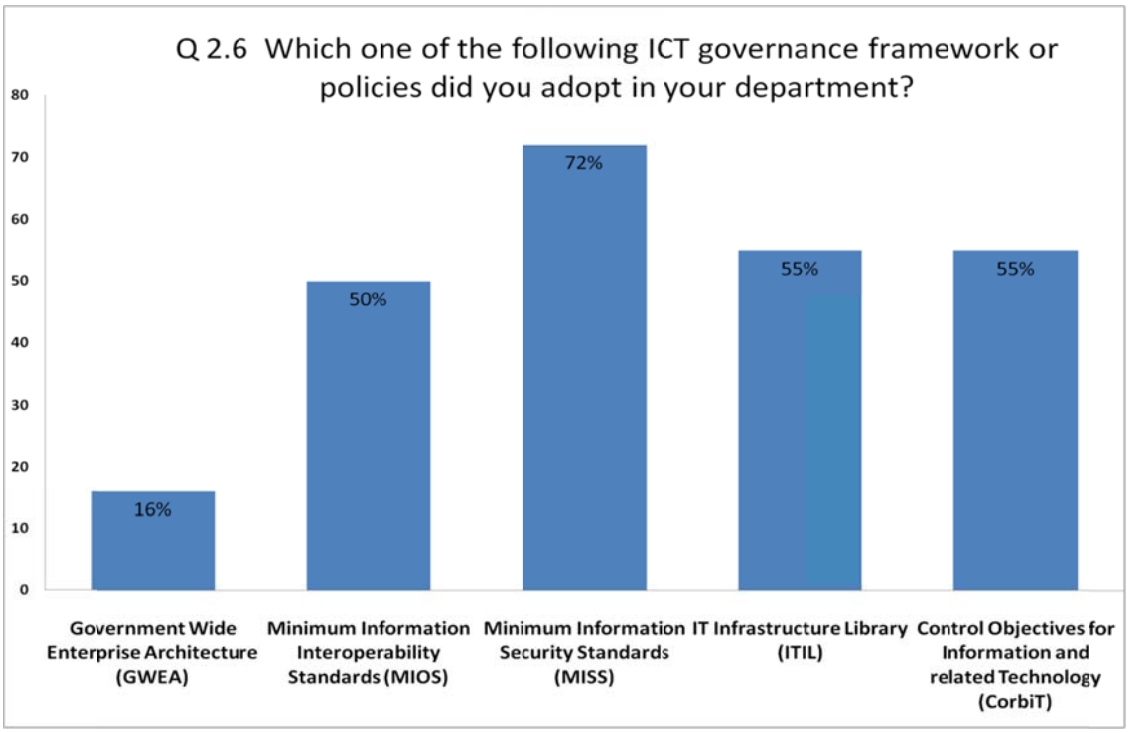


Figure 4.9 indicates that 16% of the participants are familiar with GWEA, half of the participants are familiar with MIOS, 72% are familiar with MISS, 55% are aware of the adoption of ITIL in the public service and 59% are familiar with CobiT. The results reveal that the majority of the respondents are familiar with ICT governance framework introduced in the public service. GWEA was introduced later than the other frameworks, this could explain the reason why very few participants indicated that they are not aware of the GWEA framework.

- Question 2.7: Which one of the ICT structures are you familiar with?

Figure 4.10 ICT structures in the public service

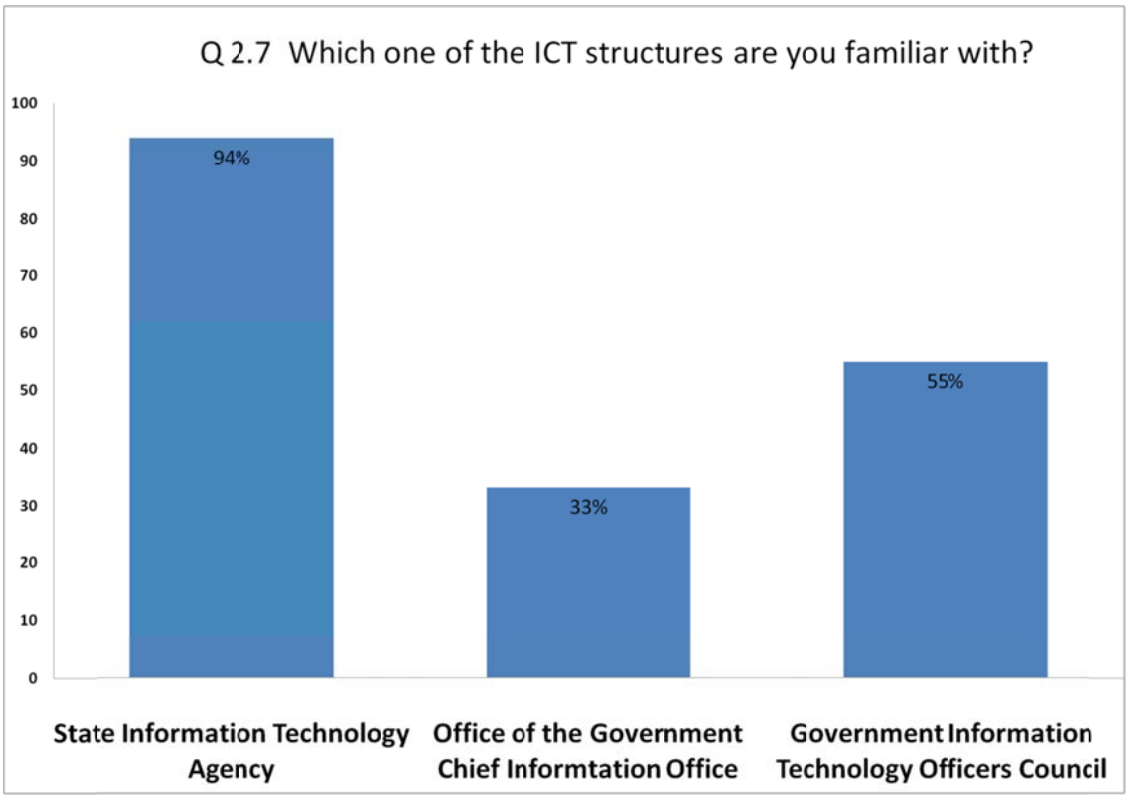
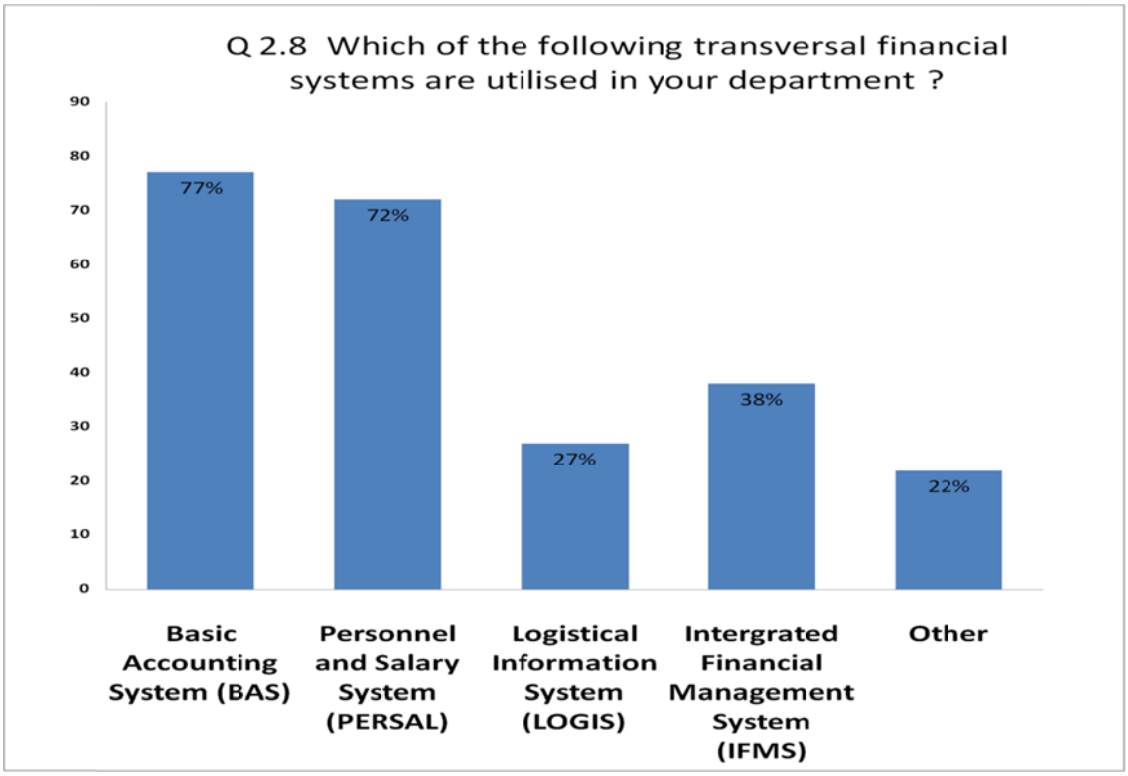


