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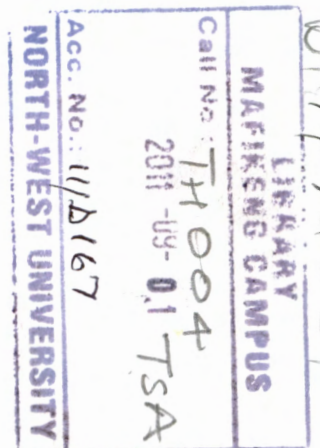
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RESEARCH PROPOSAL

BY



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***Information Technology Directorate Challenges and its Impact on
Service Delivery of the North West Province Government***

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In conclusion, I would like to note that the views, suggestions, opinions, guidelines/recommendations and conclusions expressed herein do not necessarily represent the views of the people, professionals, academics and organizations mentioned above. They were mentioned without prejudice for the contributions made, in one way or another, for the completion of this mini dissertation.

Declaration

I, Kelebogile Beauty Tsatsinyane hereby declare that this mini thesis for the degree of Master of Business Administration (MBA) submitted at North West University has not been submitted by me for any other degree at this or any other university. I also declare that it is my own work and materials and references contained in this study are acknowledged.

KELEBOGILE BEAUTY TSATSINYANE

Abstract

The effective use of information technology (IT) compounded under e-Government has become a major element of the delivery of service by Governments including the North West Provincial Government (NWPG). To this end, there have been policies initiated by the NWPG with the aim of augmenting the intention to use IT. The use IT requires efficiency where the costs involved result in commensurate return on investment at the various levels of Government namely; national, provincial and local. The Government like other organizations faces the challenge of retaining critical skills especially related to IT. Retention of human resource can partly be attributed to budgetary constraints faced by the Government on how to effectively use limited finances. The key findings of the study revealed the high turnover of staff in the IT Division has affected the delivery of service by the NWPG resulting in the lack of effective and efficient function of the IT Division. Most IT staff leave the IT Division for better jobs in the private sector. This is because of lack of competitive incentives, which include competitive salaries and organizational structure and lack of career progression. Challenges faced by the IT Division emanate from budgetary constraints. There has been a failure to integrate strategic planning of the IT Division, and the Treasury Department with the service Departments. Integration of strategic plans maybe the underlying factor to this challenge faced by the IT Division.

Table of Contents

Chapter One	1
1.1 Introduction	1
1.2 Background of the Study	2
1.3 Problem Statement	2
1.4.1 Research Objectives	2
1.4.1 Primary Objective of the Study	4
1.4.2 Specific Objective of the Study	4
1.5 Rationale of Study	4
1.6 Key Words	4
1.7 Research Design	5
1.7.1 Research Method	5
1.7.2 Sample Design and Analysis	5
1.7.3 Data Collection Instruments	5
1.8 Scope of Study	6
1.9 Plan of Study	6
1.10 Conclusion	6
Chapter Two	8
2.1 Introduction	8
2.2 Definition of concepts and Keywords	9
2.3 Use of Government	11
2.4 Government Policy on Use of IT	13
2.5 Cost of Benefit of IT an Organisation and its Rationale	16
2.6 Integration of Government Strategic Planning and IT	19
2.7 Attraction and Retention of IT Personnel in Government Departments	21
2.8 Budgetary Constraints of IT Department in Government	25
2.9 Provincial and Local Service Delivery Issues	28
2.10 Service Delivery in Relation to IT Division use in Service Departments	30
2.11 International Perspective of IT in Government	31
2.12 Developments and Future of It in Government	34
2.13 Research Questions	35
2.14 Conclusion	36
Chapter Three	38
3.1 Introduction	38
3.2 Research Types	38
3.2.1 Quantitative and Qualitative	38
3.2.2 Research Method (s) used in Thesis	41
3.2.3 What Data is required?	41
3.2.3.1 Primary and secondary Data	41
3.3 Data Collection Method	42
3.3.1 Methods of Collecting Primary Data	42

3.3.2	Questionnaires	43
3.3.3	Sampling Methods	44
3.3.4	Types of Variables	45
3.4	Ethical Consideration Pertaining to the Study?	46
3.5	Limitations	47
3.6	Conclusion	47
Chapter Four		48
4.1	Introduction	48
4.2	Response rate	48
4.3	Demographics	49
4.4	Frequency Tables and Figures on IT and IT Service Delivery	53
4.5	The measures of association	62
4.5.1	Standard Deviation, Mean and Correlation	62
4.5.2	t-Test	74
4.6	Conclusion	79
Chapter Five		80
5.1	Introduction	80
5.2	Summary of Study	80
5.3	Response to Research Questions	81
5.4	Managerial Guidelines	84
5.5	Limitations	85
5.6	Future Research	86
5.7	Conclusion	86
References/Bibliography		87
Appendix A: Matrix used		93
Appendix B: Questionnaire construction		102
Appendix C: Questionnaire		105

List of Tables

Table 4.1	Qualification profiles of the respondents	50
Table 4.2	Time worked of the respondents	53
Table 4.3	Competitive salary packages help with retention of IT staff members	58
Table 4.4	Organisational structure/career progression contribute to IT staff members	59
Table 4.5	SITA constraints affect the performances	61
Table 4.6	Max, min, mean, SD, correlation, p-values and correlation of determination between age and position of the respondents	62
Table 4.7	Max, min, mean, SD, correlation, p-values and correlation of determination between age, years in the department and position	64
Table 4.8	Max, min, mean, SD, correlation, p-values and correlation of determination and correlation of determination between efficient solution of queries, hardware good enough and network efficiency	66
Table 4.9	Max, min, mean, SD, correlation, p-values and correlation of determination Between the contribution of IT to service delivery, efficient help desk and loss of expertise but still deliver good service	68
Table 4.10	Max, min, mean, SD, correlation, p-values and correlation of determination between IT staff turnover, SITA constraints and age of respondents	69
Table 4.11	Max, min, mean, SD, correlation, p-values and correlation of determination between loss of IT expertise, enough IT expertise and retain IT staff	71
Table 4.12	Max, min, mean, SD, correlation, p-values and correlation of determination between post respondents is in, SITA constraints and IT staff	73
Table 4.12.1	T – Test for significance test between post the respondent occupies, SITA constraints and staff turnover	74
Table 4.12.2	Continuing (One sample t-test/ Two-tailed test – SITA constraints)	75
Table 4.13	Linear Regression	77

List of Figures

Figure 4.1	Ethnicity	49
Figure 4.2	Job profiles of the respondents	50
Figure 4.3	Gender profiles of the respondents	51
Figure 4.4	Age of the respondents	51
Figure 4.5	Citizenship of the respondents	52
Figure 4.6	Place of abode of the respondents	52
Figure 4.7	IT contributions to effective delivery of services in the NW Government	54
Figure 4.8	IT help desk solved user queries efficient enough	55
Figure 4.9	Hardware efficient enough to help answer the queries	55
Figure 4.10	Experienced problems with network that impacts on Service Delivery	56
Figure 4.11	IT Division loss of expertise affects its function	57
Figure 4.12	Present expertise be coped with	58
Figure 4.13	Incentives' of IT staff help with retention	59
Figure 4.14	IT Division budget	60
Figure 4.15	Link between the Department of Provisional Treasury strategic plan and the IT Division budget	61
Figure 4.16	Regression of staff turnover by SITA constraints	78

Chapter One

Overview

1.1 Introduction

A number of internal factors, which include the ineffective use of the Information Technology (IT) Division, have hampered the level of service delivery of the Department of Provincial Treasury in the North West Provincial Government (NWPG). The IT Division, directly under the Department of Provincial Treasury, caters for all other Departments within the NWPG. The Department of Provincial Treasury centrally controls the IT Division in order to prevent duplication and unnecessary expenditure on IT services. The IT Directorate has well-defined goals. Despite the efforts, problems continue to persist in the Directorate rendering the objective of cost saving and efficiency farfetched.

This research aims at highlighting the challenges faced by the IT Directorate. The study further addresses how the issues have impacted on the on the effective service delivery of the North West Provincial Government as a whole. The NWPG is located in Mafikeng, which is the administrative capital of the North West Province.

Literature used in the Chapter has been derived from the South African Government Policies and Regulations, and the the North West Provincial Department of Provincial Treasury documents have been reviewed. Other literature that has been used includes contemporary literature from journals periodicals and research textbooks.

This Chapter involves an overview of the study, a description of the background of the study, which has been followed by the problem statement. The research objectives of the study have been articulated by showing the primary objective and the specific objectives of the study; these address the purpose of this study. The research design has been explained namely; research methods, sample design, analysis, and the data collection instruments. The geographical limit and parameters of the study have been detailed in the scope of the study proceeded by the layout of the entire research, ending with a conclusion.

1.2 Background of the Study

The mandate of the Department of Provincial Treasury is prescribed in the Provincial Treasury's Financial Handbook chapter that states that the IT Division was authorized to render IT services in all Provincial Departments. Lack of financial directives, instruction and policies would hamper the process of compiling an informed budget. IT policies must be strengthened so that Executive Council (EXCO) can start to realise the importance of IT in the working environment.

The IT Division is experiencing staff turnover where, in the previous year, the Division lost 38 skilled and experienced officials through resignations and transfers. Lack of staff retention and talent management might have lead to its inefficient service delivery. The IT Division is operating with contractual internships; the learning curve might impede the service delivery. The Call Centre does not have a response at all times and the problems take too long to be resolved due to the shortage of staff.

Expenditure in IT is progressively consuming a greater proportion of South Africa national budget. It is vital to strike an overall balance between IT's rate of investment and rate of return in order to derive some benefits, earnings and savings that are expected to result in the investment. IT should not be viewed as a means to an end but as an instrument enabling the re-engineering of the South African Government and its processes (Sant, 1997: 3).

1.3 Problem Statement

The critical budgetary issues that might have been impacted on Government services delivery and the fiscal problems that have incited Systematic budgetary reform in the North West Province.

The Departments have discredited the integrated strategic planning, prioritization, financial planning, resource allocation and performance management and synergy. This has resulted in policies that are not communicating/unconnected with budgets or Governments strategic direction and are thus prone to implementation failure (Department of Finance and Economic Development Strategic Plan, 2005 – 2008:16).

In order for the North West Provincial Department of Provincial Treasury to optimise its services, especially with regard to enough funding towards IT that the North West Provincial EXCO considers IT as one of its priorities. The Government dependent on IT to

prioritise for effective carry out its different responsibilities like Education, Health, Provincial Treasury, and infrastructures.

A mechanism is needed to allow the North West EXCO to put expressed front-end on the budget process. The budget and financial management process often do not generate adequate Information to assist political decision-making. Information such as human resources, economic and social aspects are not provided (National Treasury Budget Review, 2006: 31-33).

The Government requires innovative responses from IT as well as its Management. Therefore the Government needs to deliver those systems that will be effectively functioning Government in the Information age. This however, places emphasis on the Government to accommodate the rapid technological surge. The appearance of new challenges and advantages are witnessed in terms of what it brings to the business environment, both in the public and the private sector (Department of Public Service Administration, 2000: 6).

