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Optimising ICT management for service delivery improvement in the North West Provincial Administration



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ABSTRACT

Although the use of Information and Communications Technology (ICT) is very important in the workplace, its management is sometimes not taken seriously. ICT in the North-West Province is still viewed as only a technical tool whereby technicians are employed to fix hardware, mount projectors and install software. However, in order for ICT to function effectively, there ought to be a dedicated budget in place. It also requires skilled officials who are not only technocrats, but also management inclined. There should also be an effective ICT representation in top management structures and an effective strategy that supports business objectives of the department.

As a result of ICT management not being taken seriously by senior management, in most cases, the allocation of resources will rather be channelled elsewhere. This research dealt with gaps in ICT management. The research focused on issues such as policies, skills, budget, ICT governance and infrastructure availability. It ascertained how effective ICT management processes were and whether they were enhancing service delivery. The findings were then utilised to develop a model to assist managers of ICT and business as a whole to deal with ICT efficiently.

The main research question was **“How can ICT management be optimised across provincial government departments in the North-West Province to enhance service delivery and lower costs?”**. The qualitative research method was used in collecting and analysing the data. The findings include the availability of an IT strategy that supports business objectives. This was coupled with other findings such as insufficient staff component for ICT support, insufficient budget for the implementation of ICT projects, ineffective procurement processes within the departments and outdated ICT infrastructure. The research focused primarily on ICT management and not on technical aspects. The recommendations drawn were that the provincial government should make provision for sufficient ICT budget, upgrade the underlying infrastructure , appoint IT manager at senior management level, decentralise ICT procurement and avoid silo operation.

ABBREVIATIONS

Abbreviation	Meaning
IT	Information Technology
ICT	Information and Communications Technology
GIS	Geographic Information System
GITO	Government Information Technology Officer
GITOC	Government Information Technology Officers' Council
IP	Internet Protocol
SENIOR/TOP MANAGEMENT	Members of Departmental Management Committee
HR	Human Resource
HRD	Human Resource Development
OTP	Office of the Premier
DITO	Departmental Information Technology Officers' Council
SCM	Supply Chain Management
PFMA	Public Finance Management Act

CHAPTER 1

INTRODUCTION

The use of Information and Communications Technology (ICT) has become a fundamental business resource in organisations. No organisation in the world today can function effectively without information technology and information systems. Information Technology has become such a critical resource for the success of any business or governmental organisation that its management, implementation as well as policies cannot be taken lightly (Apulu, 2012). For this reason, this study aimed to determine ways of optimising ICT management for service delivery improvement in the North-West Provincial Administration.

Investment in information systems hardware, software and telecommunications equipment now constitutes a significant proportion of all capital investment in many organisations. The results of this massive spending on Information Systems and Technologies are reflected in the way organisations conduct business. As will be shown in the literature review later, over the years, Information Technology management in government departments never received the same level of attention as other fields such as Human Resources Management and Communications. Some of the main problems were related to performance measurement and accountability arising from a lack of involvement and support from top management, performance measurement systems not aligned with departments' strategic priority goals and poor communication.

This has led to departments having many pressing ICT needs. These include the need to better organise and protect business information, communicate effectively and professionally with stakeholders, ensure operational efficiency and also compliance with the necessary legislative requirements. Mahlatse (2011:1) indicates that the South African government is implementing ICTs in order to improve services for its citizens.

Implementing the right strategy can help departments to accomplish organisational goals more effectively and efficiently by saving time and money and ensuring ICT

productivity within the provincial government. The foundation of an effective strategy begins with aligning the ICT strategy with departmental and government strategy.

The purpose of this research was to determine ways that can assist managers to maximise ICT service delivery in the North-West Provincial Administration. The researcher identified whether the existing policies were appropriate to improve service delivery and also conducted a skills audit to ascertain whether there were appropriate managerial and ICT skills in place to maximise productivity. In addition to this, the researcher determined whether the existing ICT infrastructure was adequate for service delivery improvement.

1.1 BACKGROUND

The State Information Technology Agency (SITA) was established by the South African (SA) public service through an Act of Parliament in 1999 in response to the findings of the Presidential Review Committee (PRC) report of 1998. The PRC report stipulated the lack of interoperability and adequate security of government ICT systems, duplication of tasks and lack of economies of scale in government ICT systems and policy. In 2000, the SA Public Service, through the Department of Public Service and Administration (DPSA), developed a policy framework for electronic government. This inventiveness was not only intended to position ICT as a tool to assist in creating innovative service delivery to citizens, but also to attend to the need for an integrated architecture for government information systems.

The SA Public Service has, consequently, put a number of significant enablers in place, which should promote the adoption of ICT and electronic government. These include the following legislation: 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), Promotion of Access to Information (PAIA) Act, 2002 (Act 2 of 2002), 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 enhance service delivery with the use of ICTs, the implementation of ICTs still represent a very real challenge for the public

service, especially in the North-West Provincial Government. This study sought to examine the current ICT environment in order to optimise ICT management for service delivery improvement in the North-West Provincial Government.

1.2 PROBLEM STATEMENT AND CORE RESEARCH QUESTION

The tension between managerial and technical competency is very often evident in the management of ICT in the North-West Province. In many instances, one either finds a competent manager who is not well versed in ICT issues or, conversely, a technocrat who is knowledgeable in ICT issues, but deficient in managerial acumen. Mahlatse (2011:13) indicates that whether developing information systems to support decision-making or facilitating better communication, effective ICT must emphasise the importance of good management.

In order for Information Technology to be optimised in government departments, it is essential to obtain the buy-in of top management. The best way to obtain this buy-in would be to ensure that senior management understands ICT technical demands over and above their managerial competence. The challenge faced by most government departments is that this is not usually the case. For instance, some departments have their ICT staff reporting to managers such as Supply Chain Management (SCM) or Risk and Human Resource Management. This has led to the provincial government encountering problematic issues such as skills shortages, leadership instability and inefficient business process, which are largely manual. The lack of efficient ICT management has also caused unnecessary duplication of systems, silo operations, insufficient ICT budget, inefficient technology and ineffective procurement processes that delay service delivery within the North-West Provincial Administration.

1.3 RESEARCH OBJECTIVES

- Determine whether ICT managers possess the appropriate skills to manage ICT to drive service delivery improvement.
- Determine whether existing ICT policies are conducive to service delivery improvement.

- Determine whether the existing ICT infrastructure is appropriate for service delivery improvement.
- Determine whether there is existing budget for ICT projects
- Determine whether ICT procurement processes are effective in enhancing service delivery
- Determine whether ICT is placed at senior management level.
- Determine whether the ICT strategy is aligned with the business strategy
- Determine the ICT management approach that could work best for productivity improvement in the provincial government.

Research question

The main research question is: **How can ICT management be optimised across provincial government departments in the North-West Province to enhance service delivery and lower costs?** This is further broken down into the following sub questions:

- Do ICT managers possess the appropriate skills to manage ICT to drive productivity improvement?
- Are existing ICT policies enhancing service delivery improvement?
- Is the existing ICT infrastructure appropriate for service delivery improvement?
- Is there a dedicated budget for ICT Projects?
- Are ICT procurement processes effective to enhance service delivery?
- Is the role of ICT clearly represented at senior management level?
- Is the ICT strategy aligned with the Business Strategy?
- What ICT management approach will work best for productivity improvement in the Province?

1.4 DESCRIPTION OF ICT

ICT is described as any technology that enables communication and the electronic capturing, processing and transmitting of data. These technologies include products and services such as computers, handheld devices, wired or wireless intranet, text editor, spreadsheet, enterprise data storage and network security software (Apulu & Latham, 2010:51-60). Furthermore, ICTs include numerous communications media

such as telephone and mobile telephony, radio, television, video, tele-text, voice information systems and facsimile as well as computer-mediated networks that link a personal computer to the Internet.

The above description indicates that ICT has become an indispensable component in our world today. In recent times, nearly every organisation makes use of information technology for storing, distributing and processing of information. Since ICTs have the potential to reduce costs and provide better operational efficiency, it is important that management not only focus on the technical aspect, but consider ways to manage ICT better for effective service delivery.

1.5 ICT MANAGEMENT IN NORTH-WEST PROVINCIAL DEPARTMENTS

The North-West Provincial Administration consists of 11 departments, namely: Office of the Premier, Education and Sports Development, Finance, Economy and Enterprise Development, Local Government and Human Settlements, Culture, Arts and Traditional Affairs, Public Works and Roads, Community Safety and Transport, Rural Development and Agriculture, Tourism, Social Development and Health.

The Office of the Premier centrally manages the provision of network infrastructure, internet and email connectivity. Departments are mainly responsible for the provision of desktop support. This involves fixing of computers, performing repairs, sourcing of quotations, provision of specifications for the procurement of ICT equipments, installation of software and ensuring network connectivity. As much as efforts have been made to improve service delivery through the use of ICTs, the execution of ICTs in government Departments still remains a challenge due to lack of management buy-in and ineffective policy implementation.

1.6 INFORMATION AND COMMUNICATIONS TECHNOLOGY

According to Laudon and Laudon (2011:34), information technology assists organisations to achieve operational excellence, new products, services and business models, substantial customer-supplier relationships, enhanced decision making, competitive advantage and continued existence. In addition, Adeosun (cited

by Apulu & Latham, (2010:51-60) explicates that ICTs are known for strategic management, communication, collaboration work, customers' access, managerial decision-making, data management and knowledge management.

Through the utilisation of powerful data analytics and interactive dashboards, ICT helps in the effective flow of data in organisations. This assists organisations in obtaining information at any given time which, in turn, helps these organisations reach their desired targets. In addition, ICT brings about change in businesses by making use of web-based services such as emails, Wikis, instant messages to interact with its employees and customers. Facebook and MySpace and the emergence of Cloud Computing help organisations to generate new opportunities for businesses to work in partnership with their customers and vendors. (Apu, 2012:59).

With the use of ICT, businesses can interact more efficiently, and it enables businesses to become digitally networked (Apu, 2012:127). ICT eliminates distance and time constraint in accessing required information flows and hence improves coordination of activities within organisational boundaries. It enables the transmission of organisational data that can be crucial for effective decision-making and control at all levels (Apu, 2012:109). ICT helps in organisational planning to improve organisational communication and flexibility and can be used as an enabler to turn data into meaningful information.

Fink and Disterer (2006) argue that ICT not only helps organisations to become more efficient and effective, but also helps them to become competitive. Pavic et al. (2007) indicate that organisations have the opportunity to achieve a competitive advantage from the advances in ICT through innovation, marketing, efficiency gains, better quality and customer responsiveness. Lal (2004) further indicates that web-enabled services increase the competitiveness of organisations as they change the relationship with customers and also assist to create stronger links between firms and clients. ICT helps to increase business competitiveness and enhance enterprise performance through indirect cost savings such as labour costs, increased labour productivity and direct cost such as reduction of a firm's input. In other words, it can be said that ICT can influence the performance of an enterprise in many and varied

ways. Hence, ICT can bring about change in organisations and make them more competitive, innovative and also generate growth and development.



1.7 SERVICES RENDERED BY GOVERNMENT DEPARTMENTS

'E-Governance' and 'E-Government' are terms often used to describe a government's delivery of services to its citizens through the use of ICT. E-Government focuses on the use of ICT, especially the internet, to provide services in support of government operations (Linders, 2012:446-454). The effective use of E-governance assists government departments to allow public access to information, facilitates more accessible government services, promotes more efficient and effective government and makes government more accountable to citizens, businesses and other stakeholders.

The ICT services provided by departments include network services (cabling, email and internet connectivity), voice-over internet protocol (VOIP) services and desktop support. There are also transversal systems where support is provided by Office of the Premier. According to (Molekedi, 2007), transversal systems are systems that are used across some or all departments to avoid duplication of functions. Some of the major transversal systems are: The Home Affairs National Identity System (HANIS), Integrated Justice System (IJS), Social Pension System (SOCPEN), National Transport Information System (e-NATIS) and Integrated Financial management System (IFMS).