Figure 4.10 reveals the knowledge of the participants with regard to the ICT structures put in place to ensure that ICT is implemented in a coordinated manner. 94% of the participants are familiar with SITA, 33% are familiar with the Office of the Government Chief Information Office located within DPSA and 55% are aware of the GITO Council.

- Question 2.8: Which of the following transversal financial systems are utilized in your department?

  Figure 4.11 Transversal financial systems currently utilized in the departments



According to the results as presented in Figure 4.11, 77% of the participants indicated that they have BAS in their departments, 72% have PERSAL, 27% have LOGIS, 38% have IFMS and 22% have other systems. The majority of the national and provincial departments are using both BAS, PERSAL and LOGIS and municipalities are using other financial management systems.

- Question 2.9: Which of the following initiatives are you familiar with?

Figure 4.12 ICT initiatives in the public service

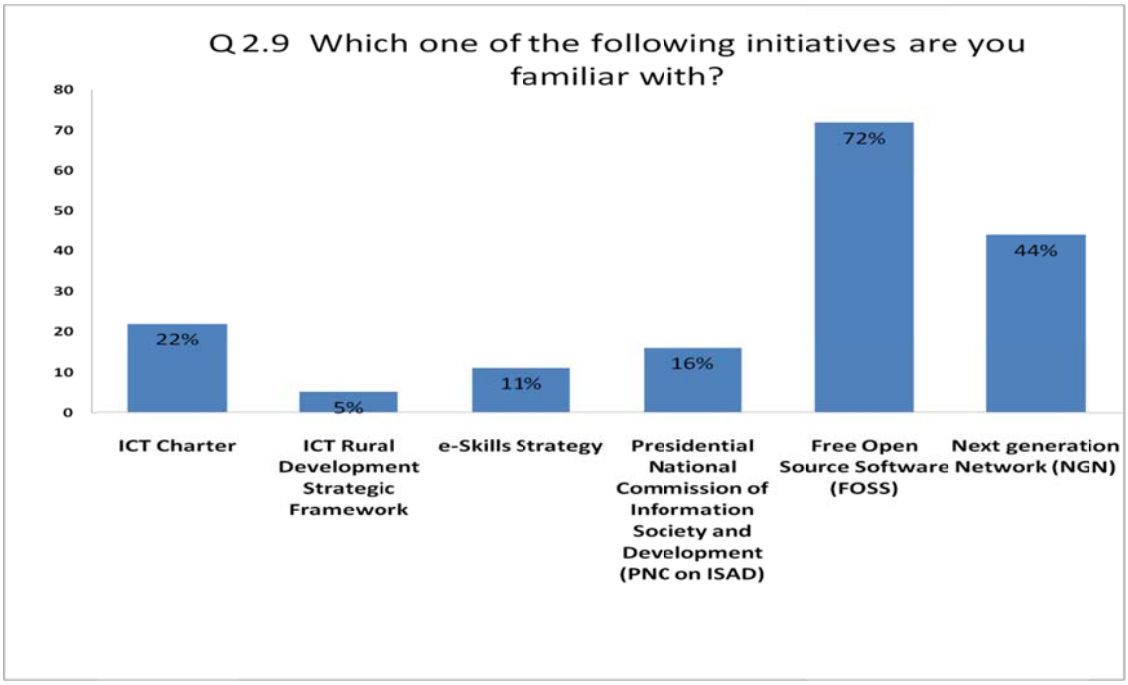


Figure 4.12 indicates that 22% of the participants are familiar with the ICT empowerment charter, very few of the participants are familiar with the ICT rural development strategic framework as reflected by 5%, 11% of the participants are aware of the e-skills strategy, 16% are familiar with the Presidential National Commission of Information Society and Development, 72% are aware of the free open source software and 44% are familiar with the implementation of Next Generation Network (NGN). The results indicate that very few of the participants are familiar with most of the ICT initiatives introduced in government in as far as the ICT charter, ICT rural development strategic framework and e-skills strategy are concerned.

4.3.1.4 Overall Analysis of the Section B: Knowledge of ICT in the public service

In terms of background knowledge of the participants, most of the participants are fairly aware of ICT initiatives in the public service. In terms of the role played by ICT, the results indicated that 94% of the departments have ICT policies,

procedures and guidelines, and 50% of the departments have ICT Steering Committees. Most participants are aware of the ICT governance framework introduced in the public service and structures put in place such as SITA, OGCIO and GITO council. 72% of the participants are aware of the MISS whereas over 50% are aware of ITIL, MIOS and Cobit. Furthermore, 94% is aware of SITA, 33% of OGCIO and 55% of GITOC. The results indicate that the level of the knowledge possessed by the participants should assist to determine the role of ICT in the public service.

4.3.1.5 Section C: ICT implementation in the public service

The aim of Section C of the questionnaire was to determine the status of the implementation of ICT in the public service. There are three closed ended questions used to collect information with regard to the role of ICT, the challenges regarding ICT implementation and critical success factors of ICT implementation in the public service. The following section analyses the results of each question in detail.

- Question 3.1: Which one of the following do you think is the role of ICT in the public service?