According to the Department of Finance and Economic Development Annual Performance Plan, (2005-2008: 31-35) factors that probably directly or indirectly contributed to the failure of IT to deliver the best service in the past include the following:

- IT services continue to take a proportion of the annual budget in such a manner that executives and senior managers increasingly became concerned about the validity of traditional approaches taken to identify effective IT investments.
- Assess IT initiatives and to subsequently manage IT investments. Management continues to experience situations where the application of IT produces doubtful benefit and often not connected to current business aims.
- The IT Division failed to deliver acceptable returns, it looks like it is not linked to an overall productivity increase and its overheads are constantly larger than predictable.
- The Provincial Departments fail to engage the Provincial IT managers in the preparation of their Departmental IT performance plan. The Department of Provincial Treasury in the IT Division provided inadequate training for employees to use the available Technology because of the high turnover rate and lack of staff retention of the skilled personnel. Therefore, these problems were experienced in the IT Division.

1.4 Research Objectives

1.4.1 Primary Objective of the Study

The primary objective of this study is to analyse the challenges faced by the IT Division of the North West Provincial Government and the impact that these challenges have on the delivery of service of the Government. The primary objective can be divided into the following distinct specific objectives.

1.4.2 Specific Objective of the Study

The aim of this study is to investigate the impact of funding on the service delivery of IT Division in the Department of Provincial Treasury, in the North West Province. The following are specific objectives addressed in this study:

- To examine the integration of strategic and financial planning within the IT Division of the North West Provincial Government
- To investigate the current sources of funding of IT Division
- To examine adequateness of budget allocation of IT Division
- To examine how other operating Departments absorb IT Division investment costs.

1.5 Rationale of Study

The IT Division of the NWPG in the past could not be in a position to produce optimistic results towards meeting client's satisfaction. The Division introduced policies developed to ensure that IT related projects in the Government are implemented in a predictable level of consistency and reliability. The policies were intended to meet the related specific corporate needs and priorities, which would ensure effective service delivery, by the NWPG. Improved functions of the Division will leads to better quality of service delivery and improved life for all.

1.6 Key Words

Mafeking, North West Provincial Government, Information Technology (IT), Information System (IS), Information Communication Technology (ICT), e-Government, cost to benefit, budgetary constraints, IT staff retention, Integrated Development Planning (IDP) and service delivery.

1.7 Research Design

1.7.1 Research Method

The research method used will be a scientific method of acquiring knowledge. This method applies a systematic investigation to a problem, research question or phenomenon, using certain socially accepted principles (Bless & Higson-Smith, 1995: 3).

1.7.2 Sample Design and Analysis

The units of analysis will be individuals, groups and the Department of Provincial Treasury. The sample units will be randomly selected from each stratum. The sampling technique to be used will be a proportionate random stratified sample. Using a simple random sampling in each stratum, each employee in the stratum has an equal chance to be selected into the sample, as such making the sample representative of the population. The consideration of the employee's demographics within a particular work place, therefore it would be ideal to use a random stratified sample proportional to the designation of the target population. The target population will be 650 employees of North West Provincial Department of Provincial Treasury and a sample will be derived from it. The sample of 250, which comprise and minus 38 per cent of the entire workforce, will be selected to conduct the study.

Data will be analyzed by means of tables, charts, graphs and inferential statistics. Statistical analysis will be conducted during the study and conclusions and recommendation will be made thereafter (Bless & Higson-Smith, 1995: 125-126 and Welman and Kruger, 1999: 45-66).

1.7.3 Data Collection Instruments

The record method or unobtrusive measures of data collection will be used. Self-administered questionnaires will be used to collect the primary data for quantitative analysis. The collection of the primary data will be by means of the questionnaire to the workforce who should be the beneficiaries of integrated strategic planning, adequateness of budget allocation of IT Division and enhanced service delivery. The secondary data gathering will be conducted by reading relevant literature including professional magazines, newspapers, journals, legislation, dissertations and by listening to specialist interviews from the television and radio stations.

1.8 Scope of the Study

The geographical parameter of the study is Mafikeng, capital of the North West province. The study is limited to employees in the IT Division of the Department of Provincial Treasury, in the North West Province. IT Division is serving all the departments in the North West Provincial Government; each department is allocated the officials that responsible for its services. The IT Division in general has over 200 employees. It has four regional offices, in Rustenburg, Mabopane, Vryburg and Potchefstroom. Its head office has 120 staff members.

1.9 Plan of the Study

This chapter gives the reader the general picture pertaining to the fundamental importance that is introduction to the background of the study, research problem, the research objectives are determined.

Chapter 2 reflects the literature review for the study. The literatures that will be conducted will be related to the current topic. Previous studies conducted that were based on IT strategic management and other deal with IT funding and service delivery.

Chapter 3 outlines the research methodology followed in the study, with the necessary rationale, the research design and analysis followed in the current study. The aspects to be covered are research design, sampling, measuring instrument and data analysis.

The response rate is dealt with in Chapter 4 and the results of the study are presented and interpreted in relation to the objectives of the research, spelled out in Chapter 1.

In Chapter 5 the outcome of the study is discussed, conclusions are drawn and recommendations are made to remedy and corrective measures of the research problem.

1.10 Conclusion

In this Chapter, the reader is introduced to the background of the problem in general terms and detailed statement of the problem is given. Four objectives of the study are articulated, research design is dealt with, the research design is exploratory and mainly quantitative that is indicating the methods sampling technique and the targeted population that will be used to conduct the study. The structured self administered questionnaire method will be an instrument to collect data.

As budgeting becomes more relevant, a wider range of policies and management challenges will compel them to focus on how they can clearly define different levels of appropriate budgeting for IT Division and the functions to be performed by the different role players. Innovative use of IT requires a systematic approach that will benefit all users and the creation of competitive advantage through the use of IT and crucial for business survival.

In Chapter Two a literature review shall be made to place the research problem in the context of the theoretical background of IT funding. The exhibition of available studies on IT that are focusing on service delivery and strategic planning will be reflected. Highlights of the existing studies on IT funding as well as which areas of IT have been emphasized and which have neglected, will be indicated.

Chapter Two

Literature Review

2.1 Introduction

IT is the use of resources for business information management. The resources comprise software, hardware and telecommunication networks. The resources manage information (Chaffey & Wood, 2005: 42 as *cited* by Olugbode, Richards & Biss, 2007). E-Government has increasingly become the method to public services delivery. This applies to internal public management, external service delivery and democratic interaction with society. This mainly conducted through electronic means (Cloete, 2004). Governments need to sanction suitable national strategy in order to generate a positive socio-economic development impact using IT (Pradhan & Metcalfe, 2009).

Meadowcroft (2008) observed expenditure in IT is progressively consuming a greater proportion of South Africa national budget. There is a need to maintain a balance between the rate of investment in IT and rate of return in order to derive optimal benefits, earnings and savings related to the investment (Meadowcroft, 2008). IT receives considerable investment in terms of money and resources. The total size of the market was estimated at R7.2 billion in 1998. An annual growth rate at the time was about 20%, which was twice that of international growth. The IT services market in 2000 was R11.4 billion (James, 2005).

The Key words used for the search of literature were; Mafeking, North West Provincial Government, IT, Information System (IS), Information Communication Technology (ICT), e-Government, cost to benefit, IT staff retention, budgetary constraints, Integrated Development Planning (IDP) and service delivery. Search engines used included Google scholar, Emerald and Business Source Complete.

The layout of the chapter follows the main themes derived from the literature. This includes the relevant definitions on the concepts and key words used. For understanding the importance of IT in Government, there is a section on literature on the use of IT in Government. Government policy on use of IT is followed this. The section relates to the effort made by Governments in light of the significance of

IT. A section related to cost to benefit of IT in an organisation and its rationale discusses the benefits derived from the effective use of IT. A section on budgetary constraints of IT department in Government outlines financial constraints faced in relation to IT and its effect on services delivery. The services delivery issues are specifically discussed under provincial and local Government service delivery issues, Government delivery service, and the use of IT *vis-a-vis* line departments. A section on international IT in Government perspective is given and lastly the developments and future of IT in Government is discussed. The conclusion summarises the Chapter and gives a brief of the researcher of the literature.

2.2 Definition of Concepts and Key Words

Defining terminology in research is crucial according to Yusof and Chell (1998: 96), this dismisses confusion and gives better understanding, for both those who are new to the subject and those who are familiar with the subject (Yusof & Chell 1998: 96).

Information Technology: IT entails the resources that used for business information management. These resources include software, hardware and telecommunication networks used for managing information (Chaffey & Wood, 2002, 42 as *cited by* Olugbode, Richards & Biss, 2007).

Information System: The term Information System (IS) refers to IT that is used by people to accomplish a specified organisational or individual objective. The technology may be used in the gathering, processing, storing, and/or dissemination of information, and the users are trained in the use of that technology, as well as in the procedures to be followed in doing so. The specific technologies that collectively comprise IT are computer technology and data communications technology. Computers provide most of the storage and processing capabilities, while data communications, specifically networks that provide the means for dissemination and remote access of information advances in computer hardware, software, and networking technologies have spurred an evolution in the structure, design, and use of corporate IS (Hildreth *et al.*, 1999). The six major areas of IT application identified are connectivity, personal communications, and information management, logistics, positioning and identification, and transactional (Patel & White, 2009).

Information Communication Technology: Information Communication Technology (ICT) can be defined as the combination of video, telecommunications and computer technologies. It can be seen in the use of computers designed for multimedia applications as well as the services and networks set up for it. ICT permeates the business environment, it underpins the success of modern corporations, and it provides governments with an efficient infrastructure. ICT has a leading role in the way that information is distributed in South Africa and around the world. There is an enormous potential in the use of ICT to provide information, accessibility to resources, enhance learning and research sources. Developing a culture based in ICT is important and plays a huge role in integrating information for everyone to access. The ICT industry involves students, researchers, teachers, businesses, information resources and much more. ICT aids in teaching processes as well as obtaining information in an independent manner between the researcher and the outside world via communication and interaction at the same time, ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. Technological developments lead to changes in work and changes in the organisation of work, and required competencies are therefore changing (UNESCO, 2002).

E-Government: Government's use of IT applications to enhance the access and delivery of Government information and service to citizens, business partners, employees, other agencies, and Government entities (McClure, 2000; Symonds, 2000; West, 2004 as *cited in* Badr & Alsharc, 2008). E-Government is conceptualised here as a new approach to public services delivery in the form of internal public management, external service delivery and democratic interaction with society, primarily through electronic means (UN-Division of Public Administration and Development Management DPAD (2003:3) as *cited in* Cloete, 2004).

Service Delivery: service delivery means delivering a service, measuring performance means there must be work output to be measured, performance contracting means people are evaluated from time to time to determine whether

they are up to the task at hand. Service delivery is a quantifiable performance by the Government or any other institution that is a service provider. Performance requires people to achieve the objectives and priorities (Mosai, 2009).