The main transversal systems used by the provincial government are:

- Personnel and Salary System (PERSAL) – this is a human resource system for the management of leave, personnel, payroll, terminations and appointments. PERSAL has interfaces with other systems. These include financial, educational and employee institutions, medical aid and pension funds as well as automated clearing bureaux and financial systems.
- Basic accounting System (BAS): This system is used to pay suppliers and to record financial transactions. BAS was developed with the intention of providing users with a user-friendly graphic user interface in order to support the capacity-

building drive within government. The improved user interface makes it easier to absorb new employees by reducing the time it takes to study the system.

- E2 Walker System – this is a financial system that is utilised to issue purchase orders and process invoices after service has been rendered before it interfaces with BAS, and also managing inventory. It also has an Asset Management Module that keeps the Asset Registers for all provincial departments.
- Logistical Information System (LOGIS) – this is a procurement and inventory system. It is primarily used for the sourcing of quotations and assists with the rotation of suppliers.

The ability of government to stay online requires effective political leadership and long-term commitment. (Molekedi, 2007). It also involves public engagement plans for the development of human capital as well as monitoring and evaluation. Any 'E-Government' application must bring added value to individual users. It should be easy to use in terms of time, cost and effort, while user concerns about security and privacy should also be dealt with.

When users within departments have a problem, they are required to log a call through the remedy system to Central IT. The help-desk operator records the type of call (faulty network, printer or computer) and the details (email address, telephone number and Persal number) of the official. If the problem can be resolved telephonically, for instance, in the case of a faulty network, a user may have unplugged the network cable, then the help-desk operator assists the user telephonically. If not, a reference number is given to the official and the same reference number is sent to the ICT manager of the department. The ICT manager then assigns the call to a technician. If the call is resolved, it is closed by the technician within two working days; but if the call is not resolved, it is escalated to the ICT manager with reasons why it was not resolved. The ICT manager either resolves the call or escalates the call to Central IT. All incident calls must be resolved and closed within two to three working days.

The challenge amongst technicians is that calls are not closed as stipulated in the service level agreement between Central IT and the Departments. When calls are escalated, sometimes it takes close to a week or even more before a technician resolves and closes the calls. This is due to a lack of capacity at Central IT or in the

department. This manner of service delivery does not contribute to service delivery improvement within the departments. Also, users do not want to log calls due to Helpdesk operators not answering calls immediately. Sometimes the phones are engaged, which is frustrating for users. It also makes it difficult for technicians to track the number of calls logged and resolved.

For most departments, since there is no ICT manager who is able of providing strategic direction, there is no procedure manual. This manual is supposed to list the different procedures such as systems requirements for and configuration of each computer, service call procedures as well as how calls were resolved. The availability of a procedure manual will save technicians' time and assist them in resolving recurring calls and also record new procedures for resolving different calls. The manual will assist all technicians to keep abreast of emerging technology and help them to resolve calls faster. Newly-appointed technicians will also be able to learn from the manual and not have to rely on old technicians.

1.8 ICT AND BATHO PELE PRINCIPLES

The eight Batho Pele principles explained below provide a framework for the development and implementation of ICT projects to ensure that they align with the macro-objective of a transformed public service. Visser and Twinomurinzi (2008:36) argue that in order for ICTs to be effective in government, the principles of Batho Pele need to be applied. It can further be argued that even though ICT has the potential to improve the performance of government organisations, it needs to be driven by management and not by technology.

The role that ICT can play in each Batho Pele principle is explained as follows:

- **Consultation:** Citizens can be consulted through the use of electronic mail to keep them informed about consultation processes. Web portals such as Batho Pele Gateway can be used to provide access to government, White Papers and policy proposals.
- **Setting service standards:** The development of Business Intelligence software can assist citizens in completing a process such as authorising a claim, issuing a passport or identity document or responding to a query.

- **Increasing access to information:** ICTs provide the technical backbone support platforms, such as the Gateway Project, multipurpose community centres and call centres. Internet-based government-to-citizen facilities extend service provision to any place with a computer connected to a telephone line.
- **Ensuring courtesy:** Customer relationship management software can be used in call centres to provide feedback and update customers.
- **Providing information:** Information about services can be easily provided via electronic mail, by accessing websites, particularly for citizens who are far away from the point of service delivery.
- **Openness and transparency:** By utilising ICTs to provide access to information and services, the public will get to have a better understanding of the way institutions operate, how well they make use of the resources they consume and who is responsible. Citizens will be able to communicate electronically by making suggestions and raising queries where necessary.
- **Redress:** Through the use of software that can assist in monitoring performance, ICTs can be used to identify areas where there are service delivery gaps and provide recommendations for improvement. The complaints and actions taken to resolve them can be recorded and monitored electronically
- **Value for money:** ICTs can play a significant role in reducing costs by streamlining and automating organisational processes, eliminating duplication and data capturing as well as bringing services closer to citizens.

To improve ICT productivity and achieve the best results in ICT service delivery, these Batho Pele principles need to be driven hard and taken to heart by every South African government department.

1.9 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY

In recent years, there has been an increase in the adoption of ICT in organisations as the use of ICT has caused some form of revolution in business practices (Apulu, 2012). The main aim of this study is to assist provincial government departments to minimise ICT costs, improve management efficiency and effectiveness and make it convenient for government employees and citizens to access ICT services. By so doing, there will be service delivery improvement, faster service delivery and

leveraging of economies of scale by making use of existing infrastructure to provide more services.

ICTs have greatly transformed the manner in which companies conduct business. Through the use of ICT government employees can:

- Lower costs;
- Improve service delivery;
- Avoid duplication of services and tasks;
- Increase productivity;
- Leverage economies of scale;
- Encourage the adoption and diffusion of user friendly technologies; and
- Achieve faster processes

1.10 DELIMITATION

In order to give focus to this study, some limits have to be set. The study dealt generally with ICT managers and also focused only on the North-West provincial government departments in Mahikeng. The study did not go into details with regard to technical matters within ICT, but rather focused on managerial aspects, which include a review of policies, procurement processes, IT strategy, conducting ICT skills audit and, ultimately, developing an approach which to assist ICT managers to lower costs and leverage economies of scale for service delivery improvement within the provincial government.

All research has one form of limitation or the other, irrespective of who performs the research. Limitation refers to matters that limit the extent of the research. Research limitations vary from financial constraints to flaws in the research design. Since this is qualitative research, all care was be taken to ensure that interviewees provided the accurate information. For instance, some interviewees might provide information based on their feelings and perspectives, rather than on what truly exists. To counter this, interviews were carried out till saturation. Moreover, the research adopted a triangulation approach to further limit any such potential shortcoming. Two other limitations included:

- Accessibility: ICT managers are almost always busy, gaining access to them could be quite difficult. The researcher made every effort to circumvent this problem.
- Time constraints: Since the researcher is a full-time employee and the mini-dissertation is required within a strict timeline, care was taken to ensure that sufficient data required for the research were obtained within the stipulated time.

1.11 RESEARCH ETHICS

The research follows five principles of research ethics. The first four principles were laid down by Mason (1986) in Myers and Venable (2014:803). Mason listed the four principles as follows: privacy, accuracy, property and access. To these four principles, were added the issue of informed consent as shown in Table 1. The research proposal was submitted to the Faculty of Commerce and Administration, Ethics Committee for clearance.

Table 2.1: Ethical principles

➤ Ethical issue	➤ Approach adopted
➤ Privacy	➤ Appropriate safeguards were put in place to protect both individuals' (interviewees') privacy and confidentiality especially with regard to information of a commercial nature.
➤ Accuracy	➤ Every effort was made to ensure that information obtained from interviewees was accurate as far as possible. This aspect is also closely related to the demands of validity and reliability. Hoppmann, Peters, Schneider and Hoffmann (2013:994) recommend that company interviews should be alternated with additional expert interviews in order to increase internal and external validity of the research framework and reduce possible biases caused by impression management.
➤ Property	➤ All sources of information and data pertaining to intellectual property rights were duly and properly acknowledged according to the latest University rules on plagiarism.
➤ Access	➤ The finished work in the form of a Master's dissertation will be accessible to everyone with an interest in the research. An executive summary of the key findings will be made available through mass media channels.
➤ Informed consent	➤ The researcher ensured that all human subjects involved in the research were enabled, to the greatest extent possible, to freely give informed consent to participate and advised that they could withdraw their cooperation with or without any reason(s) at any time.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The effective management of ICT remains a challenge in provincial government departments. The literature review discusses some of the factors leading to these challenges. The review begins with the role of the Information Technology Officer's Council. It also took a closer look at the procurement of ICT equipments and services. The review further discusses the infrastructure, policies, recruitment and service delivery improvement within the provincial departments.

2.2 THE GOVERNMENT INFORMATION TECHNOLOGY OFFICERS' COUNCIL

In South Africa, the Minister for Public Service and Administration (MPSA) and the Department of Public Service and Administration (DPSA) are responsible for the management and functioning of departments and provinces regarding the optimal utilisation of ICT as a scarce and valuable resource to enable government to accelerate service delivery to the citizens. To achieve this responsibility, the Government Information Technology Officers' Council (GITOC) was established through Cabinet resolution 38a of August 2000. The function of the Council is to improve the co-ordination and utilisation of all national and provincial departments. These departments are assigned to Government Information Technology Officers (GITO). This role is equivalent to Chief Information Officers in private organisations. At the provincial level, there is a GITO Council, which comprises all ICT managers of the provincial government. These managers are responsible for reporting ICT progress and challenges within their respective departments to the Council.

2.3 PROCUREMENT OF ICTs

SITA is an agency of government formulated through an Act of Parliament in 1999. Its purpose is to address issues pertaining to the lack of interoperability of government systems, inadequate security and duplications. SITA serves as a

procurement agency for government for all ICT related services. All departmental ICT equipment and services are to be procured through SITA.

According to (Grandia, 2016), the more sustainable the goods and services the government buys, the greater the impact they will have on the market and the environment. However, studies show that the degree of sustainable procurement is not constant within a public organisation, but varies across procurement projects.

In the provincial departments, making use of SITA, has been a challenge. Only a few suppliers are registered on the SITA database and, therefore, sourcing of IT quotations are limited to only these suppliers. Also, the system for sourcing of quotations is outdated and, as such, quotations need to be sourced manually. This puts more pressure on technicians who still have other responsibilities. In most departments, procurement is done through Supply Chain Management (SCM) directorates. The challenge with the sourcing of IT quotations by SCM officials is that they are not skilled enough to fully understand the specifications. Therefore, in the case where suppliers choose to quote on wrong specifications, it becomes difficult for the SCM officials to recognise this. It is important that IT management in the departments get involved with the procurement of ICT equipment to improve productivity and service delivery.

2.4 SERVICE DELIVERY IMPROVEMENT

Service delivery implies utilising resources effectively and efficiently to achieve organisational goals and objectives (Chun, Kim & Lee, 2015:999-1016). In these modern times, what used to take days to accomplish can be done by just the click of a button through the use of ICTs, which have the ability to automate tasks, avoid duplications, allow for easier retrieval of information and for faster processing of information (Chowdhury, Zelenyuk, Laporte & Wodchis, 2014:74-82). By so doing, ICTs assist organisations to maximise productivity and efficiency, while reducing costs.

ICTs can be used as a business enabler to improve service delivery. Within the North-West Provincial Administration, ICTs can be utilised to integrate data silos and to streamline business processes. Externally, ICTs can extend the provision of

services to citizens and the private sector by making use of web portals, internet and other web-enabled e-Government services. ICTs have the potential to stimulate growth within the provincial government by creating job opportunities and improving competitiveness.

Through the use of ICT optimisation, government departments can make effective use of ICTs to enhance citizen satisfaction. Information technology forms the heartbeat of every organisation, especially government departments. Every government employee requires access to information technology services such as desktop support, access to email and internet, cell phones and the like. However, the challenge is whether the provincial government has the skills and competencies required for effective ICT management. This research could assist in developing a model that will ensure service delivery improvement through the use of ICTs.