  Figure 4.13 The role of ICT in the public service

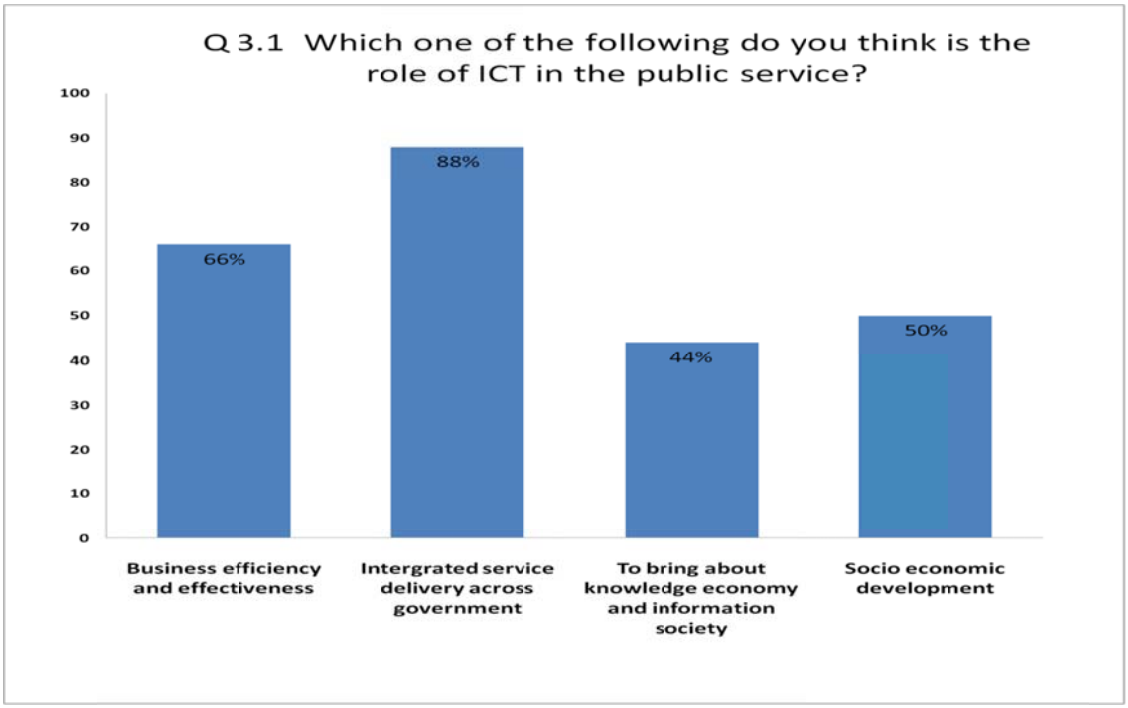
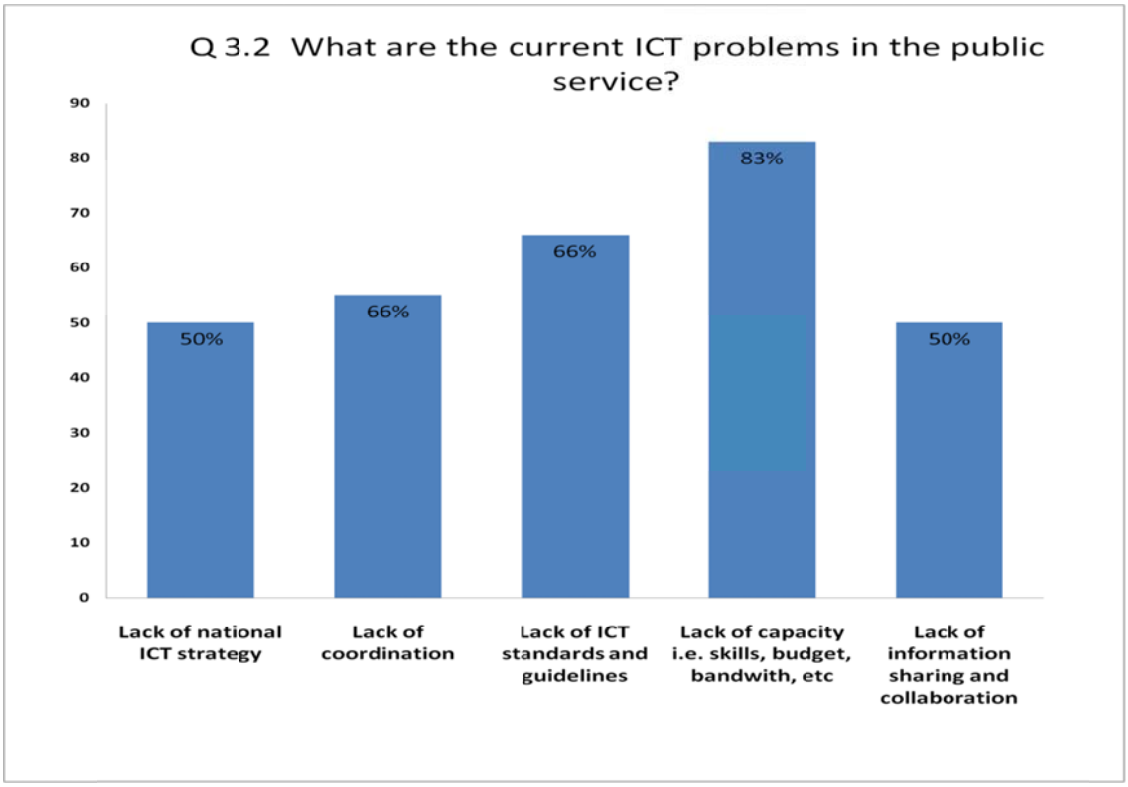


Figure 4.13 depicts that 66% of the respondents indicated that the role of ICT is to bring about business efficiency and effectiveness, (88%) indicated that ICT should integrate service delivery across government, 44% indicated that ICT should bring about knowledge economy and information society and 50% indicated that ICT should contribute towards socio economic development.

- Question 3.2: What are the current ICT problems in the public service?

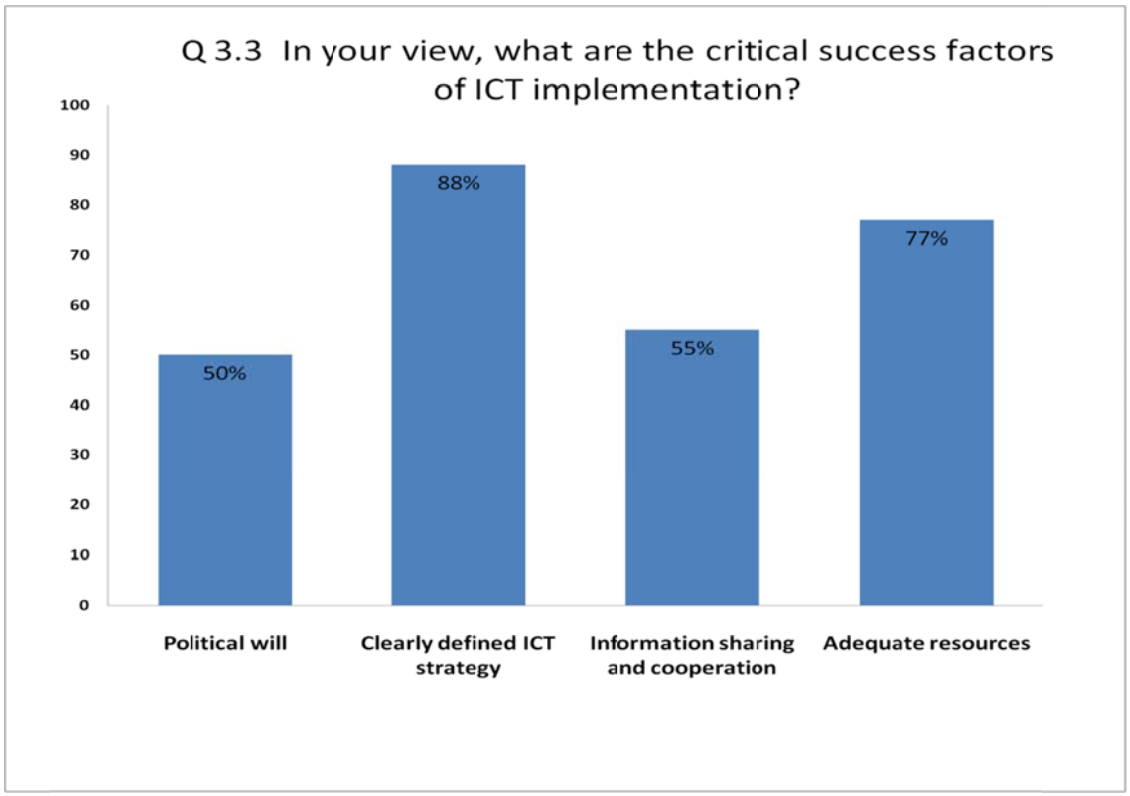
Figure 4.14 ICT problems in the public service



According to Figure 4.14, 50% indicates that lack of national ICT strategy is a concern, 66% of the participants are saying that the problem is lack of ICT coordination in the public service, 66% indicated lack of ICT standards, the majority of the respondents (83%) cited lack of capacity and 50% indicated lack of information sharing and collaboration.