2.3 Use of It in Government

The establishing of IT strategic infrastructure is critical for developing countries where the marginal impact of improved network communications can be high, leading to improved economic productivity, governance, education, health and quality of life, particularly in rural areas (Adam, 1996; Press, 1996 as *cited* in Madon, 2000). IT contributes to the performance of an organisation and there is an expansion of knowledge on what factors cause better leveraging of IT resources in organisations. Little understanding has been done to how these factors interact with technology that results in improved performance (Prasad, 2009). These factors referred to have a bearing to use of human capacity, while organisations include Government institutions such as the North West Provincial Government, which is the organisation under review of this research. Accomplishments achieved with ICT within the private sector have encouraged various stakeholders including Governments to link up public sector services with the internet revolution (Barca & Cordella, 2004; Choudrie, Weerakkody & Jones, 2005; Heeks, 2004; Kenway, 2004; Susman, 2001 all *cited* in Badri & Alshare, 2008). ICT has the potential to change the generation and delivery of public services by public institutions (Stiftung, 2002 as *cited* in Bwalya, 2009). Heeks (2001) who observed new ICT can make a contribution to the achievement of governance goals, also referred to this. E-Governance can make governance efficient and effective, which brings other benefits (Heeks, 2001). IT can also attribute a key component in improving the way the public sector provides services to citizens (Seneviratne, 1999 as *cited* in Luk, 2009). There is evidence that if implemented strategically, e-governance and e-Government can improve access to public services, increase the efficiency, transparency and accountability of Government and political processes (UNDP, 2007).

Following the growth of the WWW, focus has shifted on the adaptation of web-based technologies to the business environment. This saw the introduction of the business-to-business (B2B) and business-to-consumer (B2C) sectors. Similar

interests have emerged in other sectors like Government, introducing Government-to-business (G2B) and Government-to-citizen (G2C). Governments have been slower to engage the web-enabled trend. This is because governments are usually conservative entities that are slower to change, and slower to adopt new initiatives, than operators in the commercial field (Marche & McNiven, 2003 as *cited* in Davison, Wagner, & Ma, 2005). For example, some provinces like the Northern, North West and Eastern Cape provinces of South Africa took long to transform to the use of IT where all applications processed manually (Duthie, 2001).

Notwithstanding, e-Government has arrived in Africa, although it is fundamentally an imported concept based on imported designs. There are growing numbers of e-Government projects, some of which are contributing to public sector reform and delivering gains of efficiency and the effectiveness across a broad spectrum of governments (Heeks, 2002). New ICT can contribute to the achievement of governance goals. Typical examples of digital Government infrastructure include the internet, which allows users to connect to each other and dedicated information exchanges networks, which make it possible to exchange structured information between the systems. The third example is operating systems that provide a platform on which the applications function. Of note has been use of infrastructure by a large number of Government organisations for purposes like information registries containing information about citizens, businesses or other kind of information used (Janssen *et al.*, 2009). However, many IS in developing countries can however, be categorised as failing either totally or partially besides some successes noted in a few (Heeks, 2002).

IT has become fundamental in Government service departments that include provincial treasury, education, health and social development as well as sanitation. For example, South Africa has more than a decade of ICT education experience. This comes from a wide range of projects and programmes pioneered by noteworthy pioneers and sponsors across the stakeholder spectrum of communities, the private sector, civil society, donor, development, and Government agencies (Isaacs, 2007). There has been a growth of the use of Computerised IS (CIS) for education in the industrialized countries, and now developing countries are starting to utilize the potential of these systems (Bisaso *et al.*, 2008).

The restructuring of the health sector in post apartheid South Africa striving for equity in health service delivery and building of a decentralised structure based on health districts. In terms of IS development, this reform process interprets into standardisation of health data in ways that portray the goals of the new South Africa by increasing local control and integration of information handling (Braa & Hedberg, 2002). Information management is fundamental to health care delivery. This is because of the fragmented nature of health care and the large volume of transactions in the system. This has imposed the need to integrate new scientific evidence into practice, and other information management activities through IS (Annals of Internal Medicine, 2006).

Another illustration of the role played by IT in Government is on waste management. Godfrey (2007) observes the development of a waste information system (WIS) for a country is more than just the collection of data routine on waste but goes further to include the enablement of improved management of waste by providing timely, reliable information to the relevant role-players (Godfrey, 2007).

The section looked at the role played by IT in Government with particular reference to service delivery in developing countries such as South Africa. Operative Government policies on the effective use of IT are necessary to achieve desired service delivery goals. The next section looks at Government policy on use of IT.

2.4 Government Policy on Use of IT

Developing countries need to develop a culturally appropriate strategy nationally if they wish IT to have a positive impact on their overall socio-economic development (Pradhan & Metcalfe, 2009). Chen *et al.* (2009) observed the importance of municipal Governments such as Mafikeng in this overall progression. Municipal or local governments interpret policies and guidelines from the central Government and their actions influence and involve people, process and environmental contingencies. Local governments face pressure from citizens and the private sector as well as higher Government authorities (Chen *et al.*, 2009). This is vital especially for South Africa given that the capacity of the South African economy to generate, distribute, and supply services is seriously constrained by a lack of growth, inequality, and abject poverty (Schwella, 2001). Hiller (2002) explained the use of IT especially by governments in data-driven decision-making

could provide a structured approach to handle complex possibilities. Additionally, organisations that employ user preference data in strategic planning processes become increasingly user-centric and effective (Hiller, 2002 as *cited* in Burroughs, 2009). Commitment by Government to develop IT strategies and policies for transformation is therefore required. Davison *et al.* (2005) observed that a considerable e-Government movement is building, with a number of national governments taking broad measures to engage in the transformation (Davison *et al.*, 2005).

Despite this, Heeks (2002) observed the e-Government transformation is only slowly spreading within Africa because of a lack of e-readiness for e-Government. Appropriate strategic building of national infrastructure and policies can avert this (Heeks, 2002). E-Government is now a permanent agenda item of local councils in the developed world (Davison *et al.*, 2005). Most governments have developed an e-government policy, including the delivery of services electronically. Decision-makers recognize the necessity to emphasis cost reduction and efficiency by examining the real prerequisites of citizens and businesses and computerizing simple and frequently used services (Accenture, 2004; Akman, Yazici, Mishra, & Arifoglu, 2005; Chadwick & May 2003; Foley, 2005; Tung & Rieck, 2005 all *cited* in Badri & Alshare, 2008).

The Constitution of South Africa, in section 214 makes provision for the enactment of an Act of Parliament. This provision calls for an equitable division of revenue raised nationally among the three spheres of Government, the determination of each province's equitable share, and the determination of any other allocations to provinces, local Government or municipalities from the national Government's share of that revenue (Brand, 2007). Isaacs (2007) notes that the need for the suitable distribution of resources and policy will be of prominence, especially as South Africa acts as host for the 2010 World Cup. The Government has embarked on accelerated economic growth strategies, the race is on to move to broadband and promote global ICT access. South African institutions like education are set to grow significantly in ICT access, teacher training, and professional development and IT usage. Challenges still need resolutions. These include the lack of a comprehensive policy on ICT, the continued need for leadership and co-ordination

of various initiatives, the promotion of enhanced learning through optimal usage of the technologies. Notable, the need to validate the value of the investment in ICT through enhanced performance and improved employability in the changing labour market (Isaacs, 2007).

Foremost of the IT strategies required to be enacted will include national policy to counteract matters of resistance to change due to cultural, personal and infrastructure factors, culturally complexities and, the rate of change of the technology. This will need a developing arrangement and learning system. The first stage in the development of such a system is to design a suitable opportunity for dialogue, and a well-constituted and on-going decision-making procedure (Pradhan & Metcalfe, 2009).

An important indicator on the significance of policy will arise from the role IT and e-Government has to offer. Heeks (2001) discusses this beginning with the power of ICT, which provide three basic change potentials for governance for development namely:

- Automation policy: that will involve the replacement of the current human executed processes. This will involve accepting, storing, and processing, outputting or transmitting information, for example, the automation of existing clerical functions.
- Information policy: supporting current human executed information processes, for example, supporting current processes of decision-making, communication, and decision implementation.
- Transformation policy: creating new ICT executed information processes or supporting new human-executed information processes, for example, creating new methods of public service delivery.
- These change potentials, in turn, can bring, singly or in combination, benefits to governance for development, namely:
- Efficiency gains: cheaper governance that produces the same outputs, at lower total cost and governance that does more by producing more outputs at the same total cost; and governance that is quicker; producing the same outputs at the same total cost in less time.

- Effectiveness gains: governance that works better by producing the same outputs at the same total cost in the same time, but to a higher quality standard; governance that is innovative and producing new outputs (Heeks, 2001).

The section discussed literature on Government policy with reference to IT. Discussion of the integration of such policies in Government development strategies will be discussed in order to highlight the importance of IT with relation to local economic development. However, the following section looks at the cost to benefit derived from the use of IT. This will enhance the understanding and the link between IT and local economic development.

2.5 Cost to Benefit of IT in an Organization and its Rationale

It has been noted that expenditure on IT increasingly consume a greater percentage of the country's national budget and it is imperative that the North West Provincial Government strikes an overall balance between rate of investment and rate of return (Santa, 2003). IT is as an important instrument to attain efficiency and effectiveness at different levels in organizations (Porter, 2001 as *cited* in Prasad, 2009). Sleight (2000) further reaffirmed this in a study conducted by suggesting gaining maximum benefit from the use of IT an organisation especially in the public sector must ensure that systems are truly effective in meeting its needs. While this may be so, Dlamini *et al.* (2009) contend the current global economic turmoil has heightened need to minimise and mitigate spending whilst straggling to ensuring compliance with regulatory mandates. This calls for decision makers to become vigilant in their spending and move towards balanced investment (Dlamini *et al.*, 2009).

To achieve optimal benefits of IT, an organisation requires a number of factors, which include personal training and synergy. In a study conducted by James (2005) it was shown that an organisation or firm to get significant productivity effects out of the introduction of ICT technologies, the firm or organisation must engage in significant re-engineering in its internal operations and its relations with outside organisations. The organisation must commit substantial resources to training employees to exploit the new technologies and systems. Void of organisational and training commitments, investment in ICT technologies is a waste of resources.

Stimulating the adoption of ICT in other major sectors of the economy is more important than the development of the ICT industry by itself (James, 2001). A statement made by a respondent in a study conducted by Olugbode *et al.* (2007) qualified this where it was noted the lack of IT skills and those of others like the respondent would mean that they would not be able to benefit from the changes that were taking place. However, training ensured that the respondent had instant access to targeted information. The respondent could then update the contract maintenance, programmes and labour tracking for sites on the intranet (Olugbode *et al.*, 2007).

For IS to be sustainable, an understanding of the underlying motivations of key stakeholders is necessary further illustrate the prominence of synergy (Heeks, 2002; Lafontaine, 2000; Moussa & Schware, 1992 all *cited* in Godfrey, 2007). Cloete, (2004) illustrated this by asserting the best travel success strategy is necessitated by the combination of the most appropriate route, the most appropriate vehicle and the most appropriate driving strategy and schedule to match the user's preferences and constraints. The fastest car does not always win the race. The combination of the most suitable car and driver is essential for success (Cloete, 2004).