2.5 ICT INFRASTRUCTURE

ICTs have permeated society to such an extent that the issue of access to ICTs is critical for economic growth and the achievement of a better life for all. ICT infrastructure is a measure of the availability and appropriateness of ICT tools, which includes hardware, software and peripheral equipment (Lu, Tsai & Wu, 2015:249-261). It also refers to the availability of internet access and other similar resources. In the North-West Province, the ICT infrastructure available in Departments includes desktop and laptop computers, printers, servers and mainframes.

One of the main infrastructure challenges in the provincial government is broadband. Broadband is defined as enabling fast and uninterrupted access to diverse services using different platforms and end-user devices (Picot & Wernick, 2007:660). Broadband infrastructure can be used as a business enabler to support numerous applications using the internet as a platform (Van der Wee, Verbrugge, Sadowski, Driesse & Pickavet, 2014:1-16). The transmission of broadband internet infrastructure can shape the nature of traditional ICT sectors such as information, entertainment, communication and media as well as other sectors and society as a whole. The availability of high bandwidth is likely to enhance business growth opportunities and bring about various kinds of social benefits. As to whether the

provincial government has the necessary infrastructure to support its citizens, it is a question yet to be answered.

2.6 ICT SKILLS

In modern days, computer systems are used to change the way work is done by organising, routinising and regularising tasks that people did more intuitively but haphazardly. Computer-based production leads to higher levels of service or even whole new services and products. According to Molekedi (2007), one of the binding constraints on economic growth is a shortage of suitable skilled labour, which affects the availability of ICT skills to capacitate and sustain the information society. Innovations in ICT have produced a growing job market and evolving technology has created a number of career opportunities in ICT arena atse, 2011:4-52).

Within the provincial departments ICT jobs include network controllers whose responsibility is to monitor the network and ensure connectivity; desktop support technicians, who provide technical support such as fixing of computers, installation of hardware and software and performing upgrades. Other ICT jobs are web developers whose responsibility is to develop websites for the various departments and also update web content. Departments such as Local Government and Human Settlements have database administrators to manage the Housing Subsidy System (HSS). Database administrators are responsible for organising data from different sources and providing record-keeping through the use of software. One critical skill lacking in the provincial government is enterprise architecture. The provincial government needs a highly-skilled architect to assist in designing business, information and ICT security architecture for provincial departments.

2.7 RECRUITMENT

Recruitment can be described as the initial step of personnel selection in an organisation and can be defined as the process of attracting capable, experienced, knowledgeable, skilled and competent individuals to fill a job (García-izquierdo, Ramos-villagrasa & Casta, 2015:155-164). When one is looking at recruitment methods today, it is important to make use of the latest technology. According to Dessler et al. (2011), most organisations are moving towards using electronic means

of social media such as Facebook, Twitter, MySpace and other internet networking sites for recruiting individuals. Advances in technology have transformed the manner in which recruitment can be handled and the past decade has seen a marked trend towards internet-based recruitment, especially among large, multinational organizations. Web-based recruiting has become popular in the light of the conveniences it offers to applicants and hiring organisations. Online tools can ease application logistics such as filling out web-based forms. This also presumably saves time and incurs lower costs in terms of time and money than mailing paper applications. Also, organizations can utilise the internet to sort through resumes and contact prospective applicants. Keramati and Salehi (2013) allude to the fact that the internet has significantly changed the way organizations present information to employment seekers. Whereas traditional recruitment practices rely largely on recruiters to convey organisational information, job seekers today rely on the internet and websites to source such information.

In the provincial government, recruitment processes remain a challenge. There are no IT systems in place to do proper recruitment. The process of selection is done manually or, at best, employees make use of word-processing applications to capture data. Online recruitment is still far from us. All applications must be completed on a Z83 form and submitted manually or posted to the relevant department.

Manual recruitment leads to government taking a long time to go through the selection process. This could take a whole week depending on the number of applicants. Sometimes, documents go missing and confidentiality remains at stake since there is no appropriate system in place. Due to the rural nature of the province, it becomes very difficult to attract the right people for the job when it comes to specialised skills such as Information Technology. The employer sometimes has no choice, but to employ an IT technician with minimal managerial skills to occupy the post. Also, employees already in Director positions do not seek better opportunities for growth and, as such, remain in the same position until age of pension. This makes it difficult for the provincial government to attract young professionals who are vibrant and willing to learn and implement new ideas. Also, due to political interference and instability, most senior level positions are usually “assigned” to

someone irrespective of their background and expertise. This is where one finds an IT manager reporting, for instance, to someone with no clue of IT-related matters.

For IT to be successful in the provincial government, it is imperative that HR appoints capable personnel who can develop policies, norms and procedures, standards, guidelines and best practices for the IT environment. The incumbent should also be able to align the department's Information and IT strategy with the strategic direction and management plans of the department, taking into consideration information, IT and business processes, with a focus on the strategic direction of the government. The incumbent should be able to create an enabling environment for the other managers to perform their functions more effectively and efficiently and change the culture of the department to embrace an enterprise-wide IT approach. This requires visible, strong and continuous support from senior managers. Managers are, therefore, required to look for personnel with the following skills and competencies:

- Strong business orientation encompassing some broad experiences in managing IT and related activities.
- Cross-functional capabilities such as a strategist and business analyst with a wide variety of skills to align the IT with the strategic direction of the department and to re-engineer business processes.
- Demonstrated ability to bring the benefits of IT to solve business issues whilst also managing costs and risk.
- Skills at identifying and evaluating new technological developments and gauging their appropriateness for the business.
- Ability to communicate with and understand the needs of non-technical internal clients.
- Strong organisational skills and the ability to manage information and IT resources, applications as well as co-ordinate divisional resources and initiatives.
- Ability to conceptualise, launch and deliver multiple IT projects on time and within budget.
- Ability to mesh well with the existing executive management team by being a good listener, a team builder and an articulate advocate of their business, information and IT service requirements.

- Understanding the underlying principles of transformation and reform. In today's high-technology-driven business environment, the issue of how to retain IT professionals remains a challenge for most organisations. Government departments spend extensive amounts of money to build IT systems and applications, but these systems become 'white elephants' after a few years due to lack of skilled professionals to maintain them. Given the importance of skilled information technology professionals, *organisations are challenged to develop effective retention strategies for their IT professionals (Ertürk & Vurgun, 2015a). How come you have this citation here and on page 30 there is Ertürk & Vurgun (2015).
- Provincial departments seek to retain IT professionals through training and development schemes. Usually, most IT officials enter the system through internship or learnership programmes. These officials are then taken for professional IT courses such as A+, N+, and MCSE. The intention is to retain these officials if there are vacancies in the department. However, the trend over the years is that substantial amounts of money are spent on training interns and they seek better opportunities in other provinces leaving the North-West Province in perpetual shortage of skilled IT professionals.
- In some departments such as Local Government and Human Settlements, employees might be trained on A+, N+, and MCSE courses, but there will be no vacancies in the department to absorb them. They, therefore, remain redundant in the same position despite their qualifications and are eventually absorbed by the private sector. Also, there is no upward mobility. Older employees do not seek to better themselves to give a chance to the younger interns to apply for positions. This becomes discouraging for junior employees who eventually leave the system. Thus, in most provincial departments, one could find a person occupying the same position for years.

In most provincial departments, Information Technology is headed by an Assistant Director. Management meetings are attended only by Directors, which means that the voice of IT is rarely heard in management meetings. Although IT technicians may

have attended courses, they are only utilised to resolve help-desk calls. As long as management and officials can connect to emails and internet and have their computers up and running, they do not care about other equally important IT matters such as backup procedures, ensuring an effective helpdesk, enterprise architecture, development of policies and frameworks that will improve the IT environment. Consequently, IT technicians rarely get a chance to put the knowledge they have acquired during the training period into practice. At best, they become 'professional technicians', eventually become bored doing one thing over and over again and seek for better opportunities outside government.

Also, in most departments, in order to save costs, training is only provided in the field of study of the employee. This means that the IT technician may never be trained on management courses, which are essential for growth. Skills such as project management, enterprise architecture and policy development are not available to IT technicians. So, even for those technicians who get the chance to be appointed to management level positions, these skills are usually lacking and they find it difficult to make effective contribution during management meetings. They are only able to discuss operational issues and confuse management with big IT terms without necessarily making any impact. When it comes to the discussion of strategic issues such as providing input into the organisational structure, development of annual performance plans, development of project portfolios and so on. the IT technician finds it difficult to provide management with the necessary guidance.

It is, therefore, important that government not only trains IT officials on technical matters, but also on managerial skills. Also,, effective recruitment of the right officials will assist in ensuring that management of IT in the provincial government is taken seriously.

According to Fu and Chen (2015:537-549), the provision of fair rewards gives an indication to employees that they are valued and important contributors to the success of their organisations. Therefore, when employees observe that they receive fair rewards, they should report greater satisfaction (Fu & Chen, 2015: 537-549). Provincial departments use the Performance Monitoring and Development System to assess employees and to provide recognition and rewards to employees.

2.8 POLICY DEVELOPMENT

Lazenby (2015:329) defines policies as specific guidelines, methods, procedures, rules, forms and administrative practices which direct the thinking, decisions and behaviour of managers and employees. Policies inform employees of what they are expected to do in order to achieve the set goals of the organisation. It is important that the policies and procedures are aligned with the organisational strategy. As such, if the strategy changes, so should the policies (Lazenby, 2015:329). According to (Arshed, Carter, & Mason, 2014), scholars have long stressed the importance of developing government policies in a way that improves the effectiveness of both government and the services it delivers to citizens. Despite these attempts to improve the quality of policy-making, problems remain. (Arshed et al., 2014) also argue that government policies are often based on unclear and distorted objectives, leading to ambiguous aims and weak monitoring and evaluation criteria.

Until 2010, there were no ICT policies in place for any department within the provincial government. The only available policy was an email and internet policy, which was developed by consultants in 2007. This posed a serious challenge in terms of productivity improvement. The IT directorates had nothing to be measured against. From 2010, auditors began to raise audit queries on the lack of IT security policy in the departments. This gave managers a wake-up call and they began the development of policies. Some of the policies developed are:

IT Security Policy: This policy is expected to provide guidelines on securing the computers and technology systems of the department against threats such as unauthorised access, sabotage, malicious misuse or inadvertent compromise. The Information Security Policy defines the roles and responsibilities associated with information security, establishes a benchmark for access to information and sets a baseline for information security standards and controls.

Governance and Management of ICT Framework: The purpose of this framework is to address issues of governance and management of ICT in the public sector. According to the framework, all ICT decisions must be taken by executive management and not left to IT managers alone. According to this framework, each department must establish ICT governance and management committees to deal

with ICT matters. One such committees is the ICT Strategic Committee, which is responsible for conceptualising and overseeing the corporate governance of ICT and the strategic alignment of ICT to the core business of the department. The next committee is the ICT Steering Committee, which has the responsibility of coordinating and overseeing the planning, implementation and execution of the corporate governance of ICT and to monitor the implementation thereof. The last of the committees is the ICT Operational Committee. It is responsible for keeping track of the day-to-day ICT service management elements as well as reporting on a monthly basis to the ICT Steering Committee on the implementation of the ICT implementation plan.

ICT Charter: The Charter depicts how the Corporate Governance ICT (CGICT) Policy will be implemented and describes the related structures, processes, functions, accountability, roles and responsibilities, delegations and reporting outputs. The objectives of the CGICT Charter are to:

- Align with the objectives of the DPSA Corporate Governance of ICT Framework;
- Incorporate the Corporate Governance of ICT as a subset of Corporate Governance in the department;
- Ensure that the ICT Director represents the ICT function at Executive Management level;
- Create business value through ICT enablement by ensuring business and ICT strategic alignment;
- Provide relevant ICT organisational structure, resources, capacity and capability to enable ICT service delivery;
- Achieve and monitor ICT service delivery performance and conformance to relevant internal and external policies, frameworks, laws, regulations, standards and practices;
- Ensure that ICT functions within acceptable levels of risk tolerance of the department; and
- Ensure that ICT projects are prioritised, aligned and monitored.

It is difficult to measure whether the development of policies alone can lead to productivity improvement in the ICT field. (Jorgenson & Vu, 2016) allude to the fact

that ICT policies must be developed in such a way that they consider not only management and regulatory factors, but also the broader spheres of the impact that the policies will have on the economy, society and governance.