- Question 3.3: In your view, what are the critical success factors of ICT implementation?

Figure 4.15 Critical success factors of ICT implementation



Although political will is cited by 50% of the participants as important during ICT implementation, the majority of the participants indicated that a clearly defined strategy and adequate resources are crucial for ICT implementation as represented by 88% and 77% respectively. Figure 4.15 also reveals that 50% of the participants are saying that information sharing and cooperation are also crucial.

4.3.1.6 Overall Analysis of Section C: ICT implementation in the public service

The primary objective of section C was to assess the implementation of ICT in the public service. Most of the participants indicated that the role of ICT should enable integrated service delivery and provide efficiency of business operations.

Although knowledge economy and information society, and socio economic development are important, they were not cited as crucial. 83% of the participants cited lack of capacity in terms skills and financial resources as the primary challenge in as far as the implementation of ICT is concerned. Clearly defined ICT strategy and adequate resources are crucial success factors of ICT implementation in the public service.

4.3.2 Interviews

The following section presents the results of the findings from the interviews that were conducted. The target population for interviews was sixteen and thirteen participants preferred that interview questions be electronically mailed to them as compared to face to face interviews as initially planned. Face to face interviews were conducted with three participants only. The main reasons cited are due to their busy schedules and most participants preferred to answer the interview questions at their own time. Figure 4.16 indicates the results of the interview process.

Figure 4.16: Interviews Participation Statistics

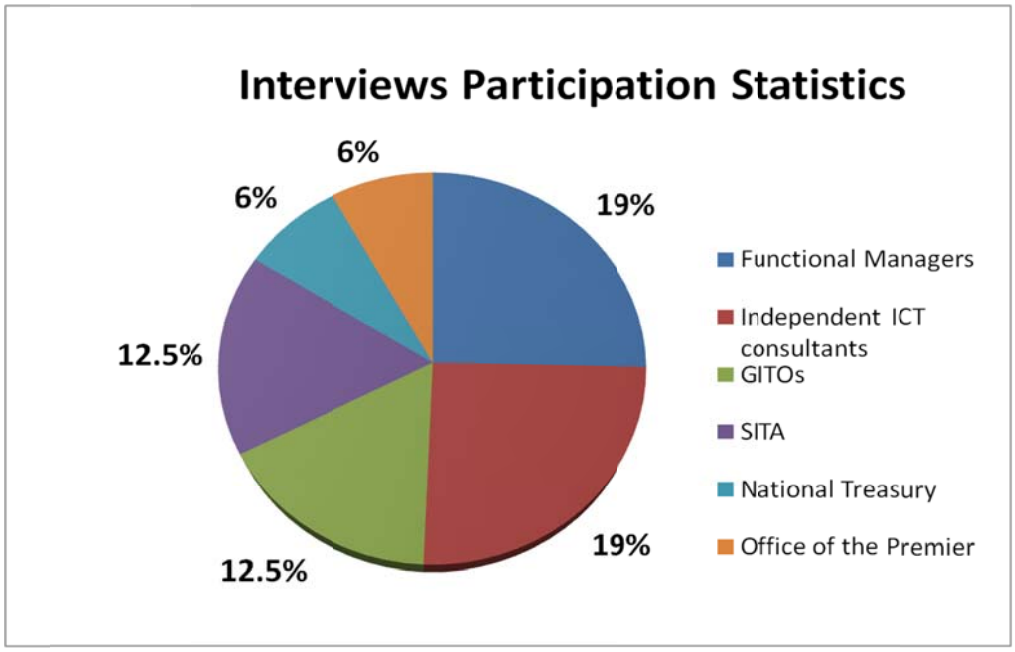


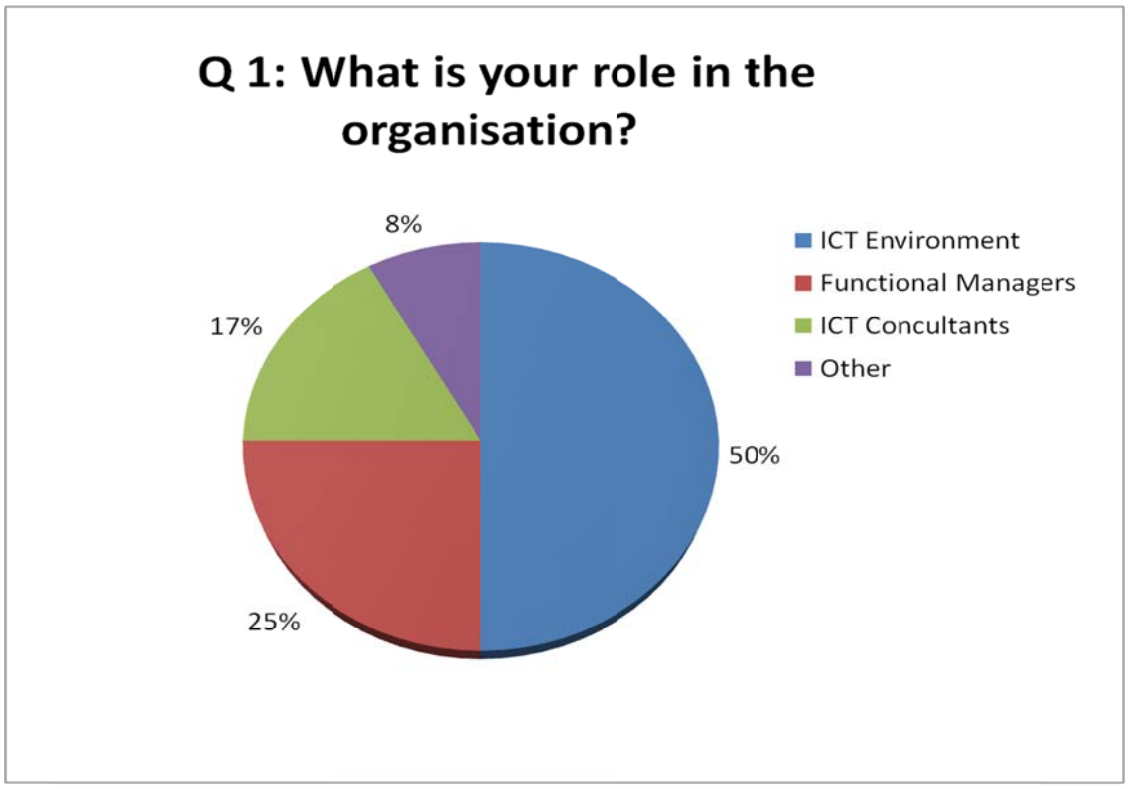
Figure 4.16 indicates that twelve participants responded positively to the request for interviews out of a total of sixteen targeted for, which is equivalent to 75% out of 100%. Out of twelve responded, three (19%) are functional managers, three (19%) are independent ICT consultants, two (12, 5%) are GITOs, two (12, 5%) are from SITA, one (6%) each from National Treasury (NT) and Office of the Premier respectively. Four participants could not return the interview questions on time and due to time constraints, no attempt was made to request feedback in this regard.