The costs of all types of failure like incomplete or abandoned projects; projects that fail to attain set objectives or which fail to satisfy key stakeholders; and projects that cannot be sustained, are high because only successful projects will ensure global economic convergence (Kenny, 2001). The failures keep developing countries on the wrong side of the digital boundary, turning IT into a technology of global disparity. For all these reasons, IS failure is therefore a very real and very practical problem for developing countries that needs to be addressed (Heek, 2002).

Maintaining equilibrium among state institutions through a system of checks and balances poses a great challenge. The principles of the separation of powers and the rule of law are crucial. Of similar significance is a decentralised state structure (Brand, 2007). Introduction of decentralised ICT does not necessarily lead to decentralisation (Madon, 1993 as *cited* in Braa, 2001) or empowerment of local users (Walsham, 1992 as *cited* in Braa, 2001), and is necessarily a complex problem in Third World contexts (Braa, 1996 as *cited* in Braa, 2001). The converse, which is the centralisation of IT or ICT as in the case of the IT division within the

North West Provincial Government, might be a case in hand. Robbins *et al.* (2009) defined centralisation as the degree to which decision-making authority is concentrate at a single point in an organisation. Prior to the information economy, technologies were centralised, that is, during batch processing on the mainframe and time-sharing systems. The key objective towards centralisation was to take full control of expensive computer equipment and to regulate the organisations.

The benefits derived from the centralised structure include proper control and co-ordination of IT functions and elimination of duplication of services. This system is also effective in smaller organisation with one core business (Public Service Staff Code, 2002). Heeks (2001) retorts in a study that used to show that e-Governance is a current, not just future, reality for developing countries. However, most e-Governance initiatives fail (Heeks, 2001). Misplacement of the IT department can lead to conflict or interference. The North West Province has particularly highlighted political interference and lack of support from other Government Departments at provincial level. This has been a hindrance to its operations (Duthie, 2001).

In as much as developing countries stand to benefit from global best practice, countries need to decide what they want from the global technology marketplace and then work out how they are going to achieve it. Technological determinism can be countered by actual and well-planned national strategies (Pradhan & Metcalfe, 2009). A typical example named by Shekelle *et al.* (2006), concerning Health Information Technology (HIT) showing widespread implementation of HIT has been limited by a lack of generalisable knowledge about what types of HIT and implementation methods will improve care and manage costs for specific health organisations (Shekelle *et al.*, 2006.). While the benefits of HIT are clear in theory, adapting new IS to health care has proven difficult and rates of use have been limited (Annals of Internal Medicine, 2006).

Colossal amount of resources and money spent on IT is bound to haemorrhage an organization's resources if not properly used. In 1998, the South African software revenues were estimated at R 3.8 billion, with half of that amount derived from packaged applications software and the rest from operating systems, networking software and software development tools. The amount included an estimated R253

million in consumer software purchases, with 90% of the rest spread across the major user sectors noted in the hardware section above. The total value for software purchases in 2000 was estimated at R 5.7 billion (James, 2001).

For IT to be cost-effective, a large user-based contribution sharing information is often necessary for its existence. This requires the use of open and standardised interfaces to enable large numbers of different users to make use of the infrastructure (Janssen *et al.*, 2009).

The importance of achieving cost to benefit use of IT as discussed will base on the efficiency and effective. Included was an observation on the requirement of commitment of resources to training employees to exploit the new technologies and systems. The proper adaptation of IT to suite users and stakeholders forms the core of a cost effective IT system. This is in light of the massive amounts of resources spent on IT. Discussion on the importance of integration of Government strategic planning with IT follows in the next section. This illustrates the importance of integration of IT in Government as a tool for service delivery.

2.6 Integration of Government Strategic Planning with IT

The Government of South Africa has implemented integrated development strategies under Integrated Development Plans (IDP). These aim to integrate national Government policies with provincial and local or municipalities. The lack of planning gave rise to the (IDP) document, which was meant to guide municipalities through the planning process Unfortunately without technical, transport, economic, town and regional planners developing and maintaining long-term plans, IDPs have generally become wish lists made up of many isolated and often non-strategic projects (Lawless, 2005).

The old models held IT isolated from the mainstream of reform, or held IT as the objective of reform. The new model brings IS (IS) to the heart of reform. E-Governance is the ICT-enabled route to achieving governance (Heeks, 2001). Braa (2001) mentioned the need to develop ICT and IS district and provincial levels in Mozambique to be an integrated effort across sectors supported this. A district Health Information System (HIS), which is part of the mandated service provision, cannot be developed in a void (Braa, 2001). Health is paramount of the

Government's service delivery. An integrated system in a pilot conducted on the South African Department of Health by Patel and White, (2009) confirm that the following benefits are realisable:

- Improved healthcare offerings to citizens, through quicker access to better quality information related to patient healthcare.
- Allowed all healthcare workers registered to perform real time 24-hour patient specific data and transaction exchange via his/her registered cell phone, thereby updating that specific hospital/clinic files and enhancing systems.
- Allowed all healthcare workers and patients (where applicable) registered to access in real time, 24 hours a day, general health information posted by Department of Health via his/her registered cell phone.
- Allowed easier drug management rules and stock control for individual patient.
- Assisted compliance regarding disease management protocols, or the deviation from approved treatment protocols.
- Provided healthcare workers and or patients with a unique, non-transferable and robust identification system that could link them to clinical data and ART (or other) prescription in real time, without compromising confidentiality.
- Allowed all existing hospital/clinic systems to interact with the National Laboratory system (Patel & White, 2009).

Early adopters of web-enabled technology applications tended to automate existing business processes, with little redesign or innovation. Typical approaches involved automation of the front-end web presence to spark e-commerce activity, but failed to integrate and redesign the business as a whole in order to make it truly web-centric. The same was true of early e-Government initiatives, there was a scramble to get as many services or web pages up with little regard to quality, service level or appropriateness for the citizenship (Davison *et al.*, 2005).

E-Government can therefore conceptualize as the mainstream integration of electronic tools with other developmental tools in internal public management, external service delivery and democratic interaction processes between

Government and society. The aim of this integration is to empower individuals and communities to make informed choices among a range of feasible alternative courses of action, and in that way to enable them to develop their full potential in life in a more effective and sustainable way (Cloete, 2004). Where e-Government projects are introduced, they mainly end in failure; either partial or total. To address this tactical challenge, stakeholders must sensitise to the large gaps that often exist between project design and African public sector reality. These large designs, reality gaps can be seen to underlie failure (Heeks, 2002).

There must be a willingness to achieve set visions pertaining to use of IT in Government. To derive this, leadership commitment is essential. Governments need to look for leaders who can take the actions of articulating and promoting acceptance of vision and strategy, and or facilitating electronic service delivery and structuring implementation effectively. This can lead to the success of e-Government service (Luk, 2009).

The research highlighted the integration of the use of IT as a tool for Government service delivery. This entailed the proper integration of policy at national, provincial and municipality/local levels through IDPs. Integration of functions with IT includes IS and ICT. This enlightens the importance of e-Government. The discussion included the leadership commitments and willingness to drive the IT vision in Government. Avoiding the human factor under leadership, commitment and willingness is unattainable. The following section discusses literature on the attraction and retention of IT personnel in Government departments.

2.7 Attraction and Retention of IT Personnel in Government Departments

Specific barriers associated with the e-Government initialization process are many, including inadequately skilled citizens and Government employees (Marche and McNiven, 2003 as cited in Davison *et al.*, 2005). One of the problems relating to the functioning of the South African system is a lack of sufficient and appropriate administrative, management and technical skills in all three spheres of Government, although this is perhaps more serious at the sphere of local Government (Brand, 2007). This is not a case only in South Africa alone. Morello and Claps, (2000) as

cited in Coombs, (2009), observed IT profession in many countries had high turnover rates. Estimation of turnover rates ranged from 20% in the 1980s, to 30% in the late 1990s and between 5 and 14% in the 2000s (Morello & Claps, (2000), as *cited* in Coombs, 2009). Recent surveys indicated a drop in the demand for IT professionals. This has attributed to the reverse of the effects of the dot com bus (Coombs, 2009). Paramount has been the attraction, developing and retention of skilled IT personnel identified in the top five IT executive management worries for 2007/2008 (Luftman & Kempaiah, 2008 as *cited* in Coombs, 2008).

In a study by Simelane (1999), it showed that South Africa has had three peaks in emigration of essential skilled workers. The first one was in 1977 after the Soweto riots. Another occurred in 1986 during the States of Emergency and in 1994 during the introduction of the ANC Government (Simelane, 1999). A dramatic increase in emigration of South Africans to countries such as Australia, New Zealand and the United Kingdom has occurred (Statistics South Africa, 2005). With figures indicating that between the periods 1997 and 2001 South Africa lost an estimated 310 000 citizens, including 50 000 professionals, South Africa is undoubtedly experiencing a skills crisis (Crush, 2002) that is unlikely to slow down in the foreseeable future (Mattes & Richmond, *cited* in Crush, 2002). Statistics South Africa (2005) reported that there was a further increase in the emigration of South Africa's skilled workforce between the years 2002 and 2003, of which 65% were economically active and 26.7% were professionals. The United Kingdom, Australia, New Zealand, Canada and the United States have emerged as the emigration destinations of choice (Kerr-Phillips & Thomas, 2009). Rationale offered by Kerr-Phillips, and Thomas, for emigration, concerning macro issues include uncertainty about the future of the country, job insecurity and fears regarding corruption and violent crime. While reasons for talent loss on micro issues attribute to leadership, organisational culture and employment equity (Kerr-Phillips & Thomas, 2009).

The supply potential of skills is low in such a situation, while the demand for service delivery is high. The importance of the public service to the Government and people of South Africa is underlined by the explicit provisions its constitution (Republic of South Africa, 1996, Adopted in Act 108 of 1996). It sets the manner

for South African public service by providing for the basic values and principles governing public administration, which includes good human resource management, and career development practices to maximise human potential (Schwella, 2001).

While internationally, skills shortages and the war for talent critically influencing competitiveness, few organisations integrate strategies for talent acquisition and retention into their mainstream strategies (Guthridge *et al.*, 2008 as cited in Kerr-Phillips & Thomas, 2009). The South African Government has strategies in place to address this. Proof is contained in a Public Service framework strategy that warrants, staff retention is about finding the best of employee for the job and finding ways of keeping these employees within the organization or in this case, department. It involves a range of ideas and human resource practices. These practices should interlink as focuses on attracting employees to join the organisation through focusing on recruitment strategies and keeping those who are already employed, especially those possess scarce skills that are difficult to get from the labour market and are more crucial to organisations. Retention involves motivating staff psychologically, which is the employee perception, their goals and their behaviours. This motivation includes other operational aspects attached to employee jobs or tasks. It requires a management approach that takes inside and outside dynamics of the the organisation into account (The Scarce Skills Retention Strategy Framework for the Public Service, 2002).