In most departments, ICT policies are developed by IT managers. The policy is then distributed to all employees for inputs. Thereafter, they are taken to a departmental consultative committee where they are scrutinised and the committee is expected to assist in filling any gaps that the IT manager may have left. When all the corrections have been made, the policy is sent for approval by the head of the department. In some departments, however, policies do not go through the consultative forum. They are developed by the ICT manager and then sent for approval. When policies are developed in this manner, they do not obtain the buy-in of employees since they were not involved in the process. Therefore, implementing them becomes a great challenge.

According to Jorgenson and Vu (2016:383-397), a comprehensive ICT policy framework must include access to connectivity, cyber security, usage of equipment and new applications. However, this is not usually the case. Most of the policies are simply copied from other departments or from the internet and do not apply to the department that must abide by the policy. For instance, a department which has a server may have nothing on user access management and controls for the server. This becomes a challenge and raises adverse audit findings.

The effective formulation and implementation of ICT policies involve taking cognisance of the mission, vision and strategic objectives of the Department as well as that of provincial government. This improves innovation and also makes policies more likely to be implementable. Management is able to see IT as adding value to the department, instead of just developing a document that remains on the shelf and never gets utilised. McManners (2016 :86-92) argues that although there is growing support for the concept of sustainability there is also a large divergence between rhetoric policy and reality (practice). Consequently, government departments or IT policy-makers should develop policies in such a way that they are sustainable and implementable. It is also important that policy-makers involve all stakeholders to obtain optimum inputs before policies are sent for approval.

2.9 CONCLUSION

The literature review indicates that much still needs to be done by both management and employees to improve productivity within government departments. Areas of skills shortage, ICT alignment to strategic objectives, policy development and implementation as well as availability of the necessary infrastructure to ensure the smooth running of ICT in the provincial government are essential for service delivery improvement.

The effective use of IT requires an understanding of the organisation, management, and the technology shaping the systems. All information systems can be described as organisational and management solutions to challenges posed by employees. According to Issa-Salwe, Ahmed, Aloufi and Kabir (2010:121-128), in order to manage ICT effectively, it is important to have an appropriate strategy that defines the systems and provides means to manage them. To improve service delivery and integrate into a smoothly working business system, managers ought to align their Information Systems with the business strategy (Sabherwal & Chan, 2001:11-33).

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

Broadly speaking, there are two types of research methodologies, namely: qualitative and quantitative. Both qualitative and quantitative methodologies make use of analytical techniques and processes to review the data (Krishnan, Adam, & Kaplin, 2004:1483-1499). In this research study, the qualitative research methodology was utilised.

Qualitative research is aimed at gaining a deep understanding of a specific organisation or event, rather than a surface description of a large sample of a population. It aims to provide an explicit rendering of the structure, order and broad patterns found among a group of participants.

Boyce and Neale (2006:3) explain in-depth interviewing as a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents. By using this method, one is able to explore the respondents' perspectives regarding the role of ICT management. Arshed et al. (2014) perceive in-depth interviews as being the most effective method of gathering data, which allows exploration of behaviour, attitudes and needs of individuals. In-depth interviews were utilised to obtain a comprehensive understanding of how management view ICT in the provincial government.

Document analysis is a form of qualitative research method in which documents are interpreted to provide meaning around an assessment topic. The researcher made use of audit reports obtained from internal audit as well as from the Auditor-General for use in document analysis. The purpose was to determine whether audit findings were taken seriously by management.

The Delphi method is a group decision-making process where, through iterative feedback, the opinions of a panel of experts are elicited and consensus is reached. The method has been used in a wide variety of disciplines including public administration, social work, operations management and information systems, to

name just a few (Keil, Lee & Deng, 2013). The Delphi technique is widely used for gathering data from respondents within their field of expertise (Hsu & Sandford, 2007). The purpose of utilising this technique is to help to enhance effective decision-making in the ICT arena of the provincial government.

The Delphi method begins with the selection of domain experts to form a panel. Each panelist is then asked to provide input regarding the problem area of interest. The inputs from the panelists are collected and then aggregated into a list of unique items. These items are then presented back to the panelists for ranking. The mean rank for each item is then computed and the ranked list is presented to each panelist along with his/her original rankings for comparison purposes. This ranking process continues in an iterative fashion until an acceptable level of group consensus is reached (Keil et al., 2013:398-414).

The Delphi technique method was used to interview experts in the field of Information Technology in order to achieve a convergence of opinion regarding the real-world knowledge of ICT. These experts included Internal audit, network, helpdesk operators as well as server and infrastructure experts.

3.2 INTERVIEWEES

Ten interviews were conducted. The respondents were interviewed in their offices or any suitable place that was deemed private, but secure and comfortable. The respondents consisted of IT managers from the 11 provincial departments. A one-on-one process was undertaken in which individuals were directly confronted with questions. The questions did not only seek information and opinions, but also allowed the interviewer to probe the richness of emotions and motivations related to the topic. This in-depth interview method assisted in clarifying goals, objectives, attitudes and motivations pertaining to ICT management in the North-West Provincial Administration.

The decision to participate in this study was entirely up to the respondents. They had the right to refuse to take part in the interview at any time without affecting their rapport with the interviewer or North-West University.

The GITO Council oversees all ICT decisions in the provincial government and gives a report to the Provincial Executive Council (EXCO). The GITO Council comprises ICT managers within the different departments. The Council is responsible for developing all provincial ICT policies, reviewing and resolving audit queries, and providing technical advice to the EXCO. Since this research is mainly based on the management of ICT within the provincial government, it was imperative that members of the GITO Council, which comprises the Chairperson, ICT managers of the departments and the Manager for Provincial Internal Audit be interviewed.

Acemoglu and Autor (2011:1043-1171) describe a skilled worker as someone who is endowed with capabilities for performing various tasks. They further explain that workers apply their skills endowments to tasks in exchange for wages and skills applied to tasks produce output. The distinction between skills and tasks becomes particularly relevant when workers of a given skill level are able to perform a variety of tasks and change the set of tasks that they perform in response to changes in labour market conditions and technology.

The first interview question centred on personnel, skills and training. As alluded to in the literature review, finding appropriate personnel with the right skills in the provincial government for ICT is not always easy (Ertürk & Vurgun, 2015:34-36). Whether a technician possesses the necessary managerial skills was also something to be considered. The question was intended to determine whether ICT managers possess the appropriate skills to manage ICT to drive service delivery improvement in government departments. Also, due to the fact that technology is constantly changing, if appointed personnel are not trained on a regular basis to update themselves, they will eventually be inefficient. Therefore, identifying how often officials are trained was intended to assist in making appropriate recommendations that could assist the IT department deliver services effectively. In addition, the number of skilled officials within the ICT component determines how effectively services are delivered. Most departments in the provincial government operate from decentralised buildings. As such, technicians are required to travel on a daily basis to provide support to officials. The more technicians a department has, the more effectively they are able to deliver the services required. In other words,

delays in responding to service calls logged are inversely related to the number of officials employed to provide support in the various buildings.

Since ICT is highly technical, one cannot appoint unskilled technicians to do the work at hand. Also, having the appropriate skills will be crucial to enhancing effective service delivery in the provincial government. Skilled personnel required in the North-West provincial government include Web Developers, Network Technicians, Server Operators, Database Administrators and other scarce skills such as enterprise architecture. For instance, an IT technician attending training on affirmative action throughout the year will not enhance his/her skills level in any way. A challenge one might face, however, is that technicians might leave after they have been provided with more appropriate skills. This can, however, be managed by providing the appropriate incentives to keep employees happy within their environment.

According to Ertürk and Vurgun (2015:34-46), the issue of how to retain ICT professionals has received relatively little attention. In today's high-technology-driven business environment, the importance of acquiring skilled information technology professionals must be given high priority across government departments.

The second interview question focused on policies. The literature review stresses the importance of policy development and aligning policy to strategy (Lazenby, 2015 : 329-338). It also indicates that as the strategy of an organisation changes, so should its policies (McManners, 2016). The question on policies was used to assess existing policies within a particular department as well as determine whether these policies are effective in enhancing service delivery. According to Baskerville and Siponen (2002:337-346), an information security policy should contain aspects such as technical computer security and non-technical security management. Therefore, the adoption of a general information security policy across departments may fail to pay attention to the fact that organisations differ and their security requirements can also differ (Baskerville & Siponen, 2002:337-346). It was important to ascertain whether policies were developed to the specific needs of departments involved or not and provide the necessary recommendations.

The question on policies was also used to check whether policies were developed in-house or outsourced, the reason being that if they are outsourced, perhaps the

department does not have the necessary capabilities or skilled technicians to develop policies in-house. Whether policies are being implemented effectively was also ascertained, paving the way for recommendations to be made to other departments struggling with policy implementation. There was also a need to identify departments facing challenges in policy development and implementation. Overall, the question on policies was to assist in finding out whether existing ICT policies are conducive to effective service delivery within the North-West provincial administration.

The third interview question dealt with infrastructure. The purpose of asking the question on infrastructure was to assess whether departments have the necessary underlying infrastructure to assist in delivering effective ICT services. A department may have the best policies in place and even the right personnel, but without the necessary ICT infrastructure, it cannot deliver the services required to citizens. Also, how often the infrastructure is upgraded is important in ensuring that service is delivered efficiently. Finding out the current infrastructure challenges was intended to assist in providing useful recommendations to management.

According to Mirchandani and Lederer (2014:622-633), effective strategic information systems planning can assist managers to decide on new infrastructure that best supports them in accomplishing their business goals and objectives. Ineffective planning for infrastructure can lead to a waste of scarce resources and fail to provide support that meets the objectives of the organisation. Planning for infrastructure systems is essential to enabling managers to achieve their goals. Departments must not only perform planning for the information technology itself, but also for the personnel responsible for managing, developing and using the technology as well as the procedures for managing, developing and using it (Mirchandani & Lederer, 2014:622-633).

Planning for infrastructure development has, in fact, remained one of the most critical challenges throughout government departments. Core infrastructure is expensive, complex and increasingly dependent on information systems. The first purpose of this question was to determine whether departments respond to that complexity with information systems planning. From a theoretical perspective, the results could enhance our understanding of planning behaviour in response to the activities within

departments. The second purpose of the question was to determine if planning is effective. From a practical perspective, results might contribute by helping departments to decide on how it might change its planning on infrastructure development.

The fourth interview question was centered on ICT Projects. Research indicates that success in managing ICT projects requires a great deal of coordination and collaboration, which can be obtained through established processes, strong teams and involvement of stakeholders (Patanakul, 2014:21-35). Even though these processes and approaches are known, effectively implementing them is very difficult.

Effective project management begins with proper feasibility studies where the scope of the project is agreed upon with the project manager. It proceeds to effective planning and execution of the project. For the project to be successful, there is a need for a proper close-out phase where the project is handed over to the department.

The objective of this question was to identify whether departments have an approved project plan in place. It also aimed at investigating the management of IS/IT projects in the departments in order to identify common problems and causes leading to poor performance.

The fifth interview question was on budget availability. Organisations of all types struggle with IT budgeting. This is usually because the IT team does not understand the budgeting process and the finance team does not understand IT. This situation can be remedied by changing the department's approach to IT budgeting from merely an annual "make it fit" exercise to a meaningful planning and ongoing management process. This shift requires that senior management work together with the Chief Information Officer to define IT's role in achieving the department's objectives, that is, transforming IT from a cost centre into an investment.

The answer to this question assisted in determining whether IT is taken seriously by senior management.

The sixth interview question was on procurement was aimed at identifying the procurement process within departments, ascertaining the effectiveness of the procurement process and checking with ICT officials what they thought must be done differently to improve the procurement processes. As indicated in the literature review, ICT procurement is done through Supply Chain Management directorates and quotations are sourced through SITA. This question sought to identify the challenges encountered by both Supply Chain Management and IT officials and to make recommendations based on these challenges.

In the provincial departments, transversal services include BAS and PERSAL, Email and Internet services. These services are provided to all departments via the Provincial IT, which resides in the Office of the Premier. In addition to this, departments require other services depending on their mandates. Not all these services are budgeted for by Provincial IT. Departments may, therefore, have to enter into Service Level Agreements (SLAs) with other service providers in order to obtain the services specific to their operations.