The following section provides a summary of all the responses from the interviews conducted.

4.3.2.1 What is your role in the organisations?

Most of the participants indicated their areas of responsibility in as far as their roles in the organisation are concerned. Participants can be grouped into three categories as functional managers, ICT consultants and ICT operations and support as per the responses received. Of 12 participants who responded to the interview questions, one did not respond the role played in the organisation, three are functional managers, two are ICT consultants and six are from ICT section as depicted by Figure 4.17. All of the participants are at a senior management level.

Figure 4.17: Role in the organization



4.3.2.2 Is ICT playing an effective role in the department and in government in particular?

Generally, most of the participants responded positively that ICT is indeed playing an effective role in the department and in government in particular but it is currently not used to its full potential. Out of twelve participants who responded, two indicated that ICT is not playing an effective role. Table 4.1 shows a list of responses as cited by participants.

Table 4.1 Effectiveness of the role of ICT in the public service

Question	Yes	No
Is ICT playing an effective role in the department and in government in particular?	Yes, could but could be a lot better; Yes, but there is a lot that IT can do to enable government in achieving	No, there are strides in using IT to transform government processes but there is still room for improvement in order to

Question	Yes	No
	its objectives, ICT is playing a big role but not used effectively, Yes, but ICT is underutilised; Yes, it enhances interoperability; ICT support the strategic plan of the department; ICT enhances government financial management and reporting and foster standardisation; Yes, but it is not stretched and used to its full capacity; It is playing a huge role, and it is effective in what it does, but not as effective as it should be; Yes, it is to some extend but there is still room for improvement;	use IT effectively in government; and Not at the moment but could improve;

4.3.2.3 What are the challenges in the ICT implementation in the public service?

Most of the participants responded very well to the question. There are various reasons that are cited as challenges for ICT implementation in the public service. Reasons that are related are grouped into four groups that emerged during the analysis of the responses received from the participants. Most participants raised challenges related to leadership and management styles, communication and decision making processes, lack of adequate resources and technical challenges and other challenges that are not related to the above four groupings are grouped as 'Other Issues'. Table 4.2 indicates the five groupings.

Table 4.2 ICT related challenges

Groupings	Related Challenges
Leadership and Management styles	Lack ICT on the National agenda, lack of coordination, bureaucracy, lack of continuity at management, business readiness, politics, no shared IT vision in government, staff attrition and lack of strategy to recruit and retain competent technical staff, political interference, no support from business executives, capacity to plan, inability to manage and sustain ICT and implement and maintain;
Communications and Decision Making processes	Lack of buy in from government executives, buy in from executives and political principals, resistance to change;
Lack of adequate resources i.e. human and financial resources	Lack of skills, lack of financial resources, ICT skills development, funding of ICT initiatives, computer literacy, lack of knowledge of the environment, lack of skilled IT resources, capacity, lack of appropriate skills hence reliance on consultants, scope creeps has financial and time implications, lack of computer skills, budget challenges, lack of capacity, budget is a challenges;
Technical challenges	Infrastructure development, lack of ICT standards, lack of adequate infrastructure, interoperability of systems, lack of BI and analytical solutions, incompatible and disintegrated platform and applications, obsolete and non standard ICT infrastructure, too many un-integrated systems,
Other issues	Contractual processes delay by demands from contractors, capacity of SITA to deliver, duplication of resources, SITA not performing;

4.3.2.4 What are the critical success factors of ICT implementation in the public service?

In terms of the critical success factors of ICT implementation in the public service, most of the participants indicated that the opposites of the ICT challenges are in fact the critical success factors. The majority of the participants indicated that buy in from executive management and adequate resources are important. Clearly defined business objectives, common vision and interoperability of ICT systems are cited as crucial to successfully implementing ICT in the public service.

4.3.2.5 What is the future of ICT in the public service?

All of the twelve participants responded positively to the question and recommendations were made indicating what needs to be done in order for ICT

to effectively make a difference in the public service. Some of the challenges that need to be addressed are with regard to capacity, strategy for ICT deployment, leadership, planning, lack of common vision and customer relationship management.

4.3.2.6 Any additional information?

The majority of the participants did not provide additional information. Of the twelve that responded to the interviews, 58% indicated none. The reasons are that there should be more focus on citizen and ICT should contribute towards effective service delivery in as far as ICT implementation is concerned. Other participants indicated that ICT should support business, service level agreements with regard to ICT services should be more reliable and capacity challenges to be addressed.

4.4 CONCLUSION

Chapter four presented the results of the empirical study. Both questionnaires and interviews were used as method of data collection. The questionnaires contained three sections. The initial section of the questionnaire provided background information of the participants, which consisted of three questions. Information about the role of the participants in an organisation and the number of years in the IT environment were obtained from the participants. It has been found that most participants are working within the IT environment and possess over five years experience in the IT environment. The information served as the foundation for other two sections of the questionnaire.

Section B of the questionnaires established more details on the knowledge the participants have on ICT initiatives introduced with regard to the implementation of ICT within the public service. For example, the public service has over a number of years introduced various governance frameworks to ensure that the implementation of ICT is standardised across the public service. SITA, OGCIO and GITOC are put in place to ensure that there is proper coordination of ICT.

Section C was based on the implementation of ICT in the public service. This included amongst others the role of ICT, the current ICT problems and challenges in the public service. Most participants indicated that ICT should play an effective role in integrating service delivery across government.

CHAPTER 5

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents discussions and recommendations based on the findings of the study and the literature survey presented in the previous chapters. The chapter attempts to answer the primary research question which is to investigate the role of ICT in the South African public service. The findings of the study reveals that ICT should be able to integrate service delivery across government, improve efficiency and effectiveness, contribute towards socio-economic development and should bring about knowledge economy and information society.

The chapter recommends that in order to implement ICT successfully, it is absolutely essential that a coordinated and common shared vision and strategy be implemented across the public service. Communication and collaboration including fostering of private sector partnership, training and development are also essential. The development of ICT infrastructure including standards, regulations and policies must be set and adhered to across government to address interoperability issues.