Despite policy and strategy being in place, three provinces, including the North West experienced staff had acute shortages (Duthie, 2001). Regional administrations continue to experience difficulties attributed to skills shortages. In the North West Province in 2002, out of an establishment of 89,000 posts, 27,000 were vacant, which according to the Premier's Office mainly included critical and key positions (Lodge, 2005). Personnel in most provinces had sound qualifications but are inexperienced, and lack of service contracts and poor salaries result in loss of experienced staff (Duthie, 2001).

Understanding the root cause for such problems especially concerning the retention of IT resources becomes ostensible. Prasad (2009) observes the access to IT

resources is limited, and an understanding of how value could be maximised within this constraint is crucial for growth (Prasad, 2009).

Lawless (2005) attributes retention of resources by local Government as a challenge worldwide. Some of the constraints to retention articulated including:

- A frustrating environment where professional judgment is not recognised
- Lack of authority, although technical staff are expected to be responsible and accountable for service delivery
- Excessive bureaucracy and the need to report the same issues to many bodies, each in a different format
- Uncompetitive salaries
- Lack of opportunities and support for developing and retaining professional status
- Contract appointments

There is a need to retain those with knowledge to lead, train, manage service providers and oversee all processes. It is imperative that senior job descriptions offer a level of authority and technical departments offered some degree of autonomy. Bureaucratic burden ought to be kept to the minimum on staff with technical expertise perceived to be valuable in local Government (Lawless, 2005).

IT professionals will willingly remain in organizations where work is stimulating and challenging, chances for advancement are high and if they feel reasonably well paid (Paré & Tremblay, 2000 as *cited* in Bashir & Ramay, 2008). Over and above the need to retain key skills such as IT/ICT, Braa, (2001) suggested the inclusion of developing educational programmes for training of ICT workers and managers, to Masters and PhD programmes in ICT and IS (Braa, 2001). International literature supports this through evidence from Uganda where IS administrators were highly valued and needed retention and supported. Studies in the Netherlands, Hong Kong and the United Kingdom also show the factoring of training in retention of such key (Visscher and Bloemen, 1999; Visscher *et al.*, 2003 as *cited* in Bisaso *et al.*, 2008).

Identifying key skills required is important; the Scarce Skills Retention Strategy Framework for the Public Service (2002) stressed this. The framework further confirms not all staff turnover Government is bad. Staff turnover allows new ideas

to come into departments and the promotion of remaining employees. The loss of employees that have critical and scarce skills can hamper service delivery. It is important to identify and prioritised such skills. Skills need classification. Classifying skills is a key step in ensuring a focused and cost-effective retention strategy. Discriminate against some categories of employees is not the aim, but rather to allow for a focused approach towards retaining staff and skills (The Scarce Skills Retention Strategy Framework for the Public Service, 2002). The apparent shortage of available skills in the ICT industry has received attention. Unlike other professions where professional bodies exist, there is no mechanism for calculating accurately how many ICT professionals are available in the country. An additional problem relates to the definitional aspects in that not all organisations use the same categories for defining ICT staff, thus making comparison more difficult (James, 2001).

The strategy of retaining scarce skills like IT skills through further training is resounded by Puah and Ananthram (2006) suggesting, Career development has a straight influence on the accomplishment of job satisfaction and career commitment (Puah & Ananthram 2006). Similarly, Johns (2005) suggests that employees that have advanced would put more effort into their work. However, Hartzenberg (2002) argues, organisations are expecting employees to assume greater responsibility for their own future as well as for organisation's success (Hartzenberg, 2002 as *cited* in Bashir & Ramay, 2008).

The section looked at importance of attracting and retention of scarce skills in relation to service delivery by Government. Literature on the causes of skill emigration from South Africa and reasons were discussed. Included in the section was literature on stratagems on retention of skilled personnel with specific reference to IT personnel. Factors of retention of staff have budgetary implications in most cases. Therefore, the next section looks at budgetary constraints of IT department in Government.

2.8 Budgetary Constraints of IT Department in Government

Integrated strategic planning of the IT Division poses a challenge, that needs a coordination of all the directorates within the department of Provincial Treasury and to link the departmental priorities, its objectives with the annual performance

plan as well as the budget. It is particularly difficult in the context of medium-term budgeting. Budgeting and resource allocation processes are deeply rooted routines of the Provincial Government that involves the distribution of limited resources to meet the Provincial Government priorities, social, economic needs by means of service delivery (South Africa Management Development Institute, 2006). In a paper delivered by on Departmental Budgeting for IT, Oberlin (2009) stated understanding the basic economics of IT is a logical and necessary step towards resolving issues related to funding IT. Building and managing IT is complicated by the extreme rate of change inherent in the industry. Thus, a key to good planning is to plan for change. One way to accomplish this is to understand life cycles and then budget accordingly (Oberlin, 2009).

A realisation is emerging that the main weakness in current policy failures in developing countries are in most cases bad management of existing resources that are largely within the control of decision-makers. These resources include budget constraints like under-spending, waste, corruption, inefficiency, ineffectiveness and low productivity (Cloete, 2004). Such constraints results in redirecting of resources causes most skilled staff to leave government to join the private sector. Lodge (2005) observed skills concentration in the urbanised provinces following the redirection of public funding *cited* this. In the more rural provinces skilled personnel like teachers, health professionals and technical staff move into the private sector (Lodge, 2005). Inadequate Government funding for functions such as the IT Division will on the other hand lead to a problem of retaining qualified staff and force dependency on consultancy services (Sleight, 2000).

Central Governments have attempted to address these problems by discriminating against the richer or better-resourced provinces in budgetary allocations through increased funding to poorer provinces. However, this has only accentuated their administrative difficulties because they lack the capacity to spend money efficiently. For example, in 2002, R 1 billion had to return to the treasury; funds that provincial education departments in South Africa had failed to spend (Lodge, 2005). A study conducted by Santa (2003), revealed that the economic problem of scarcity is central to budgeting. In the private and public sectors, organisations and Governments have limited resources at their disposals. These limited resources

need to be allocated to meet a variety of needs. The allocation of the resources takes place in accordance with the objectives of an organisation or state. The resources expended in the form of expenditure. In the private sector with a profit motive, where the goods or services resulting from the funds expended are sold to customers. The study showed a paradigm shift towards rendering services in a more business-like manner by Government sectors (Santa, 2003).

Other scholars like Brand (2007) still argue in favour of financial independence because it is decisive for political competence. Only an even distribution of state revenue can ensure efficient, good quality, collaborative and accountable service delivery. Since provinces and municipalities are diverse, especially in terms of their economic power, a financial equalisation system is necessary to balance the quality of life in the different regions of the country (Brand, 2007). Argument by Brand (2007) may be justified considering the effect of lack of appropriate budgets leads to concerns where authorities are overstretched requiring additional funding. Jeffery and Reilly (2003) assert the pattern of growth of functions alongside static income causes capacity gaps. Where staffing levels are inadequate for a growing range of tasks result in over-stretching and requires additional to carry out existing responsibilities more effectively (Jeffery & Reilly, 2003).

To maintain adequate funding and spending by local Governments, turnaround strategies need to be developed; master plans updated or developed from scratch, and long-term, holistic views and budgets must be integrated into Integrated Development Plans (IDPs). This will help make turn them into credible documents. The difference between an IDP and a departmental business plan must be clearly understood. Prioritisation of budgets must meet with service delivery with sustainability underlined based on value for money and life cycle costing (Lawless, 2005). Limited budgets generate pressure to make format choices within development and for decisions (Burroughs, 2009).

The Government in the past resorted to raising additional funds from both the private sector and international donors, to support a number of the planned IT particularly in relation to human resources development and training. These sustained the Medium Term Expenditure Framework (MTEF) budget process. This supported a number of key sub-divisions. However, in developing IT service

delivery with external financial assistance, departments paid particular attention to the question of longer-term sustainability, given that external funding was undependable in the long term (White Paper on the Transformation of Public Service, 1995)

The need for fiscal restraint in national and provincial budgets, and the limited assistance expected from external donors, made it inevitable that the majority of the costs of IT be absorbed within existing departmental budgets. This would be achieved through the re-prioritising of expenditure and the achievement of efficiency savings to assist the processes of efficiency savings and the reprioritisation of budgets. The White paper contained reference that “rectification of the budgets be made through the provision of accurate and disaggregated figures for each Programme within the department of Finance (White Paper on the Transformation of Public Service, 1995) This insinuates none accuracy of the budgets in the fist place. The effect of lack of appropriate budgets leads to overstretching of authorities and soliciting of additional funding (Brand, 2007).

The section discussed literature pertaining to budgetary strategies and policies on developing countries and South Africa. Results of budgetary constraints, sourcing and allocation of funds were discussed. The next section looks at literature related to provincial and local Government delivery issues

2.9 Provincial and Local Government Service Delivery Issues

The UNDP (2007) observed there are numerous and complex causes leading to the failure of Governments to provide decent service delivery. Among prominent causes are lack of accountability, transparency and commitment in making services work for poor and marginalised citizens. Effective service delivery is hindered by the lack of Government agencies implementation capacity and engagement of citizens. Other causes include the insufficient targeting of the poor, supply-driven planning, proper capturing of programmes and their inability to reach the Government and service providers (UNDP, 2007). E-Government is becoming the answer to problems that Governments or public agencies in general face in serving their constituencies effectively. This is especially so in developing countries, where generally the public agencies face resource constraints in improving their operations and delivering services to the citizens (Kumar & Best, 2006).

In South Africa, while it is clear that policy makers have been productive, it is not clear that the performance and delivery of the public service in any way have matched the real and good intentions of the policy makers. Government departments are strong on policy but weak on delivery (Presidential Review Commission on the Reform and Transformation of the Public Service in South Africa, 1998 as *cited* in Schwella, 2001). Benjamin, (2001) also noted that the lack of regularly updated content and interactivity led to the failure of a community based e-Government initiative in South Africa within a year, despite its initial success (Benjamin, 2001 as *cited* in Kumar & Best, 2006). Governments in the developing nation's costs tend to be high while service delivery remains low with minimal accountability (Heeks, 2001). The South African Governments at national, provincial and local level is probably more effective today. This is particularly due to the willingness of legislators to address oversight functions as well as the efforts by provincial parliaments to promote citizen engagement. However, bureaucratic shortcomings in the new provincial Governments continue to impede performance (Lodge, 2005).

The North West province, experienced bureaucratic factionalism between departmental heads nominated by the committees and administrators perceived to be loyal to the former ruler of the province, Lucas Mangope (Head of the Bophuthatswana homeland). This had a major impact on service delivery for several years, especially in the Departments of Education and Social Welfare. A civil service of 50,000 homeland workers combined with 20,000 officials from the Cape and Transvaal administrations. Violent political conflict, junior officials and public workers, professedly loyal to the African National Congress (governing party), preceded this procedure (Lodge, 2005).