The purpose of the seventh question was two-fold: first, to ascertain the type of services required by departments and whether there are appropriate SLAs in place to assist in making recommendations on shared services required by other departments; and, secondly, to determine the quality of services provided by the provincial IT and IT officials in the department. This is important in assessing whether the departmental officials and managers are receiving value for IT services or not.

3.9 CONCLUSION

The interview questions indicated how ICTs can be utilised to improve service delivery in the North-West Provincial Administration. Each question asked was clearly analysed. The questions depict the utilisation of ICT management in the provincial government. The interview questions were objective and allowed the interviewees a chance to express themselves in a manner that could assist in providing an ICT management approach that could work to enhance IT service delivery in the North-West provincial departments in Mahikeng.

CHAPTER 4

STATEMENT OF RESULTS

4.1 INTRODUCTION

This chapter presents the findings of the research and provides an analysis of the results. The results are presented according to responses to questions asked on specific issues during the interviews.

4.2 PERSONNEL, SKILLS AND TRAINING

In this area, it was found that the number of personnel required for IT support in most departments was insufficient. For instance, some respondents indicated that there were four IT officials providing support to as many as seven hundred and fifty employees. This amounts to one IT official supporting as many as forty employees. In one department, there were only three IT officials responsible for supporting a staff complement of about two hundred officials, which puts too much pressure on the IT officials and, as such, they are unable to do their work effectively. Some of calls are delayed as a result of lack of sufficient personnel. IT managers indicated that they do not have enough resources to support the departments. They also alluded that not enough time is allocated to calls logged. One technician may be assigned projects and, at the same time, required to resolve service calls. The users tend to suffer as a result of low staff components. This leads to a delay in overall service delivery whereby milestones for projects are not met and calls are also not resolved effectively.

Although some managers indicated that some of the officials were still on probation and required further training, most respondents indicated that IT officials possessed the necessary skills to deliver services effectively. In some departments, IT officials are not sent on IT training. Other managers indicated that IT technicians are sent on training, but the training is not IT-related. Some are sent on hearing procedure courses, which does not have anything to with IT. Yearly, officials complete the personal development programme, but the training unit decides to send officials on different courses. Human Resource Development has its own programme required

for the department such as Advanced Management Development, which is budgeted for. Others indicated that although IT officials may be taken to technical courses, they are generally not sent on management courses such as COBIT 5 and ITIL. This keeps IT at the level of technical work and, consequently, the officials lack managerial skills. Almost all interviewees indicated that IT officials are sent on training only once a year or, at most, twice a year. The department of Finance however, indicated that its entire IT staff had been sent on COBIT 5 training. This was to prepare them towards strategic thinking and ability to putting into effect the management of Corporate Governance of ICT.

In terms of filling of vacant posts, IT managers indicated that it is difficult to make inputs into the organisational structure. Some managers indicated that due to the level of IT within the department, its officials are not contacted to provide input into the structure?. Other managers indicated that HR tends to give priority to core function posts rather than posts pertaining to support functions, while others indicated that the organisational structure lacks funding for vacant posts and, therefore, critical positions such as IT management posts are not filled. This puts a lot more pressure on IT technicians to perform both management and technical duties.

4.3 POLICIES

In terms of policies and frameworks, managers outlined the policies in their departments, such as Email and Internet policies, IT security policies and Corporate Governance of ICT charter. Most departments indicated that the policies were effective for service delivery. Some of the IT managers however, indicated that policies were a mere copy and paste from the internet and also that they were not effectively monitored. As such, they were not effective for enhancing service delivery. Also, some transversal policies were not customised to departmental needs and it is difficult for specific departments to implement. It was also interesting to know that most policies within departments were developed in-house. Only a few policies were outsourced, including the Road Asset Management System. Also, it was found that the departmental policies were approved by management. The implementation of the policies differed within departments. Some departments implemented the policies through electronic mail communication. Other managers

indicated that policy implementers were work-shopped and they, in turn, transferred the knowledge to other officials. Some departments also placed the policies on departmental websites in order to inform users. Still, others indicated that the policies were presented to committees such as the steering and strategic committees and the GITO Council.

The policy challenge faced by most departments is the lack of understanding of the importance of these policies. Also, organisational culture has a major effect, whereby policies are merely developed for compliance and, as such, not enforced. IT managers also indicated that although management had approved these policies, implementation and constant monitoring remained a challenge. Others also indicated that policies were not amended when there were changes in the department. This renders the existing policies ineffective.

4.4 INFRASTRUCTURE

It was found that departments did not have appropriate infrastructure in place to enhance service delivery. Managers indicated that the infrastructure was too old and had not been upgraded over the years. Managers with regional offices indicated that the infrastructure only benefited those in major towns whereas those in villages struggled for network infrastructure. Some departments indicated that no steps at all were taken made to upgrade IT infrastructure.

IT managers indicated that network was down from time to time due to a lack of modern and appropriate infrastructure. Most indicated that infrastructure was upgraded after five years or more. Some indicated that IT is not taken seriously by senior management and, therefore, matters of Infrastructure upgrade are not discussed in top management meetings. As long as managers had access to email and the Internet, this seems to be enough for them.

Departments are not responsible for underlying Infrastructure, which is centralised. Some IT managers indicated that provincial IT takes long to respond to changes requested and departments are not responsible for budgeting for the infrastructure. Some indicated that centralisation of infrastructure was a problem. Technicians are not informed if there are any changes to infrastructure. Departments are also not

informed when there is a breakdown in infrastructure. There is no effective communication between where services are centrally managed and the departments. Some departments strive to pay suppliers within 30 days as required by the PFMA and this delays service delivery.

Departments indicated that due to the lack of appropriate infrastructure, new IT projects are delayed or cannot be implemented. Also, there are only a few skilled officials to support infrastructure facilities for the entire provincial government. As a result, departmental servers can only be housed by central IT. This means that backups and maintenance of departmental servers still remain the responsibility of departments, whereas what most departments really need is hosting facilities where their servers are stored, maintained and backed up by central IT. This issue of housing raises audit queries for various departments.

4.5 IT PROJECTS

In terms of projects, most departments indicated that there was an IT project plan in place. However, the plan was documented merely for the purpose of compliance and, as such, it is not being implemented by top management. Also, some indicated that the project plan had been developed in-house. One department, however, indicated that IT projects were outsourced. The IT manager also indicated that the project plan was not effectively communicated to all stakeholders and that, even when communicated, there was no management buy-in.

IT managers indicated that IT projects are usually not successful. The main reasons for this are poor planning and lack of sufficient budget to implement these projects. Additionally, the managers indicated that stakeholder engagement was lacking in most cases. Further, lack of understanding of IT projects by top management still remains a challenge. From a central point of view, the projects outlined for the provincial government include modernisation of the data centre and rolling out of broadband and smartGov solutions such as leave management, e-submissions deemed necessary.

It was also found that one of the main problems leading to the failure of IT projects is a shortage of project management skills in departments. In addition, the entire

provincial government lacks skills in enterprise architecture. The lack of enterprise architecture obviously leads to a failure of IT projects since the projects are not aligned to departmental business processes. Also, there is a lack of effective communication amongst IT managers. Departments implement their own projects without consultation with the GITO council. IT managers on the council feel they are not adequately informed by the council of projects that are in the pipeline. This silo way of working causes departments to be unaware of what other departments are implementing or intend to implement. This usually leads to a duplication of systems. For instance, some departments are paying a provincial licence for systems that could most assuredly assist the entire provincial government with solutions such as leave and case management, but due to lack of effective communication, other departments procure a licence for the same kind of services.

4.5 BUDGET

In this area, it was found that IT budgets are decentralised. Except for Office of the Premier, there were only two other departments with a dedicated IT budget. Also, the centralised budget from the Office of the Premier is only enough to pay for services such as maintenance costs and licence fees. Thus provincial IT is only managing to keep the lights on for the entire provincial government. Compared to the Western Cape, the IT budget for the North-West Province is meagre.

In most departments, the IT budget is only meant for the procurement of IT equipment for officials. Systems and projects that require substantial amounts of money are not catered for. Some IT managers indicated that they are not involved during budget allocation and, as such, departments cannot allocate adequate budgets to various IT projects. Also, the IT budget is sourced from other programmes. In the Supply Chain Management Directorate, the IT budget is combined with that of furniture, making it difficult to know exactly how much is allocated to IT.

The lack of sufficient budget in the entire provincial government leads to delays in implementing most IT projects. As a matter of fact, some of these projects may never materialise. Also, it is difficult for the provincial government to make provision for the appointment of scarce-skilled personnel such as project managers and enterprise

architects. When these officials are appointed, the provincial government is unable to retain them and, consequently, they leave before implementing what they were really appointed to do.

4.6 PROCUREMENT

The main findings for procurement were that IT procurement for most departments is handled by the Supply Chain Management Directorate. In some departments, the specifications are sourced by the IT section and then given to the Supply Chain Management Unit to continue with the sourcing of quotations, printing of the order and payment of the suppliers.

Another finding was that in some departments the entire process, which ranges from sourcing of quotations to receiving of the equipment and payment of suppliers, is handled by the Supply Chain Management Directorate. IT managers indicated that the procurement process is tedious and inflexible. IT managers ascertained that the turnaround time for requesting and receiving IT equipment is one to three months. In other departments, for instance, the request must be approved by the head of department before IT and supply chain can proceed with procurement process. IT managers indicated that there is usually a lack of communication between finance, supply chain and the IT unit. For instance, due to the technical nature of IT resources, the SCM unit normally sources wrong quotations which, if not checked and rectified in time, leads to the supplier delivering equipment with wrong specifications. This further delays the turnaround time as the equipment has to be returned and, in some cases, the procurement process will have to be repeated.

It was also found that, in some cases, the suppliers themselves do not have adequate understanding of technical issues. Some have only been in the business for a year or two and, as such, do not have technical background whatsoever to handle IT specifications. For instance, one supplier may quote an all-in-one printer for less than a R1000.00, whereas the same supplier will quote a black and white printer for R10, 000.00. This clearly indicates that the supplier is not well-versed in IT matters, thus, leading to further delays. Further, it was also found that there is poor communication between SITA and departments. In most cases, departments are not informed in advance when SITA contracts expire.

4.7 IT SERVICES

The IT services provided by central IT include network support, email and internet services, web support and customer service. Departments provide their own desk-top support. All departments, therefore, have a number of technicians for these services. IT managers indicated that the services provided are appropriate to enhance service delivery. The challenge, however, is that there is a lack of capacity for additional services such as offsite web-hosting facilities or an integrated financial management system. Some managers further indicated that the services are not enough to meet their departmental demands. For instance, services such as Geographic Information Systems (GIS) are not provided for the entire provincial government. However, several departments require these services for effective service delivery.

IT managers indicated that there is an SLA between OTP and the provincial government departments. IT managers indicated that the SLAs are not effectively monitored. The SLA between OTP and the departments is not monetary-based, but with other service providers it is. SLA meetings are held on a quarterly basis and with other service providers it is bi-monthly.

4.8 IT STRATEGY

In terms of strategy, all IT managers indicated that the IT strategy is in place. They also indicated that the IT strategy is aligned to their departmental business objectives. Managers also said that the strategy had been approved by senior management. Some also indicated that the strategy was implemented through the operational plans of departments. In the Office of the Premier, the strategy is developed through the shared services model. Managers indicated that the strategy was derived from departmental strategic and work plans.

The common challenge, as indicated by most IT managers, is that there is not enough budget to implement the projects outlined in the IT strategy. Also, managers tend to prioritise long-term projects, which delays implementation of short-term projects. The shared services model is only being implemented in central IT and not yet cascaded to departments. There is, therefore, a silo operation amongst IT

managers and, as such, departments are implementing their own projects that could have been catered for in the shared services model.