5.2 DISCUSSIONS OF THE FINDINGS

In this section, the findings from the questionnaires are integrated with the findings from the interviews. The results of the study are then grouped into meaningful and related categories, namely: challenges related to leadership and management styles, communication and decision making processes, lack of resources, technical challenges and other issues. The key observations are summarised as follows:

- Challenges related to leadership and managerial styles where raised as concerns to the failure of the ICT implementation in the public service. For example, lack of clear roles and responsibilities, lack of focus and management commitment, lack of ICT national agenda and vision are all the symptoms of leadership and management challenges. Additionally, the results of the interviews also revealed that sustained top management leadership and political will are key to overcoming challenges during ICT implementation. The participation of top management in ICT implementation is cited as critical to its success and without this level of involvement, the objectives of ICT implementation will not be fully realised.
- The majority of the participants raised concerns related to lack of integration between business and IT function, which relates to lack of ICT strategy. This creates a challenge as the role of IT is perceived to be an operational issue alone rather than being an integral part of the IT and business function. This indicates that GITOs are not seen as the departments' strategic ICT advisors. As a result the IT function is delegated to the operational levels, which in turn dilutes the commitment to the strategic role of IT in government.
- Other concerns raised related to slow decision making and lack of political will to drive ICT agenda in the departments. This indicates that in most instances GITOs are not members of Executive Committees in the departments. These also mark the limited authority to take the decision towards the coordinated growth of IT across government.
- The other main concern raised is the lack of ICT skills and professional opportunities for growth coupled with the low empowerment. This could eventually see many of government employees poached by the private sector. This is consistent with the findings from the interviews which revealed that scarcity of skilled ICT staff poses a significant challenge in ICT implementations. Information sharing was also cited as a challenge in government. Departments seem to be operating in silos and this ultimately have an impact on the role of ICT in the public service.

5.3 REACHING THE OBJECTIVES OF THE STUDY

The primary objective of the study was to:

- Investigate the role of ICT in the South African public service.

The secondary objectives of the study were to:

- Conduct a literature survey on prevailing theories, principles, legislation and best practices on ICT;
- Conduct a critical assessment on the implementation of ICT in the South African public service;
- Determine and analyse the role of ICT in the South African public service; and
- Make recommendations on how to improve the implementations of ICT to achieve its strategic objectives.

The objectives of the study were realised in the following ways:

Chapter one provided a brief outline of the background to the study, problem statement, objectives and importance of the study. Although it is acknowledged that ICT plays an important role in assisting the South African public service to improve its services towards its clients, the implementation of ICT requires a radically different culture in order to succeed.

In order to determine the role of ICT in the South African public service, a foundation for the study has to be laid in chapter two. The chapter explored the theory, principles and best practices with regard to ICT. This included the definition of ICT, the value proposition of ICT and importantly, how ICT strategies are formulated in organisations.

Chapter three extended the literature review presented in chapter two and focused on the implementation and management of ICT in the SA public service. It was established that significant efforts have been established by the South African public service to provide enabling environment for the implementation of ICT. This included the establishment of the State Information Technology Agency (SITA), Office of the Government Chief Information Officer (OGCIO) and the Government Chief Information Officer Council (GITOC). The primary aim is to ensure that the implementation of ICT is effectively and efficiently coordinated in the public service.

Chapter four provided an exposition of the research design and data analysis. Both questionnaires and interviews were used as methods of collecting data. In this chapter, views of the public service officials within the ICT environment, functional managers and ICT consultants as well as of the ICT service providers were highlighted.

Chapter five concludes the study by answering the primary research question regarding the role of ICT in the SA public service. Based on the outcome of the study, it is clear that the potential for ICT within the public service have not been exploited sufficiently and comprehensively.

The following conclusion is then drawn on the role of ICT in the South African public service, and recommendations are then made on how ICT can be effectively utilised to improve service delivery. It can then be concluded that the objectives of the study were successfully achieved.

5.4 CONCLUSION

The role of ICT in the South African public service is explained in the following section, which provides an answer to the primary research question.

5.4.1 ICT should integrate service delivery across government

ICT, through electronic government should be able to improve the efficiency of government departments, extend and improve service delivery to the citizens and improve citizen participation and engagement. Electronic government has the potential to integrate different systems that never talked before and reduce redundancy that currently exists through integrated systems capabilities. This means that 'silos' that currently exists can be broken and collaboration across boundaries can be achieved. Better and more accurate information will provide opportunities to many government departments to improve productivity and to innovate.

5.4.2 ICT should facilitate business efficiency and effectiveness

ICT should be able to enhance and broaden collective awareness and participation in the implementation of ICT through information sharing, knowledge creation and opportunities for improved efficiency and effectiveness. For example, to facilitate this flow of information, integrated systems are needed and also integrated information requirements and processes should be established. If the processes and information are integrated, management of information across government will be achieved at a reduced cost.

5.4.3 ICT should contribute towards socio-economic development

ICT should become an agent of transformation. The implementation of ICT must be driven by government's developmental agenda, rather than technology. Government invests heavily in the technology and should expect to attain

substantial return on this investment. For example, the objectives of ICT in the public service should be linked to Medium Term Strategic Framework (MTSF) and Medium Term Expenditure Framework (MTEF). This will ensure that ICT is able to facilitate the strategic policy priorities and plans of the government for the next five years and contribute towards a national developmental agenda.

5.4.4 ICT should bring about knowledge economy and information society

ICT solutions must be developed within the broader scope of the knowledge society and good governance. The development and building of knowledge sharing culture and information societies should be the main priorities of the South African public service at all levels of government. For example, the goal of the public service should be to manage not only information but knowledge in order to remain competitive and be able to meet the service delivery demands.

To achieve this goal, extensive cooperation is required between all stakeholders in government. Government should capacitate and strengthen organisations such as the Centre for Public Service Innovation (CPSI) to focus on the use of technology and other innovative means to achieve sustainable service delivery partnerships, influence the work culture within government and develop an environment which is supportive of innovation.

5.5 RECOMMENDATIONS

The following section provides a discussion on the recommendation as follows:

5.5.1 Create a shared, common vision and strategy across government

According to Yulk (2005:295), a compelling vision is useful to guide the change in an organisation. Tait (1996) agrees that the vision must be compelling and clearly communicated to motivate people to action. A compelling vision and strategy in the public service will combine changes with a genuine management commitment and this would help the rest of the people to connect with the vision.

The South African public service comprises national, provincial, local and municipal as well as public entities. National departments are operating at a policy, strategic and monitoring level where as local government is seen as interface for service delivery through municipalities. The reality is that there exist three independence spheres of government with no single jurisdiction. Interactions of these organisations require a common vision. This is the legislation, strategic and policy environment which requires to be harmonised to focus every party involved in the same direction. The vision must be communicated and be captured in a manner that would allow every party to have access to it as and when it is required. This also should give a clear roadmap against which every organisation involved could measure itself or be measured for compliance and performance.

5.5.2 Leadership Capacity Building

The greatest impediment in government is the lack of leadership talent. It is very clear that there is a need for change and different leadership practices in government organisations from the findings of the study. Leadership contributes significantly in the success and failure of an organisation (Crawford and Lok, 2004). Good leadership will have to build relationships with followers and is

fundamental in cooperative relationships. Therefore, a critical requirement in support of the implementation of ICT is the development of change leadership roles throughout government departments.

The following need to be taken into consideration during the development process.

- Succession planning;
- Mentoring and coaching plans;
- Career pathing;
- Leadership and management development programmes at all levels; and
- Competency assessment of ICT employees to ascertain abilities.

5.5.3 Human Capital Development

Training and advancement opportunities are insufficient in government and where they exist they are not properly structured, managed and monitored. Ndou (2004) indicates that a major challenge of an e-government initiative is the lack of ICT skills in the public sector. This provides a challenge for government as it is unable to attract and keep enough skilled people.

The public service would require investing in its employees by educating them on ICT implementations. Even though this is a lengthy process, it will properly receive a bigger return on investment in the long run.

5.5.4 Build Strategic Partnerships

By taking advantage of all that technology can offer, government should build relationship with the private sector. Government can collaborate with private sector in order to rollout and support its vision for ICT in the public service. Private sector has long recognised the value of effective collaboration and information sharing in creating improved efficiency and better performance

(ITWeb, 2008:80). Government departments should also apply these principles as they strive to achieve better service delivery for more people with limited resources at their disposal.