Delivery of services has been an issue arising from retention of vital skills as noted in the Scarce Skills Retention Framework for Public Service (2002), on the recruiting and retaining staff. It mandates the role of the Human Resource Manager to ensure that the organisation has right number of staff, right kind of staff, at the right time and place with the right skills doing what is economically important for the organisation. Without staff, it will not be possible to provide the services meant

for the Department to provide to all the South Africans (The Scarce Skills Retention Strategy Framework for the Public Service, 2002).

2.10 Service Delivery in Relation to IT Division use in Service Departments

The White Paper on Transformation Service Delivery (1995) recognises that service delivery in the past was:

- inefficient and ineffective
- self serving, inward looking, bureaucratic, fragmented and over centralized
- inequitable, discriminatory, lacking diversity and demographic representation
- prescriptive, rule bound, too compliance oriented, top down/top heavy and
- corrupt infested

To counter these legacies required re-engineering which would include among other things improved performance in the application of policies, effective systems, processes, organisation, technology, infrastructure and resources (Nel, 2006). These clearly point towards the use of e-government for the improvement of service delivery.

E-Government must be given serious consideration in developing countries not only for its potential for stronger institutional capacity building, but also for better service delivery for citizens and business. This will lead to increased local social and economic development and for reducing corruption by increasing transparency and social control (UN-DPEPA 2001:5 as *cited* in Cloete, 2004). The use of IT in Government enhances service delivery through both front-office applications and applications in the back-office, that is, improved internal efficiencies (Patel & White, 2009).

South Africa is currently experiencing a general skills crisis, especially pertaining to the retention of its top talent or ‘knowledge workers’ such as IT professionals. This ‘brain drain’ leads to the depletion or loss of intellectual and technical personnel, with a negative outcome that influences the economic and social growth of the country (Du Preez, 2002 as *cited* in Kerr-Phillips & Thomas, 2009).

The National Public Service needs to develop and retain core competencies with capability to manage development. When the economic environment improves, it

becomes harder to retain scarce resources. The fast pace of technological innovation requires procures and manage skills from the market. The National Public Service can leverage the development of an indigenous IT capability in this. The IT Division should not perceive technology as an end in itself but as an enabling instrument towards the re-engineering of the Government and its processes. Otherwise, new systems will become superfluous simply legislation, regulations and procedures (Sant, 1997).

As a technical catalyst for development, use of IT should be in the context within of appropriate services delivery. Development and service delivery must include the widest connotation of change management and human issues. If a system is not delivering, work will not be done until management down the line pro-actively exploits its full potential. This introduces the relationship of IT shared with its client/line departments (World Bank Group, 2008). Managers attached to the IT Division in the Department of Finance should work to improve communication skills because they are required to effectively interact with line departments and other partnerships they represent (National Treasury, 2004: 24-25).

The section has looked at literature that stresses the importance of e-Government in relation to line departments as an institutional of capacity building and for better service delivery. Discussion includes the shortage of IT professional currently faced in South as a crisis. The National Public Service needs to develop and retain core competencies with capability to manage development and services delivery. The next chapter looks at literature pertaining to international use of IT specifically. This aimed to draw international best practices.

2.11 International Perspective of IT in Government

E-Government concepts and designs have their origins in the West. These origins are significantly different from African realities. Some best practices however can be drawn that can help to close design and reality gaps, thereby assist in the improvement of African IT project success rates (Heeks, 2002). Heeks (2003) reaffirms this *citing* some analysts have noted that e-Government projects often fail either totally or partially in achieving their objectives despite initial successes (Heeks, 2003 as *cited* in Kumar & Best, 2006). In a study of a rural e-Government

project in India, Cecchini and Raina (2003) find that though service satisfaction was high, usage over time was low, and the poorest people were not using the services (Cecchini & Raina, 2003 as *cited* in Kumar & Best, 2006).

It is imperative that South Africa becomes globally competitive. The World Competitiveness Report (IMD, 2008) lists South Africa in 53rd position in a ranking of the competitiveness of 55 nations, a decline from previous years. A critical component of competitiveness is having the appropriate skills complement across a range of occupations and professions as well as the skills to drive leadership in South African organizations (Kerr-Phillips & Thomas, 2009).

The understanding of IS development as a universal phenomenon is less commonly questioned. Consideration remains on whether systems development really is the same in Africa as in industrialized countries, because of several differences in contextual factors. We suggest that there are special requirements that should be taken into consideration in systems development methodology in Africa. These include sustainability, affordability, socio-economic justification and community participation (Mursu *et al.*, 2000). Developmental successes in industrial nations attribute to the successful implementation of integrated and synchronized policy strategies in various policy sectors, leading to sustainable developmental outcomes (Weaver *et al.*, 1997; Cloete, 2000 as *cited* in Cloete, 2004). One of the contributing factors in this regard, in addition to the crucial empowering role of education in increasing literacy levels and providing alternative possibilities for policy-related choices, is the significant role that technology had played in modernising and transforming outdated practices and processes in those societies (Cloete, 2004).

The use of IT cannot be underestimated. Developed countries such as the United States face challenges that can best be solved through improve IT. For instance, the health care system is at risk due to increasing demand, spiralling costs, inconsistent and poor quality of care, and inefficient, poorly coordinated care systems. Evidence suggests that health IT (HIT) can improve the efficiency, cost effectiveness, quality, and safety of medical care delivery by making best practice guidelines and evidence databases immediately available to clinicians, and by making

computerized patient records available throughout a health care network (Shekelle *et al.*, 2006).

Reports from individual developing countries found information system failure to be the dominant theme (Heek, 2002). Although the general literature reveal that developing countries are lagging behind in the use of IT, partly because of constraints in skills, expertise, finance, and computer equipment (Visscher, 2001), this has not entirely been the case in Botswana and Uganda (Bisaso *et al.*, 2008). Examples of the use of IT in Botswana are in the administrative reforms geared to improve efficiency in the public sector, together with a rapidly expanding education system, were the foundation upon which the computerisation of activities of the Ministry of Education (MOE) was grounded (Bisaso *et al.*, 2008). Other countries that have reported measures of success include Egypt. The Information and Decision Support Centre has created a comprehensive national database with 85 million birth records, 34 million death records, 12 million marriage records and 2 million divorce records. This has provided the basis for a national ID number and, hence, a secure and accurate national ID card. Automation of previously manual processes has saved considerable sums of money. The information base and ID numbers have also been an essential building block in the creation of other public sector planning and service delivery applications (Heeks, 2001).

Computers and Internet are rapidly being spread to the provincial capitals and major districts in Mozambique. A main problem identified is the lack of ICT-skills and education and poorly developed infrastructure and networks of support (Braa, 2001). Similarly, in Pakistan, organisations employing IT professionals are seeking strategies, which can induce organisational commitment in IT professionals. Several factors affect organisational commitment but present study focuses its relationship with career opportunities, work life policies and job. Pakistan organisations employing IT professionals are seeking strategies, which can induce organisational commitment in IT professionals. Several factors affect organisational commitment but present study focuses its relationship with career opportunities, work life policies and job creation (Bashir & Ramay, 2008). Nepal faces the IT skills dilemma where Pradhan and Metcalfe (2009) assert if left

unchecked the technological marketplace will impose a hard-to-reverse negative position (Pradhan & Metcalfe, 2009).

Such challenges in developing countries have however not stopped the ambition to introduce the use of IT for the betterment of Government service delivery. Shanghai recognises but is not deterred that launching a municipality-wide e-Government program is an extensive, meticulously planned initiative involving ambitious goals and large-scale operational transformation (Chen *et al.*, 2009).

The section looked at literature pertaining to international use of it in developed and developing countries. Albeit the use of it in developing countries, the importance of its use envelopes countries such as USA. Literature reviewed includes African countries namely; Botswana and Uganda, Egypt and Mozambique. Other literature studied was based on Pakistan and Shanghai. The next section highlights the developments and future of IT in Government.

2.12 Developments and Future of IT in Government

IT (IT) can be the main factor in increasing productivity in public administration, communications infrastructure, industry and agriculture (Pradhan & Metcalfe, 2009). E-government involves the use of IT by governmental organizations to improve their operational efficiency and effectiveness in meeting citizen needs (Chen *et al.*, 2009). Recognizing the potential of internet technology to facilitate how they conduct business with the public, agencies have turned to e-government complement or, in some instances have replaced, traditional public service delivery systems (Moon & Welch, 2005 as *cited* in Luk, 2009).

Spreading use of IT has evolved in service delivery areas such as health with the development of Health IT HIT has the potential to enable a dramatic transformation in the delivery of health care, making it safer, more effective, and more efficient. Some organizations have already realised major gains through the implementation of multifunctional, interoperable HIT systems (Shekelle *et al.*, 2006). Health care experts, policymakers, payers, and consumers consider HIT, such as electronic health records and computerised provider order entry, to be critical to transforming the health care industry (Annals of Internal Medicine, 2006).

Most state Governments today have moved beyond the static informational and bulletin-type web sites to offer a wide range of interactive services (Badri & Alshare 2008). In the past, IT remained isolated from the mainstream of reform, or objective of reform. It is currently common to bring IS to the heart of reform (Heeks, 2001). The old model was one of IT (IT) automating the internal workings of Government by processing data. The new model is one of HITs Supporting and transforming the external workings of governance by processing and communicating data (Heeks, 2001).

Information system development (ISD) is an essential part of the diffusion and implementation of IT. It is broadly defined here as a process by which some collective work activity is facilitated by new IT means through analysis, design, implementation, introduction and sustained support. It also includes activities like project management, quality assurance, and software process improvement. Information system development (ISD) is an essential part of the diffusion and implementation of IT. It is broadly defined here as a process by which some collective work activity is facilitated by new IT means through analysis, design, implementation, introduction and sustained support. It also includes activities like project management, quality assurance, and software process improvement (Mursu *et al.*, 2000). Procedural justice, information sharing, and work life policies practices must be considered as complementary means to achieve lower IT turnover rates (Paré & Tremblay, 2000 as *cited* in Bashir & Ramay 2008).

2.13 Research Questions

The literature review has shown the increased use of IT in governments for the purpose of enhanced service delivery. North West Provincial Government has an IT Division placed under the Treasury Department. The IT Division continues to face challenges that have an impact on the overall service delivery of the Government. The question stands on how effective the North West Provincial Government uses IT for the enhancement of service delivery. Thus the following researches remain:

What is your main research question?

- Is the North West provincial Government coping with the effective and efficient delivery of services to the public?

List any subsidiary research questions.

- In the North West Provincial Government, is there IT use for the purpose of service delivery to the public?
- Is the use of the IT Division of the North West Province contributing to the effective and efficient delivery service to the North West Provincial departments?
- Is the IT Division facing challenges that are limiting its desired performance?
- Is the IT Division experiencing staff turnover?
- Are there current budgetary constraints faced by the IT Division?