The other challenge is that although some departments may have licences for software with service providers, the underlying infrastructure is not conducive to building any solutions. Therefore, it leads to fruitless planning. IT managers also indicated that there was a shortage of skills to implement some of the projects. As a result, most projects are not being implemented. For instance, some indicated that departmental specific projects such as GIS could not be implemented due to the shortage of skills in this field. Sadly, most departments had not even begun implementing any projects in their IT strategic plan due to these challenges. Others also indicated that there is no effective communication of the strategy to other units and amongst managers. Some managers mentioned that departments do not have a project plan for the projects in the IT strategic plan. Also, managers indicated that benchmarking with other provincial governments in terms of strategy implementation is lacking. Departments that are unsuccessful are also not benchmarking with other successful departments for improvement of their strategy. Therefore, the strategy remains only a document for compliance and ineffective.

4.9 ICT GOVERNANCE

In terms of ICT governance, some respondents indicated that the governance structures were in place. Governance structures include: ICT strategic committees, ICT steering committee and ICT operational Committees. Some indicated that not all of these committees were functional. In most of the departments not all the committees were functional although established. For instance, some respondents indicated that only the strategic committees were functional, whereas others indicated that the operational and steering committees were more successful than the strategic committees.

The respondents indicated that the common challenge faced by their departments was that the committees do not sit regularly. It is difficult to find members since they are busy with other commitments and, as such, do not prioritise the ICT committee meetings. This makes the structures dysfunctional and ineffective because meetings cannot take place if the members do not constitute a quorum. Other IT managers

ascertained that the DITO position was vacant. As a result, there is no people in the departments to drive the ICT committees. IT managers also indicated that the committees are not effective due to lack of senior management representation. Also, some indicated that the committees consist of officials at lower levels who find it difficult to drive ICT strategic matters.

4.10 CONCLUSION

The findings indicate that the provincial government still has much work to do in terms of the questions posed. Although some work has been done to ensure that ICT strategy and policies have been developed, implementation of the ICT strategy by management and the policy by employees still remains a challenge.

CHAPTER 5

RECOMMENDATIONS

5.1 INTRODUCTION

The research findings in the previous chapter fulfil the aims and objectives outlined in Chapter 1 of this study. This Chapter makes recommendations based on the results of the research findings. The recommendations are based on suggestions from specialised sources such as Supply Chain Management for procurement of IT services, Infrastructure Management of the North-West Provincial Administration, internal audit findings as well as Monitoring Performance and Assessment Tool (MPAT) and the Auditor-General's findings on the departments.

5.2. CONCLUSIONS

The general conclusions include avoidance of silo operation by all departmental IT managers. Managers need to communicate regularly to avoid duplication of resources and systems. Also, the government needs to make resources available to procure new infrastructure for the province as well as to ensure that the right skilled labour is appointed at senior management level in order to ensure effective ICT representation. Effective procurement processes should also be put in place to ensure that the right services are delivered.

5.3 RECOMMENDATIONS

The following recommendations, for short- or long-term, are critical for ensuring the successful, effective and efficient ICT service delivery in the North-West Provincial Administration.

5.3.1 AVOID SILO OPERATIONS

From the research findings, it is clear there is no effective communication amongst IT managers. For instance, there are systems in departments that other departments are not aware of. In order to ensure effective and efficient operations within the

North-West Provincial Administration, it is recommended that IT managers avoid working in silos. Cilliers et al. (2012:1-9) refer to a silo mentality as feelings of disconnection; a situation where the left hand does not know what the right hand is doing. It is described as a situation of stuckness, isolation and powerlessness, lack of trust, respect, collaboration and collegiality (Cilliers et al., 2012). Based on this description, each department should ensure it communicates its services through the GITO council, at least, on a quarterly basis. This will avoid unnecessary duplication of systems, thereby reducing cost. Also, effective implementation of shared services model will ensure that departments obtain resources from other departments without having to procure the same services individually.

Figure 5.1 presents an effective communications model for provincial departments and Office of the Premier.

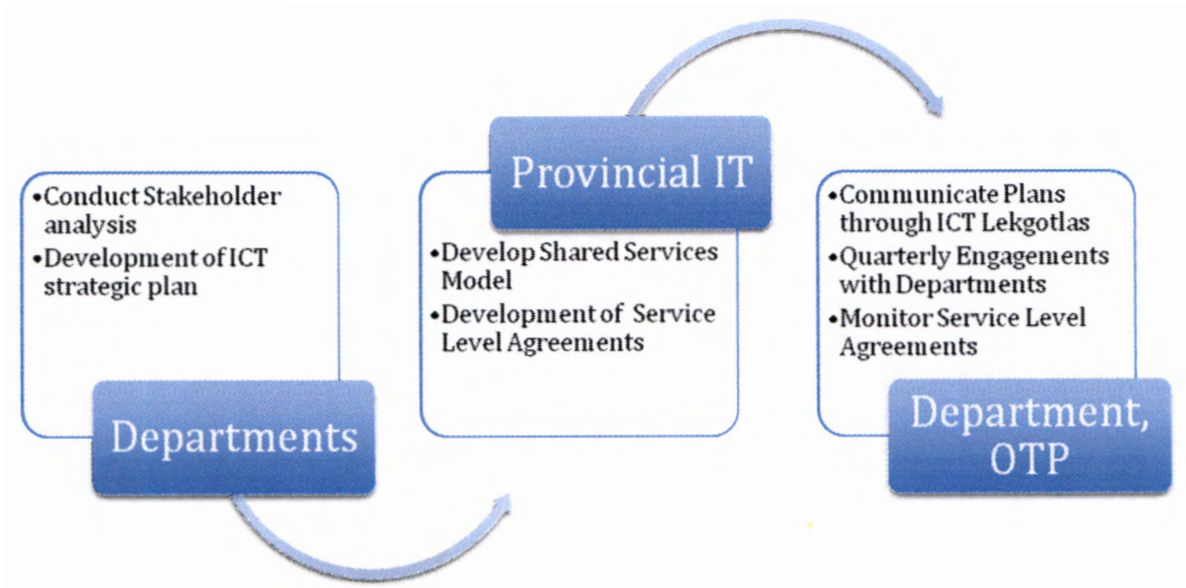


Figure 5.1: Communications Model

5.3.2 STAKEHOLDER ENGAGEMENT

It is also recommended that stakeholder engagements be conducted on a regular basis. For instance, IT managers should be made aware of IT services that are available to them within the provincial government. This could be done through service level agreements between Office of the Premier and departments. The service level agreements should be monitored on a quarterly basis to ensure that services are, indeed, being rendered as agreed upon. The provincial government could also conduct bi-annual ICT lekgotlas for the North-West Province, which could provide added advantage. In addition, IT technicians should be informed of changes that take place on the provincial network in order to effect the necessary changes, especially on the wide area network (WAN) side. It should not be assumed that technicians will automatically pick up these changes. IT managers should, in turn, ensure that all stakeholders are contacted in order to identify resources such as hardware, systems and software required by the respective departments. The results of stakeholder analysis should be communicated to the Office of the Premier. Also, all systems required should be documented in the ICT strategic plan.

5.3.3 ENSURE BUDGET AVAILABILITY

It is recommended that IT budget is made available for IT projects that are beneficial to departments and to the province. IT budget involves the allocation of monetary resources to diverse IT programmes. For IT managers who are not conversant with the justification process that accompanies budgeting, this exercise can be tedious. Where there is no dedicated budget for IT, one may be pressurised to request and justify every IT expenditure as it occurs, which makes for significant unnecessary overheads. IT budgeting for departments should not be for the procurement of computers only. It should range from hardware and software leases and procurement of systems to enhance effective service delivery. The IT budget should also include staffing and other expenses such as a fixed duration of a project or initiative.

Budgeting for IT is essential as it provides funding to keep the technology of the provincial government running. Over and above just "keeping the lights on", budgeting effectively for IT is essential for identifying and executing IT initiatives that

are crucial to the provincial government. It is important for IT managers to involve everyone from line managers to consultants who could have a hand in preparing the budget. Activities employees and consultants will be engaged in during the year should be clearly defined by the budget. The IT budget is, therefore, a vital document that takes IT priorities from concept through to execution.

The IT manager should avoid attempting to secure a maximum amount of money. Rather, the budget should be considered as a true manifestation of the IT strategy. For instance, if the IT strategy includes a project of migrating infrastructure to the cloud, it is important to highlight the operational savings of this project. The budget should reflect those savings, which can be used as justification for increased project expenses elsewhere. In short, every line item in the budget should tell a story that maps back to the IT strategy. If a good job has been done in communicating and sharing the IT strategy, it will shift the budgetary process from tweaking amounts to justifying whole categories of spending.

In order to get the budget process right, it is important to consider how intensely the IT budget can affect the department at all levels and put the appropriate time and diligence into its preparation. Budgeting should not be seen as a painful administrative process, but rather as the financial manifestation of the IT strategy and direction the department will take over the coming year. Ideally, the process of planning for the IT budget should begin immediately after the previous budget is approved and leveraging the past budget as a starting point. It is also critical to monitor the spending against the previous year's budget and, where there are variances, to allocate funds more effectively and use them as input to an ongoing draft budget.

Figure 5.2 shows a list of items to be considered when budgeting for IT.

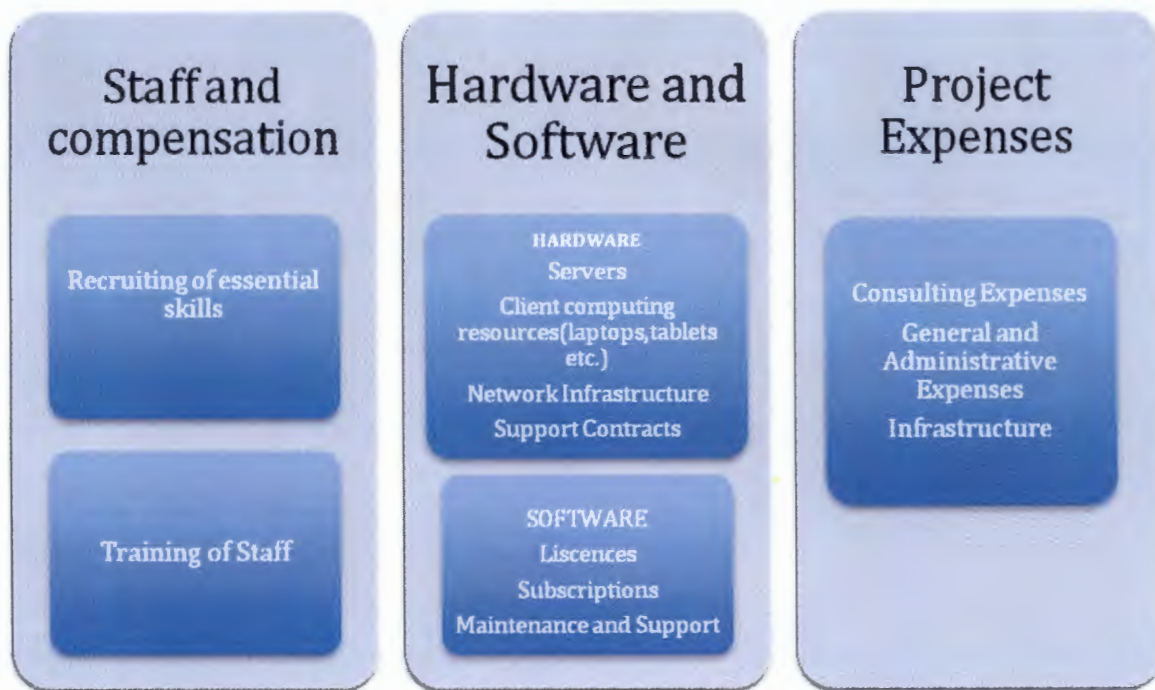


Figure 5.2: Budget List

It is important for the provincial government to prepare budgets for IT as a whole. Since the provincial government IT is centralised, services such as server housing and hosting, cloud computing and other essential services required by all departments could be centralised into one budget. Unlike the Western Cape, the budget for IT in the North-West Province is only essential for “keeping the lights on”. It is now time for the provincial government to allocate a suitable budget that will ensure that the necessary underlying infrastructure required is put in place.