For example, government should consider Public Private Partnerships (PPP) to improve on efficiency and quality provision of public services. The government PPP strategy is seen as a solution to government departments and agencies struggling with ICT especially at local government level. The challenge is that PPPs can be complicated and requires a different culture to succeed.

5.5.5 Development of ICT Infrastructure

The development of adequate ICT infrastructure is very important if ICT is to play a strategic role in government. Technical challenges raised relate to legacy systems, inadequate ICT infrastructure, compatibility issues and lack of ICT standards and guidelines. Interoperability issues are also commonly cited as problems during ICT implementations. Policies and standards are needed to ensure that ICT is standardised across government. In order to reduce ICT costs, skills shortages and complexities in government.

5.5.6 Strengthen monitoring and evaluation systems

It is also recommended that the South African public service should establish systems in order to monitor and evaluate the effectiveness of the current governance structures and processes. Governance structures and processes put in place in government should not be merely for compliance purposes, but for example, SITA, OGCIO and the GITOC should have clearly defined roles and responsibilities with measurable objectives. The establishment of ICT steering committees should be able to assist to ensure that informed decision-making on major investments and IT strategic direction in various government departments.

BIBLIOGRAPHY

Avison, D. and Fitzgerald, G. 2003. *Information Systems Development,* 3rd Edition. United Kingdom: McGraw-Hill.

Bocij, P., Chaffey, D., Greasley, A. & Hickie, S. 2006. *Business information Systems: Technology, Development & Management for the e-business*, 3rd Edition. England: Pearson education Limited.

Bentley, L.D. and Witten, L.J. 2007. *Systems Analysis & Design for the Global Enterprise*, 7th Edition. New York: McGraw-Hill.

Bridges.org. 2002. Progress towards ICT integration in South Africa: a survey of Government initiatives [online]. Cape Town: Bridges.Org. Available from: < www.share4dev.info/kb/documents/2343.pdf> [Accessed 23 September 2011]

Crawford, J. and Lok, P. 2004. 'The effect of organizational culture and leadership style on job satisfaction and organizational commitment', *Management Development*, 23(4): 321-338.

Deloitte and Touché. 2004. CIO 2.0 – *The changing role of the Chief Information Officer (CIO) in government and why it matters to leaders in the public sector* [online]. USA. Deloitte & Touché LLP. Available from: < http://www.deloitte.com/assets/Dcom-shared%20Assets/Documents/us_ps_CIObook.pdf > [Accessed 19 July 2011].

Department of Communication. 2008. *Presidential National Commission on Information Society and Development (PNC on ISAD) Plan*. Pretoria: Department of Communications.

Department of Communication. no date. *Towards an Information and Communications Technologies (ICT) Rural Development Strategic Framework*

[online]. Pretoria: Department of Communication. Available from: < ww.pnc.gov.za/pnc_isad_msf/images/.../ict_rdstrategy_2011.pdf> [Accessed 24 September 2011]

Department of Public Service and Administration. 2007. *Information and Communications Technology*: *Contextualizing the Integrated Financial Management System (IFMS) – Discussion Document for Cabinet*, Pretoria: Department of Public Service and Administration.

Department of Public Service and Administration. May 2003. *The Machinery of Government: Structures and Functions of Government*. Pretoria: Department of Public Service and Administration.

Department of Public Service and Administration. May 2005. *Constitution of the Government Information Technology Council.* Pretoria: Department of Public Service and Administration.

Department of Public Service and Administration. 2006. *E-Government Architecture and Integration.* Version 1.5. Pretoria: Department of Public Service and Administration.

Diamantopoulos, A. and Schlegelmilch, B.B. 2005. *Taking the Fear Out of Data Analysis*. Singapore: Thomson Learning.

Farelo, M. and Morris, C. 2006. The Status of E-government in South Africa [online]. Pretoria. Department of Public Service and Administration. Available from: http://researchspace.csir.co.za/dspace/bitstream/10204/966/1/Farelo_2006_D.pdf [Accessed 15 April 2011].

Ferreira, E., Erasmus, A.W. & Groenewald, D. (2009). *Administrative Management*, 2nd Edition. Cape Town: Juta and Company Ltd.

Fraser-Moleketi, G. 2008. *Public and Service Administration Budget Vote 2008/09* [online]. Pretoria. Department of Public Service and Administration. Available from: http://www.polity.org.za/article/sa-frasermoleketi-public-service-and-administration-dept-budget-vote-200809-03062008-2008-06-03 [Accessed 15 April 2011].

Fraser–Moleketi, G. 2003. It is about constructive debate and engagement. *Electronic government magazine*, 2003, vol.1, no.1, p.1.

Frenzel, C.W. 1999. *Management of Information Technology,* 3rd Edition. Canada: Course Technology.

Government Information Technology Officers Council (GITOC). 2007. *Marketing Communication Strategy for the Government Information Technology Officers Council*. Pretoria: Department of Public Service and Administration.

Gregor, S., Hart, D. & Martin, N. 2007. 'Enterprise architectures: enablers of business strategy and IS/IT alignment in government', *Information Technology & People*, 20(2): 96-120.

Hazlett, S. and Hill, F. 2003. 'E-government: the realities of using IT to transform the public sector', *Managing Service Quality*, 13(6):445-452.

Hewlett, L. (2003). *Planning for Monitoring and Evaluation*. South Africa: Olive Publications.

ITWeb. 2006. *Effective E-Government: South Africa's Guide to Public Sector Transformation Through Technology*. 2nd Edition, Johannesburg: IT Web Informatica.

ITWeb. 2008. *Effective E-Government: South Africa's Guide to Public Sector Transformation Through Technology*. 4th Edition, Johannesburg: IT Web Informatica.

ITWeb. 2010. *Effective E-Government: South Africa's Guide to Public Sector Transformation Through Technology*. 6th Edition, Johannesburg: IT Web Informatica.

Kamal, M.M. 2006. 'IT innovation adoption in the government sector: identifying the critical success factors', *Enterprise Information Management,* 19(2): 192-222.

Leedy, P.D. and Ormrod, J.E. 2005. *Practical Research: Planning and Design*. 8th Edition. United States of America: Prentice Hall.

Marchand, D.A., Davenport, T.H. & Dickson, T. (2000). *Mastering Information Management.* 1st Edition. Great Britain: Prentice Hall.

Matthee, M.C., Tobin, P.K.J. & van der Merwe, P. 2007. 'The status quo of enterprise architecture implementation in South African financial services companies', *South African Journal of Business Management*, 38(1): 11-24.

Meyer, M.W. and Barber, R.L. (1997). *Computers in your future*, 2nd Edition. United States of America: Macmillan Publishing.

National Treasury. 2008. IFMS FIN Conceptual Application Architecture [online]. Pretoria: National Treasury. Available from: <

http://www.treasury.gov.za/ifms/secure/0236-00345%20IFMS%20FIN%20Conceptual%20Application%20Architecture%20v2.01d.pdf> [Accessed 22 September 2011]

Ndou, V.D. 2004. 'E-government for Developing Countries: Opportunities and Challenges', *Information Systems in Developing Countries*, 18(1): 1-24.

Padayachie, R. (2011). *ICT sees jobless growth* [online]. Johannesburg. ITWeb. Available from: http://www.itweb.co.za/index.php?option=com_content&view=article&id=42803:ict-sees-jobless-growth&catid=147 [Accessed 22 May 2011].