2.14 Conclusion

The literature on the significance of IT in Government was made to highlight the role played by IT in Government with regard to service delivery particularly for the North West provincial Government. Governments have increased the use of IT compounded under e-Government in areas such as education, health and finance. To this end, there have been policies that have been initiated with the aim of augmenting the intention to use IT in Government. The use IT requires efficiency where the costs involved result in commensurate return on investment at the various levels of Government namely; national, provincial and local. The Government like other organizations faces the challenge of retaining critical skills especially related to IT. Retention of human resource can partly be attributed to budgetary constraints faced by the Government on how to effectively use limited finances. Budgetary constraints overlap the retention of labour and tend to affect ability to offer effective services to the citizens. Services delivery issues are specifically discussed under provincial and local Government service delivery issues, Government delivery service, and the use of IT *vis-a-vis* line departments. South Africa belongs to a global family and therefore most of the literature discussed has compared local practice with international best practice or issues. Literature discussed has therefore included a section dedicated to international Governments' perspective on IT and a section on the future and development of IT.

The literature review indicates the importance of the use of IT to be used in service delivery through provincial departments (integrated of strategy and the use of IT).

IT division is facing with budgetary allocation to the IT division of limited resources to meet the Provincial Government priorities, social, economic needs by means of service delivery.

This study if considered by the leadership of the North West Provincial Government as a valuable tool should enhance the service delivery provided by IT division and North West Provincial Government at large.

The next chapter looks at the research methodology applied to establish the role played by IT in the North West Provincial Government towards service delivery. The research methodology applied has been limited to the quantitative method. For the benefit of determining the most appropriate method for this research, the advantages and disadvantages of the chosen methods have been explored. This will assist with arriving at the apt method required to answer the research questions put forward.

Chapter Three

Research Methodology

3.1 Introduction

The research problems, which remain unresolved, were specified in the previous chapters. A review was made on various literature with regard to specified research problems, yielding no specific solution. This chapter therefore provides a research methodology aimed at solving the questions put forward. Hartley (2004) defines research methodology as the method of connecting the research questions, objectives and the data collection, followed by analysis and interpretation in a logical sequence (Hartley, 2004). The study attempts to resolve the following research questions: 1) Is the IT Division facing challenges that are limiting the North West Provincial Government to cope with the effective and efficient delivery of services to the public? 2) Is the IT Division experiencing a loss in expertise? 3) Are there budgetary and other constraints faced by the IT Division?

Aspects receiving review under this chapter include the research methodology used for the study in relation to the topic and the data collection methods available. The chapter also includes the nature of questions presented to respondents and the appropriateness of the questionnaires used. Special attention has been given to a discussion on the population and sampling. The chapter closes with a declaration on ethical limits to which the researcher has undertaken to comply.

3.2 Research Types

3.2.1 Quantitative and Qualitative

Quantitative, qualitative and mixed or triangulation, are the three main research methodology classifications. The choice of which methodology applied depends on the nature of data to be collected and the problem of the research. The quantitative methodology will apply where data is numerical while qualitative methodology will usually be undertaken where the data collected is verbal (Leedy & Ormrod, 2005).

Quantitative analysis is the collection and analysis of data that is non-qualitative (Lofland, 1984). Quantitative method is mostly concerned with the analysis of numerical data. Quantitative research manipulates variables, control natural phenomena, and as such, it is

impersonal and experimental. It is generally associated with systematic measurement, statistical analysis and mathematical models. The characteristics of traditional quantitative research are a focus on deduction, confirmation, theory/hypothesis testing, explanation, prediction, standardised data collection, and statistical analysis (Wan, 2003). According to Drott (1989) quantitative methods involves a systematic approach of using numerical data for the purpose of possible correlation among two or more phenomenon. It examines the situation as it is and therefore does not lead to any addition to the investigation, nor does it provide the cause-and-effect relationship (Leedy & Ormrod, 2005).

Researchers under quantitative methods should collect multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strength and non-overlapping weaknesses (Brewer & Hunter, 1989). Grayson (1980) contends the failure to use of quantitative methods by most researchers is because of the inability to understand computational data and models or interpretation of statistical inferences.

Qualitative methods focus mainly on phenomena occurring in its natural settings and aims to study the phenomena in their complexity entirely (Leedy & Ormrod, 2005). Under qualitative analysis, the assumption is that there are differing views to a problem or phenomenon, and the use of this method will deliver an accurate opinion of the matter studied. The researcher is required to dwell on the interpretation of the matter other than focusing on quantifying the situation (Creswell, 2003). Wan (2005) further states qualitative research as the methodology of study that produces descriptive data where people are written or spoken words and discernable (Wan, 2003). Qualitative data are generally based on themes that emerge through open-ended interviews, observations, or the review of various documents and audio visual materials such as videotapes, photographs, sounds, and even email and text messages (Creswell, 2005).

Peshkin (1993) asserts qualitative research has the ability to:

- Enable the researcher to have fresh views concerning a specific phenomenon allowing the development of new concepts or theoretical perspectives and or draw complications pertaining with the phenomenon
- Expose the nature of certain situations, settings, processes, relationships, systems or people

- Give the researcher tools to judge the effectiveness of certain policies, innovations and practices
- Encourage the researcher to test the validity of particular assumptions, theories, generalisations or claims within a practical setting.

According to Johnson and Onwuegbuzie (2004) mixed methods research is formally defined as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. It is an expansive and creative form of research. It is inclusive, pluralistic, and complementary, and it suggests that researchers take a heterogeneous approach to method selection and the thinking about and conduct of research. The research question is important to determine the approach and that offers the best chance to obtain useful answers. Many research questions and combinations of questions are best and most fully answered through mixed research solutions by mixed methods research, both quantitative and qualitative research are important and useful. The goal of mixed methods research is not to replace either of these approaches but rather to draw from the strengths and minimise the weaknesses of both in single research studies and across studies (Johnson & Onwuegbuzie, 2004).

The following is a comparison of the quantitative, qualitative and triangulation using a table:

Quantitative	Qualitative	Mixed
Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur.	Data based on the participants' own categories of meaning	Words, pictures, and narrative can be used to add meaning to numbers
Can generalize a research finding when it has been replicated on many different populations and subpopulations	It is useful for studying a limited number of cases in depth	Numbers can be used to add precision to words, pictures, and narrative
Useful for obtaining data that allow quantitative predictions to be made	It is useful for describing complex phenomena	Can provide quantitative and qualitative research strengths
Data collection using some quantitative methods is relatively quick (e.g., telephone interviews)	Provides individual case information	Researcher can generate and test a grounded theory

The research results are relatively independent of the researcher (e.g., effect size, statistical significance)	Responsive to changes that occur during the conduct of a study (especially during extended fieldwork) and may shift the focus of their studies as a result	Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach
It may have higher credibility with many people in power (e.g., administrators, politicians, people who fund programs)	Data in the words and categories of participants lend themselves to exploring how and why phenomena occur	A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study
It is useful for studying large numbers of people.		Can provide stronger evidence for a conclusion through convergence and corroboration of findings

Table 3.1 Distinction between quantitative, qualitative and triangulation methodology
(Source: Johnson & Onwuegbuzie, 2004)

3.2.2 Research Method (s) used in this Thesis

The quantitative approach is the method used for the purpose of this study. The quantitative methodology can best be used for observation studies, correlation research, development designs and survey research. On the other hand, qualitative methodology can best be used in descriptive, interpretive, verification and evaluation studies (Leedy & Ormrod). The reason to use this method has been arrived at based on the comparison of two methods i.e. quantitative and qualitative, in relation to the data collection method and the research question. This aim of this study is to determine the correlation between challenges faced in IT Division and its impact on service delivery of the North West Provincial Government.

3.2.3 What Data is Required?

Primary and Secondary Data

Primary data is firsthand information collected by the researcher aimed precisely for the study undertaken. Interviews and surveys can be used for the collection of data or information. Secondary data refers to information or data collected from previously gathered sources conducted by someone else for the purpose of a related study and subsequently used by other researcher. Secondary sources includes data collected from

sources such as books, journals, periodicals, and reports (Leedy & Ormrod, 2005). Leedy and Ormrod (2005) further state primary data is considered the closest to the actual study and secondary data as a layer farther away from the study performed. Cooper and Schindler (2004) on the other hand consider secondary data provides background information and direction for a research. This study, therefore, employs both primary and secondary data. As recommended by Leedy and Ormrod (2005), a research methodology is used for obtaining primary data based on a conducted survey. To achieve this, a survey is conducted to gather primary data while secondary data is been drawn from journals, reports and available literature in the academic field on the topic.

3.3 Data Collection Method

3.3.1 Methods for Collecting Primary Data

Data collection is categorised as a monitoring and communication process. In monitoring, the researcher does not need any response from subjects but inspects activities or nature of a material. In the interrogation or communication type of data collection, the researcher questions the subjects through interview or telephone conversation, self administered or self-reported instruments (Cooper & Schindler 2004). There is no simple answer to what is the best data collection instrument. The nature and purpose of the research will just give guide to which method to use (Blankenship & Breen, 1993). Open-ended questions characterise quantitative studies, while survey interviews are structured (Leedy & Ormrod, 2005).

a) Interviews

Qualitative studies tend to have open-ended interviews, survey research interviews tend to be structured. The questions posed in a structured interview tend to have a standard set of questions from the researcher (Leedy & Ormrod 2005).

b) Survey

The characteristic of a survey is the collection of numeric or quantitative data from a given group using direct observation. A survey can be used for various reasons that can include one of the following (Leedy & Ormrod 2005):

- Explore differences
- Examine correlations and associations

- Exploratory research
- Testing of a theoretical model
- For identification of trend

The primary data in this study will be collected by conducting a survey with structured questionnaires. The questionnaires will be distributed through email to decision makers in the 11 departments of the North West Provincial Government who will complete and disseminate the questionnaires to other relevant subjects of the study. Carefully selected officials in the departments will form part of the survey. These will include decision makers such as directors and managers directly involved with service delivery of the North West Province. Distributed of other questionnaires will involve personnel within the IT Division.

3.3.2 Questionnaires

Data collection is the gathering of data that may range from a simple observation at one location to a grandiose survey of multinational corporations in different parts of the world (Cooper & Schindler 2006:253). Questionnaires have been opted in this study because alternative methods such as personal interviews are costly in time and money. This constraint usually results in a small sample for study (Bless & Higson-Smith, 2000:108-109). Telephone surveys as an option can be costly and therefore interviewing length must be limited. Using this as a basis, it was decided to use a self-administered structured questionnaire in conducting the present study. De Vos (1998: 290) describes a questionnaire as an instrument with open or closed ended questions or statements to which a respondent must react. Questions are arranged in a definite order according to the researcher's choice. In close-ended questions, a series of possible answers are given from which the respondent must make his/her choice. Open-ended questions allow the respondents to give their own opinions, perceptions, and etcetera and do not restrict them to specific alternatives. The manager for Information Technology in the Department of Finance was approached for approval to distribute copies of the questionnaire amongst staff members in the IT Division. The strategy used to develop the items in the questionnaire was mainly derived from the literature in Chapter 2.

Twenty (20) questions but essential to the research make up the questionnaire as recommended by Leedy and Ormrod (2005). The intention is also to encourage and maximise the response rate. The questionnaire has three sections (Refer to Appendix C).