5.3.4 UPGRADE THE INFRASTRUCTURE

Consequently, it is recommended that a thorough risk analysis be conducted focusing on the impact of expected benefits not being realized*, vis-à-vis other potential risks, including cost overruns and impact on other systems or departments.

The indispensable backbone for enterprise-wide digital transformation is Advanced Information Technology services are a journey that enables enterprises to remain competitive in a dynamic market (Scaramella et al., 2016:1). As departments undertake initiatives such as social media-focused communications, connected devices and analytics-driven business processes in the quest to drive superior strategic outcomes, IT is required as a trusted partner to deliver this superior service

quality experience. In theory, with the right infrastructure in place, it is easy for departments to meet the demand for stringent and consistent service quality required by internal and external stakeholders. In reality, however, provincial government IT struggles on this front. One of the key culprits identified is an aging infrastructure that continues to grow in scale and complexity as more and more applications are piled on it. The inability of central IT to meet departmental needs results in frustrated users which, in turn, leads to higher costs and delay in the implementation of IT strategy.

According to Scaramella et. al., (2016:1), organisations can lose up to 39% of peak performance and add up to 49% in application management cost and up to 148% in server administration costs by neglecting to upgrade server infrastructure in a timely fashion. The benefits of upgrading underlying IT infrastructure regularly far outweigh the risks. Provincial government IT, in conjunction with departmental IT managers, must consider new technology solutions that will help to address the demands of users and seek to achieve improved IT management capabilities, automated and preventive support solutions, and integrated tools required to better monitor the IT environment.

IT managers need to realise that ICT is in a state of constant transition. This paradigm shift to the next era of computing is driven by innovations in social technologies, big data, mobility and cloud computing. Departments in the North-West Province are at the beginning stages of this digital transformation with IT as the key player. Progressive enterprises are seeking to leverage third-platform technologies to create new business opportunities and competitive differentiation through new products and services, new business models and new ways of engaging customers. In a sharp departure from the traditional role of supporting business operations, IT managers in the North-West are required to drive business opportunities with IT. Noticeably, IT capabilities have become a critical factor to the success of any business. This requires provincial IT to run a reliable and agile IT environment. The GITO has the responsibility of upgrading the data centre with modern infrastructure, which consists of the latest generation of server technology.

Information technology in the provincial government needs to deliver mobile and cloud capabilities to applications in addition to managing new service models. It is, therefore, essential for IT staff to be outstanding multi-taskers to handle all that is

expected of them. Among their many tasks, IT managers must have the knowledge and skills to account for maintaining the life-cycle schedule of IT. In reality, updating IT infrastructure at a pace that keeps up with today's accelerating competitive environment is imperative to delivering value to the business. In effect, IT drives business opportunity and a lack of change within the IT environment is a risk factor for significant economic loss.

It is a common practice to install new infrastructure and end up maintaining the old one for a long time or install a new technology and discover that a new version supersedes it in short order. Therefore, while benefits can be expected from new infrastructure, there is always a risk that those benefits will not be realised. Consequently, it is recommended that a thorough risk analysis be conducted focusing on the impact of expected benefits not being realised, vis-à-vis other potential risks, including cost overruns and impact on other systems or departments. The risk analysis should be done with IT managers and relevant staff from provincial departments to avoid surprises and, ultimately, achieve the objective of the upgrade.

Budget constraints are the primary reason the provincial government is slow in adopting new systems. Overburdened IT staff is also an inhibiting factor. The subsequent migration of applications and data as well as retirement of old systems and deployment of new systems are time-consuming tasks. As provincial government IT looks to modernise the data centre, it is essential to invest in systems that can be deployed quickly and correctly, fully optimised and supported, and operating at peak performance. Despite the challenges, there are profound business and technology reasons provincial government IT should pursue a more proactive approach in modernisation of the provincial data-centre.

5.3.5 DECENTRALISE IT PROCUREMENT

One of the main challenges identified was lack of IT involvement throughout the procurement process, which delays the entire process of procurement and, sometimes, the wrong equipment is even delivered. It is recommended that a person knowledgeable in IT, for instance an IT technician, be trained in E-procurement, who will then assist in sourcing quotations. After this, the quotations should be verified by SCM, an order issued by SCM and then sent to the supplier. The timelines should be

agreed upon between the supplier and the department to avoid delays. Upon receipt, the items should be verified by both the IT and Asset Management sections within SCM. Payment should only be made when IT and Asset Management have confirmed that the correct equipment has been delivered. Also, the head of department should delegate the responsibility of approving IT equipment and systems to the departmental Information Technology officer. This will reduce unnecessary duplication and save time. Figure 5.3 suggests a simple process flow for procurement.

IT PROCUREMENT PROCESS FLOW

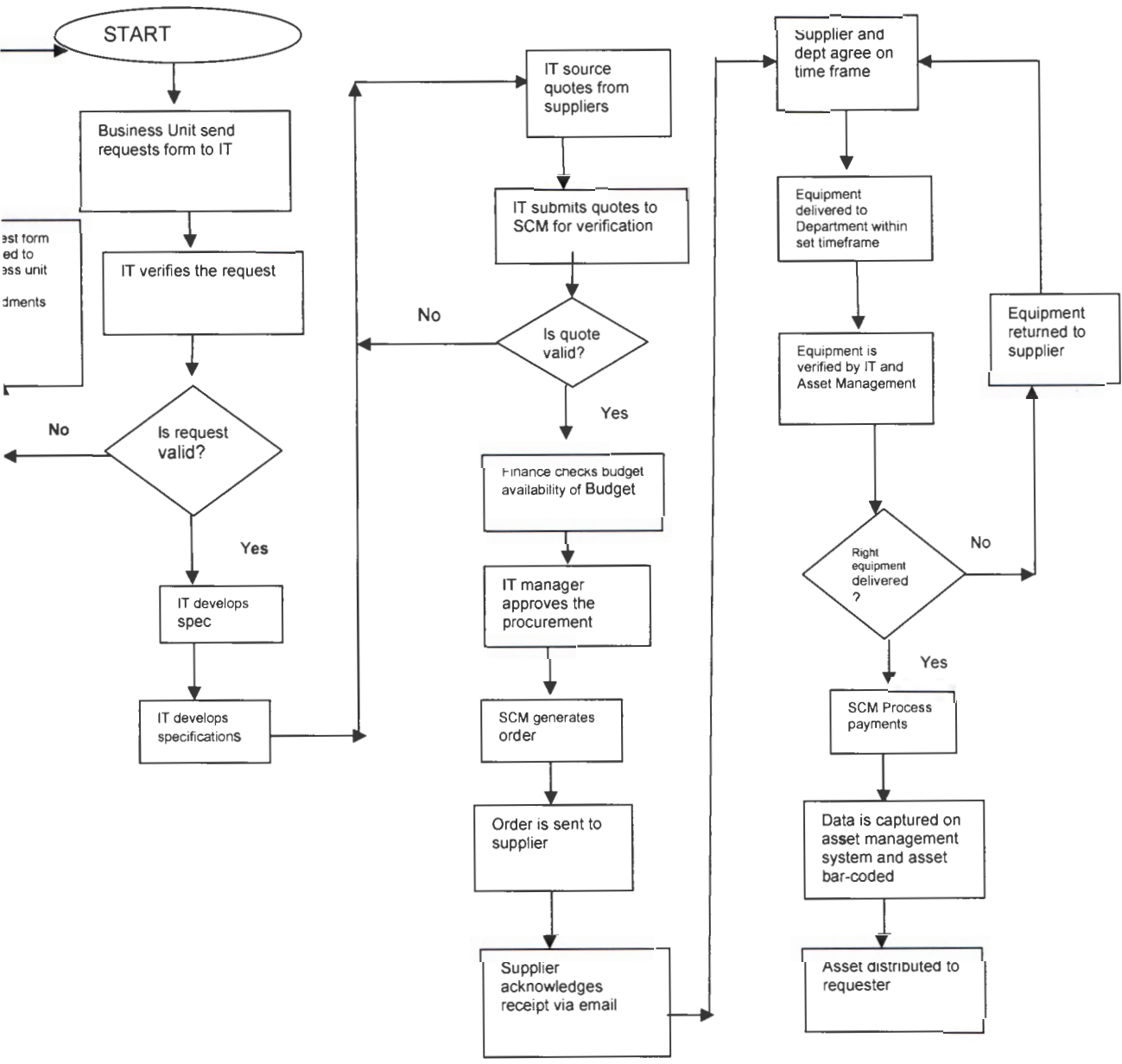


Figure 5.3: Procurement Process Flow

CHAPTER 6

CONCLUSION

6.1 INTRODUCTION

This chapter concludes the entire research project. It provides a model on how ICT management can be taken seriously by the Bokone Bophirima (North-West) Province. Thus, the research finally concludes with a diamond-shaped approach that could assist the provincial government in improving ICT service delivery.

The major challenge identified is that IT is still viewed at the level of where the IT manager is only responsible for fixing of computers, uploading projectors, fixing network cables and procuring IT equipment and peripherals for users. These tasks are at an operational level and IT in the provincial government cannot move forward as long as it is kept at this level. Similarly, the IT manager needs to begin thinking strategically and assigning such operational tasks to technicians. At management meetings, IT managers should listen attentively, connect what is being said to technology and develop an approach of how to utilise information technology not only to enable business, but also to transform business operations. Heads of departments should consider appointing departmental Information Technology Officers who can think beyond just fixing of computers to strategically and utilising IT to support business. The departmental Information Technology officer should be able to communicate IT solutions and develop cost-benefit analyses in a way that management can understand and provide the necessary support. The IT manager, in addition, should be able to develop business solutions and project plans and lead the ICT committees in such a way that the voice of IT is heard throughout the department. In this way, ICT can be taken seriously by stakeholders.

The IT manager should set up committees through which ICT can be discussed at strategic, steering and operational levels. Table 6.1 shows the recommended committees, their responsibilities, key issues they need to consider and who should sit on them.

Table 6.1: Roles and Responsibilities of ICT Committees

Committee	Roles and responsibilities	Matters for Discussion	Who should sit on the committee
ICT Strategic Committee	Assist the head of department in governing and overseeing the department's ICT related matters and ensure the strategic alignment of ICT to business objectives	Development of ICT Strategic Plan, resources required to ensure implementation of the ICT Plan (this includes human and financial resources, prioritisation of ICT-related projects)	Departmental management committee
ICT Steering Committee	Coordinate and oversee the planning, implementation, and execution of ICT projects and plans	Implementation of ICT Plans, Identify ICT Risks, identify service providers for ICT-related projects	Senior Management of Risk, Finance, Core Business, Human Resource
ICT Operational Committee	Support the departmental Information Technology Officer in managing the department's technical ICT-related matters	ICT procurement and challenges, IT budget and challenges, IT operational issues	Middle management of department's Core business

It is the responsibility of the IT manager to ensure that committees are sitting at least once in a quarter. Matters for discussion in committees are outlined in the Table 6.1. The composition of the ICT committees should be taken seriously by management. The committees should not only be set up for issues of compliance, but to ensure that IT matters are discussed at all levels, namely, strategic: steering and operational. It is also important that all stakeholders are represented in the committees. The DITO should ensure that minutes of meetings are kept and that a detailed report is prepared for executive management on a quarterly basis. It is also important that ICT remains a standing item on the Departmental Management Committee. By so doing, management will begin to prioritise ICT and the DITO inform management of progress within ICT, communicate any challenges and obtain advice and the way forward from departmental management team.

The Management Diamond Model

The conclusion can be summarised into a diamond-shaped approach that could assist in enhancing service delivery in the North-West Provincial government. The model is depicted in Figure 6.4.