Poulton, R. (2011). *ICT sees jobless growth* [online]. Johannesburg. ITWeb. Available from: http://www.itweb.co.za/index.php?option=com_content&view=article&id=42803:ict-sees-jobless-growth&catid=147 [Accessed 22 May 2011].

Public Administration Leadership and Management Academy (PALAMA). 2010. *Executive Development Programme: Research Methodologies for Senior Managers*. Pretoria: Public Administration Leadership and Management Academy.

Rumizen, M.C. 2002. *Knowledge Management*, 1st Edition. USA: CWL Publishing Enterprises.

Schekkerman, J. 2004. Enterprise Architecture Validation: Achieving Business Aligned and Validate Enterprise Architecture [online]. Available from < http://www.enterprisearchitecture.info [Accessed 4 May 2012].

Schindler, P.S. and Cooper, D.R. 2003. *Business Research Methods.* 8th Edition. New York: McGraw-Hill.

South Africa. ICT Empowerment Charter Working Group. 2004. *The ICT Charter* [online]. 3rd Working Draft. Pretoria: Department of Communications. Available from: < http://www.ictcharter.org.za/content/ICTCHARTER_Draft3.pdf [Accessed 19 April 2011].

South Africa. Office of the Provincial GITO. 2011. *Information and Communication Technology Strategic Direction.* Polokwane: Office of the Premier.

South Africa. 1998. *Presidential Review Commission on the Reform and Transformation of the Public Service in South Africa* [online]. Pretoria: Department of Public Service and Administration. Available from: < http://www.polity.org.za/polity/govdocs/reports/presreview/index.html > [Accessed 2 May 2012].

State Information Technology Agency (SITA). 2010. IFMS Supply Chain Management Overview. Pretoria: State Information Technology Agency (SITA).

Republic of South Africa. *State Information Technology Agency Act*, 1998 (Act 88 of 1988).

Tait, R. 1996. 'The attributes of leadership', *Leadership & Organizational Development*, 17(1): 27-31.

Themistocleous, M. and Sarikas, D. 2005. 'Thoughts on e-government', *Enterprise Information Management,* 18(5): 508-510.

Tibco. 2003. *A User's Guide to BPM*. Chicago: Doculabs.

Turban, E., Lee, J., King, D. & Chung, H.M. 2000. *Electronic Commerce: A Managerial Perspective*, 10th Edition. USA: Prentice – Hall.

Varghese, J. and Kurien, P. 2004. 'IT imperatives beyond strategic alignment: enterprise architecture flexibility and IT delivery efficiency', *Handbook of Business Strategy,* 2004:275-279.

Yulk, G. 2005. *Leadership in Organisation*. 6th Edition. New Jersey: Prentice Hall.

ANNEXURES

7.1 STUDY PARTICIPATION CONSENT FORM

AN INVESTIGATION INTO THE ROLE OF ICT IN THE SA PUBLIC SERVICE

Dear Respondent

My name is Lucky M Kekana. I am currently studying Masters in Public Administration (MPA) degree at North West University (NWU) – Potchefstroom Campus. As part of completing the degree, I am expected to conduct a study and selected you to participate in the process. The selection is based on your involvement in the of ICT environment.

The primary objective of the study is to investigate the role of ICT in the public service.

The questionnaire is divided into three parts and has 15 questions and will take about twenty (20) minutes to fill. It is in a *tick the box* format. Kindly fill in the attached questionnaire and return it to the following email address: kekanam@treasury.limpopo.gov.za or call 082 497 9773 for additional information.

The information obtained for this survey will be kept confidential and used for study purposes only. There is no harm whatsoever in participating in the study.

Thank you for your willingness to participate in the study.

PARTICIPATION DECLARATION

I _____ hereby voluntarily grant my permission for participation in the study. I understand my right to choose whether to participate in the study and the information furnished will be handled confidentially.

7.2 QUESTIONNAIRE

Topic: An investigation into the role of ICT in the South African public service												
1. SECTION A: Background Information (Kindly mark with an X, the one appropriate to you)												
1.1Which organization are you working for?	National Department			Provincial Department			Local Government /Municipality					
1.2 What is your role in the organization	CIO or GITO		IT Manager		IT Consultant		Other					
1.3 Number of years in IT	Less than 2 years		2 – 5 years		5-10 years		More than 10 years					
2 SECTION B: Knowledge of ICT in the public administration (Kindly mark with an X, the one appropriate to you)												
2.1 To whom is the CIO/GITO office reporting in your department	HOD/ DG		Corporate Services		Line Function		Other					
2.2 Do you have a Strategic Information System Plan (SISP) in your department?	Yes				No							
2.3 Do you have an ICT Steering Committee in your department?	Yes				No							
2.4 Do you have ICT policies, procedures and guidelines?	Yes				No							
2.5 Has your department implemented any e-government project?	Yes				No							
2.6 Which one (s) of the following ICT governance framework or policies did you adopt in your department?							Government Wide Enterprise Architecture (GWEA)					
							Minimum Information Interoperability Standards (MIOS)					
							Minimum Information Security Standards (MISS)					
							IT Infrastructure Library (ITIL)					
							Control Objectives for Information and related Technology (CobiT)					
2.7 Which one (s) of the ICT structures are you familiar with?							State Information Technology Agency (SITA)					
							Office of the Government Chief Information Office (OGCIO)					
							Government Information					

Topic: An investigation into the role of ICT in the South African public service		
	Technology Officers Council (GITOC)	
2.8 Which of the following transversal financial systems are utilized in your department?	Basic Accounting System (BAS)	
	Personnel and Salary System (PERSAL)	
	Logistical information System (LOGIS)	
	Integrated Financial Management System (IFMS)	
	None	
2.9 Which one of the following initiatives are you familiar with?	ICT Charter	
	ICT Rural Development Strategic Framework	
	e-skills Strategy	
	Presidential National Commission of Information Society and Development (PNC on ISAD)	
	Free Open Source Software (FOSS)	
	Next Generation Network (NGN)	
3 SECTION C: ICT Implementation in the public service (Kindly mark with an X, the one appropriate to you)		
3.1 Which one (s) of the following do you think is the role of ICT in the public service?	Business efficiency and effectiveness	
	Integrated service delivery across government	
	To bring about knowledge economy and information society	
	Socio economic development	
3.2 What are the current ICT problems in the public service?	Lack of national ICT strategy	
	Lack of coordination	
	Lack of ICT standards and guidelines	
	Lack of capacity i.e. skills, budget, bandwidth, etc	
	Lack of information sharing and collaboration	
3.3 In your view, what are the critical success factors of ICT implementation?	Political will	
	Clearly defined ICT strategy	
	Information sharing and cooperation	
	Adequate resources	

7.3 INTERVIEW QUESTIONS

Agenda		Notes
1. Thank the respondent in advance. Indicate the time he/she allocated for the interview		
2. Introduce myself		
3. Introduce the purpose of the research		
4. Assure the respondent that the interview is confidential and is for the sole purpose of studying MPA at NWU: Potchefstroom Campus		
5. Questions	5.1 What is your role in your organization?	
	5.2 Is ICT playing an effective role in the department and in government in particular?	
	5.3 What are the challenges in the ICT implementation in the public service?	
	5.4 What are the critical success factors of ICT implementation in the public service?	
	5.5 What is the future of ICT in the public service?	
	5.6 Any additional information?	
6. Thank the respondent again for his/her the time.		
7. Conclusion		