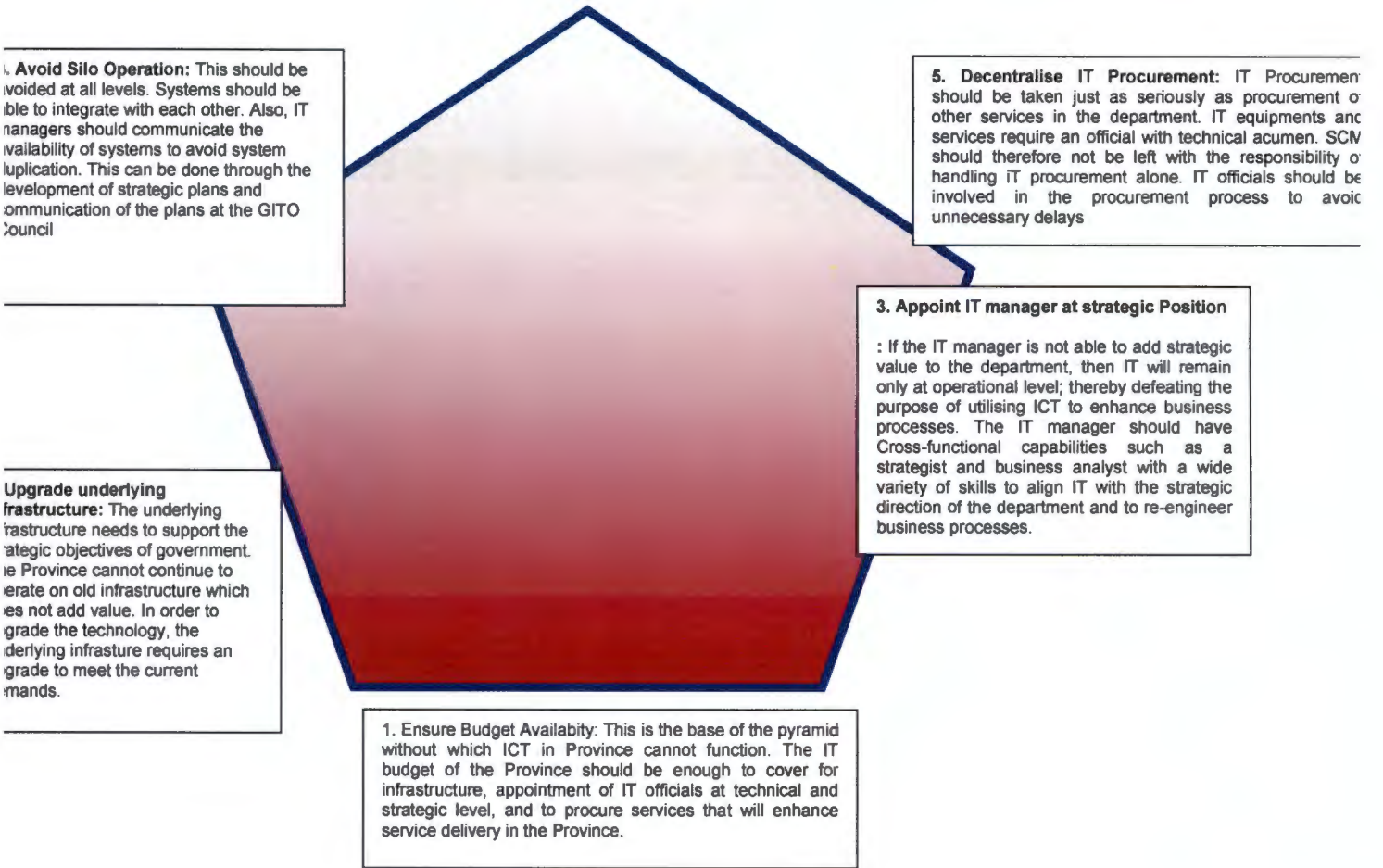


Figure 6.4: The Diamond shape Model for ICT service delivery

At the base of the model is the budget. This forms the core of IT. If there is no budget in place, it will be difficult for the provincial government to procure essential IT services that will enhance service delivery. The provincial government should, therefore, look at prioritising IT resources and funding the resources in order to optimise service delivery. The left side of the diamond indicates the process of upgrading the underlying infrastructure. This is essential to improve service delivery. If the infrastructure is old, the provincial government cannot operate efficiently. This means that services can only be rendered in the short-term. In the long-term, the old infrastructure will not be able to support new technology and, therefore, the provincial government will be unable to run on new platforms such as cloud computing. Consequently, it is essential that the provincial government takes the upgrading of infrastructure seriously in order to keep abreast with new technology. The right side of the diamond indicates that the IT manager should be appointed at senior management level. This is essential to improve service delivery. In addition to this, the IT manager should have adequate management capabilities and able to drive IT forward. He/she should also be technically inclined in order to manage technical staff as well. This is important if the provincial government wants to see IT moving forward. It is essential that the IT manager possesses both technical and managerial skills in order to advise management on IT deliverables and, at the same time, be able to supervise IT staff.

The top left of the diamond indicates the necessity of avoiding silo operations. All IT managers in the provincial government should be able to communicate either through a portal or at council meetings. It is essential that managers are aware of systems within their departments and other departments. This will reduce duplication of systems and leverage economies of scale, which will save the departments a lot of money. The last arm of the structure is to decentralise IT procurement. This is essential. IT should be given the same priority as HR and other functions such as Supply Chain Management. It is essential that IT be involved in the entire procurement process to save costs and time.

Finally, as the Bokone Bophirima Province, whose main aim is to promote Agriculture, Culture and Tourism, ICT remains an essential platform to enhance effective service delivery. ICT can be used to promote various cultures, tourism and

agricultural products. Through mobile connectivity, ICT can be used to provide services to citizens in remote areas. ICT can also be used to enhance health care facilities, provide houses to citizens, transportation, services and quality education to children. It is, therefore, important that the provincial government views ICT at a level where it will not only enable business, but transform business to provide faster, efficient and effective services to residents of the North-West Province and South Africa.



LIST OF REFERENCES

- Acemoglu, D., & Autor, D. (2011). Chapter 12 – Skills, Tasks and Technologies: Implications for Employment and Earnings. In *Handbook of Labor Economics* (Vol. 4, pp. 1043–1171).
- Apulu, I. (2012). Developing a Framework for Successful Adoption and Effective Utilisation of ICT by SMEs in Developing Countries: a Case Study of Nigeria, 6:51-60.
- Arshed, N., Carter, S., & Mason, C. (2014). The ineffectiveness of entrepreneurship policy: is policy formulation to blame? *Small Business Economics*, 1–21.
- Baskerville, R., & Siponen, M. (2002). An information security meta-policy for emergent organizations. *Logistics Information Management*, 15(5/6), 337–346.
- Boyce, C. & Neale, P. Conducting in-depth Interviews: A guide for designing and conducting in-depth interviews for evaluation input,3.
- Chowdhury, H., Zelenyuk, V., Laporte, A., & Wodchis, W. P. (2014). Int . J . Production Economics Analysis of productivity , ef fi ciency and technological changes in hospital services in Ontario : How does case-mix matter ? *Intern. Journal of Production Economics*, 150, 74–82.
- Chun, H., Kim, J.-W., & Lee, J. (2015). How does information technology improve aggregate productivity? A new channel of productivity dispersion and reallocation. *Research Policy*, 44(5), 999–1016.
- Cilliers, F. , & Greyvenstein, H. (2012). The impact of silo mentality on team identity: An organisational case study. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde*, 38(2), Art. #993, 1-9.
- Dessler Gary, Barkhuizen Nicolene, Bezuidenhout Adele, De brain Roslyn, D. P. Y. (2011). *Human Resource Management* (12th ed.). CapeTown: Pearson education.
- Ertürk, A., & Vurgun, L. (2015a). Retention of IT professionals : Examining the infl uence of empowerment , social exchange , and trust . *Journal of Business Research*, 68(1), 34–46.
- Ertürk, A., & Vurgun, L. (2015b). Retention of IT professionals: Examining the influence of empowerment, social exchange, and trust. *Journal of Business*

Research, 68(1), 34–46.

Fink, D. and Disterer, G., (2006). International case studies: To what extent is ICT infused into the operation of SMEs. *Journal Enterprise Information*, 19:608-624.

Fu, J., & Chen, J. H. F. (2015). Information & Management Career commitment of information technology professionals : The investment model perspective. *Information & Management*, 52(5), 537–549.

García-izquierdo, A. L., Ramos-villagrasa, P. J., & Casta, A. M. (2015). *Journal of Work and Organizational Psychology*, 31, 155–164.

Grandia, J. (2016). Finding the missing link: examining the mediating role of sustainable public procurement behaviour. *Journal of Cleaner Production*, 124, 183–190.

Hoppmann, J., Peters, M., Schneider, M., & Hoffmann, V. H. (2013). The two faces of market support—How deployment policies affect technological exploration and exploitation in the solar photovoltaic industry. *Research Policy*, 42(4), 989–1003.

Hsu, C., & Sandford, B. (2007). The delphi technique: making sense of consensus. *Practical Assessment, Research & Evaluation*, 12(10), 1–8.

Issa-Salwe, A., Ahmed, M., Aloufi, K., & Kabir, M. (2010). Strategic Information Systems Alignment: Alignment of IS/IT with Business Strategy. *Journal of Information Processing Systems*, 6(1), 121–128.

Jorgenson, D. W., & Vu, K. M. (2016). The ICT revolution, world economic growth, and policy issues. *Telecommunications Policy*, 40(5), 383–397.

Keil, M., Lee, H. K., & Deng, T. (2013). Information & Management Understanding the most critical skills for managing IT projects : A Delphi study of IT project managers. *Information & Management*, 50(7), 398–414.

Krishnan, C., Adam I. & Kaplin, D.M.D. (2004). Transverse myelitis: pathogenesis, diagnosis and treatment, 1483-1499

Keramati, A., & Salehi, M. (2013). Website success comparison in the context of e-recruitment : An analytic network process (ANP) approach. *Applied Soft Computing Journal*, 13(1), 173–180.

Lal, K. (2004). E-business and export behavior: Evidence from Indian firms. *World Development*, 32(3), 507-524.

- Lazenby. (2015). *The Strategic management Process* (Third). Van Schaik.
- Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly*, 29(4), 446–454. <http://doi.org/10.1016/j.giq.2012.06.003>
- Lu, C., Tsai, C. C., & Wu, D. (2015). The Role of ICT Infrastructure in Its Application to Classrooms : A Large Scale Survey for Middle and Primary Schools in China, 18(2), 249–261.
- Mahlatse, K. L. (2011). *An investigation into the role of Information and Communications Technology (ICTs) in the South African Public Service Kekana Lucky Mahlatse Dissertation submitted in the fulfillment of the requirements for the degree of Masters in Public Administration*. North West University Potchefstroom.
- McManners, P. J. (2016). Developing policy integrating sustainability: A case study into aviation. *Environmental Science and Policy*, 57, 86–92.
- Mirchandani, D. A., & Lederer, A. L. (2014). The impact of core and infrastructure business activities on information systems planning and effectiveness. *International Journal of Information Management*, 34(5), 622–633.
- Molekedi, F. G. (2007). *Basic Concepts of Information and Communication Technology Notes* (First). Pretoria: Department of Public Service Administration.
- Myers, M. D., & Venable, J. R. (2014). A set of ethical principles for design science research in information systems. *Information & Management*, 51(6), 801–809.
- Patanakul, P. (2014). Managing large-scale IS/IT projects in the public sector: Problems and causes leading to poor performance. *The Journal of High Technology Management Research*, 25(1), 21–35.
- Pavic, S., Koh, S.C.L. Simpson, M., M, & Padmore, J. (2007). Could e-business create a competitive advantage in UK SMEs? *Benchmarking: An international Journal*, 14(3), 320-351.
- Picot, A., & Wernick, C. (2007). The role of government in broadband access. *Telecommunications Policy*, 31(10–11), 660–674.
- Sabherwal, R., & Chan, Y. E. (2001). Alignment Between Business and IS Strategies: A Study of Prospectors. *Information Systems Research*, 12(1), 11–33.
- Van der Wee, M., Verbrugge, S., Sadowski, B., Driesse, M., & Pickavet, M. (2014).

Identifying and quantifying the indirect benefits of broadband networks for e-government and e-business: A bottom-up approach. *Telecommunications Policy*, 39(3–4), 1–16.

Visser, W., & Twinomurinzi, H. (2008). E-Government & Public Service Delivery: Enabling ICT to put “People First”—A Case Study from South Africa. *Journal of Systemics, Cybernetics and Informatics*, 6, 36–41.