The first part concerns permission to use the respondent’s answers the academic research. The second section aims at collecting biographical data on the respondents such as age, gender and qualifications. The third section contains specific questions pertaining to the Information Technology Division challenges and its impact on service delivery of the North West Provincial Government. Responses require the respondent to indicate a yes or no answer. The following table gives the questionnaire outline.

A short disclaimer describing the purpose of the research - refer to Appendix A	
A reminder – refer to Appendix B	
The Questionnaire – Refer to Appendix c	
A ‘Thank you’ Note – refer to Appendix D	
Section 1	Permission to use the respondent’s answers the academic research
Section 2 Questions 1-8	Collects biography data on the respondents including age, gender and qualifications
Section 3	Focuses on collecting response on the Information Technology Division challenges and its impact on service delivery of the North West Provincial Government

Table 3.2: Questionnaire Outline

3.3.3 Sampling Methods

Babbie *et al.* (2003:112) describe a population for a study as that group (usually of people) about whom the researcher wants to draw inferences. However, with limited time and money, researchers are unlikely to study the entire body of relevant facts about the whole group of people under investigation. Therefore, the findings and conclusions in survey research are based on information gathered from a limited number of people from whom generalisations can be made about the whole number. This selected group from the population is called a sample (Nachmias & Nachmias 1996:201). When choosing a sample, the researcher often has to prepare a comprehensive list of all units in the target population that is called a sampling frame (Leedy & Ormond, 2005).

A list of all participants required for the sample is sourced followed by a random selection of the sample to be used for the purpose of the survey. The population is divided into the following North West Provincial Government and IT Division strata: senior management or directors, middle level management, lower level management (supervisors) and lower level staff. After stratifying the population, the respondents are randomly selected from each stratum. By using simple random selection in each stratum, each employee has an

equal chance to be selected into the sample, as such making it more representative of the population.

A table prepared by Krejcie and Morgan (1970) can help establish the appropriate sample size (S) based on the population (N). The proposed population size in this particular study N= 650 therefore S= 242. This entails that the sample size will require of a minimum of 108 completed questionnaires in order to draw an expressive conclusion from the data collected in the survey.

3.3.4 Types of Variables

Diamantopoulos and Sclegelmilch (2004) describe a variable as an empirical observable characteristic of some phenomenon, which can take more than one value or response category. For example, gender, number of tourists visiting a town, profits derived from a tour business or the percentage of the provincial budget spent on improving infrastructure. Expectation is that all questions raised in a questionnaire generate a variable. The common variables include nominal, ordinal and ratio variables (Diamantopoulos & Sclegelmilch, 2004).

Nominal variables: involve variables where the response can be placed in any order and the numbers assigned to the response categories have no other property except to serve as labels.

- Nominal variables allow the classification of responses
- The responses groups should be mutually exclusive and collectively exclusive in nature
- The frequency or percentage of occurrence under each category can be determined for nominal variables
- No numerical meanings are given to the categories

Ordinal variables: these are variables where the response categories have a certain order and the numbers assigned to the response categories have an order.

- Response from ordinal variables can be placed in categories
- The frequency or percentage of occurrence under each category can be determined for nominal variables
- Order of the number assigned to the categories have meaning

- The number assigned to the ordinal variables do not have meaning
- A rank or order of response can be placed on ordinal variables
- Difference between consecutive categories need not be the same

Ratio variables: these are numerical variables where there is some standard unit of the property measured. The distance between consecutive numbers is the same. Therefore, accurate statements on the differences between cases can be made.

- Responses can be categorised
- The frequency or percentage of occurrence under each category can be determined for nominal variables
- The number assigned to the rational variables have meaning
- The order of the number assigned to the categories have meaning
- A rank or order of response can be placed on rational variables
- Distance between two cases can be calculated allowing the measure of how much more or less
- The ratio of the two responses can be calculated

The survey will employ a combination of variables. For identifying participants, nominal and ordinal variables will be applied. The nature of questions asked will determine variables applied for survey questions varying from ordinal to ratio variables.

3.4 Ethical Consideration Pertaining to the Study

Ethics are concerned with the rules and principles that harmonise the aims and desires of all men. Since human beings are the subject of the study in the social science, this brings its own unique ethical problems to the fore that would never be relevant in the pure, clinical laboratory settings of the natural sciences (De Vos, 1988:23) ethical standards adhered to in this study follow the following norms:

- Justice; where all respondents are treated with respect and fairness
- Beneficence; no respondent is exploited in any way, nor harmed nor even exposed to any discomfort physical, emotionally or psychologically
- Confidentiality where no information provided by the respondents to the researcher is available to any other person

- Privacy; the researcher undertakes necessary precautions to ensure that the self-respect and dignity of the respondents is maintained by collecting the questionnaires privately
- Information consent; full disclosure is given to the respondents on the purpose and objective of the study and how the study is conducted
- Trust between the researcher and respondents are vital throughout the study. Attempts were made to gain trust of respondents during the course of the survey.

3.5 Limitations

Survey technique suffers from a number of shortcomings including the low response rate from to questionnaires. This will tend to impinge on the relevance of the research owing to lack of full representation.

- Other limitations arise where respondents are required to tick one of the possible answers and are not asked to give their true feelings
- Survey respondents are also likely to provide socially acceptable answers or avoid strongly negative or positive views and stick to compromise positions
- Some respondents deliberately and unnecessarily give extreme opinions as their answers. Occasionally, response rates are also low and it takes researchers extra time and expense to collect required number of responses
- Correlation research has a limitation where the correlation may suggest existing relationship between two variables, while proof of change in a variable resulting from that of the other variable may not be given.

3.6 Conclusion

This chapter described the research design and methodology used in this study. Further, it looked at instrumentation, research type, population, sampling method, and data gathering methods from a theoretical perspective. A discussion of how these were applied in this study was also indicated. Justifications for the choices made were provided as well. Both Tse (1998) and Schaefer and Dillman (1998) have found significantly faster response times with e-mails surveys and the same is hoped for this study as it will use e-mail survey approach. The next chapter articulates the study findings that would be used in rejecting or accepting the raised questions.



Chapter Four

Data Discussion

4.1 Introduction

The survey conducted involved the IT Division and Department within the North West Provincial Government (NWPG) with the aim of analysing the impact of the challenges faced by the IT Division on the level of delivery of service by the NWPG in the province. IT contributes to the performance of an organization (Prasad, 2009). E-governance and e-Government may improve access to public services, increase the efficiency, transparency and accountability of government and political processes (UNDP, 2007). However, IT is progressively consuming a greater proportion of South Africa national budget. There is a need to maintain a balance between the rate of investment of in information technology and rate of return in order to derive optimal benefits, earnings and savings related to the investment (Meadowcroft, 2008).

This chapter discusses the research findings and provides analyses and interpretation of data. The survey conducted had certain questions asked that have been analysed based on the application of Pearson correlation coefficient and p-value. The Pearson correlation coefficient method correlates all listed variables with each other, using two at a time, and indicates statistical significance of the relationship. The p-value provides information on the extent, which the significant region is (Diamantopoulos & Schlegelmilch, 2004).

This chapter starts with a descriptive introduction based on the demographics of the respondents. This is followed by a section reflecting the findings of the target survey's perception with regard to the impact of the IT Division challenges on the level of delivery of service by the NWPG. This starts with Frequency Tables and Figures on IT and IT service delivery, followed by the measures of association using Standard deviation of the means, and correlation. The chapter closes with t-Tests with all the tables.

4.2 Response rate

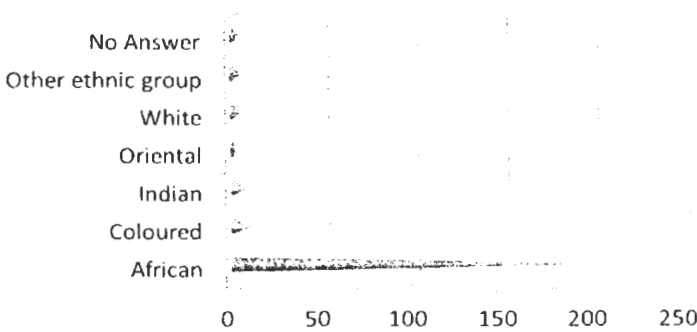
The following sections discuss the results of the survey. There were 300 questionnaire distributed out of a population of 650 desired employees of the NWPG. There were 250 completed questionnaires returned using simple random sampling technique. The number of 242 returned questionnaires was deemed the sufficient sample size according to Krejcie

and Morgan (1970). The data was summarized on a spreadsheet and xlSTAT was used to produce the required results.

4.3 Demographics

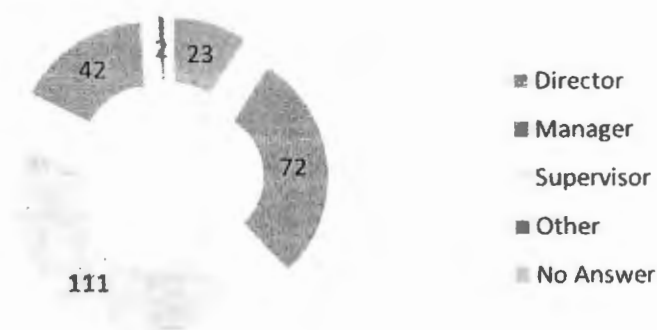
Results on demographics are discussed in this section. The results include figures and tables highlighting the ethnicity demographic profile, job profiles of the respondents, qualification profiles of the respondents, gender profiles of the respondents, age of the respondents, citizenships of the respondents, place of abode of the respondents and finally the section looks at the time worked of the respondents.

Figure 4.1: Ethnicity



As indicated in the chart above, out of the 250 respondents, there were a large number of African people. The result arises owing to the Affirmative Action policies currently in place in the civil service, which promotes the employment of more Africans. This has seen an increased exodus of other ethnic groups, especially among the white employees. This result may have an effect on the the standard deviation. It shows how much variation there is from the "average" (mean). A high standard deviation indicates that the data is spread out over a large range of values owing to the fact that the African component is so large. This draws the sample out of proportion. If one ignores the African component then the SD is only 15 showing that the sample is therefore representative. The sample size shows variability showing that the sample was picked at random.

Figure 4.2: Job profiles of the respondents



As indicated in the figure above, the highest number 111 (44.4%) of respondents was received from supervisors followed by managers with 72 (28.8%). The targeted sample was mainly of employees who were in discussion making positions such as directors, managers and supervisors. The respective employees have a better understanding of the challenges faced by the IT Division and its impact on delivery of service by their respective Departments. This is because of the experience actually gained through delivering deferent types of services to the community and in dealing with the IT Division. The number of directors in the NWPG compared to other positions is relatively small and therefore a response of 23 (9.2%) was representative of their category. The IT Division has 200 employees, out of which most of the 42 (16.8%) responses were obtained.

Table 4.1: Qualification profiles of the respondents

A degree	78
A postgraduate degree	23
Matric	145
No Answer	4

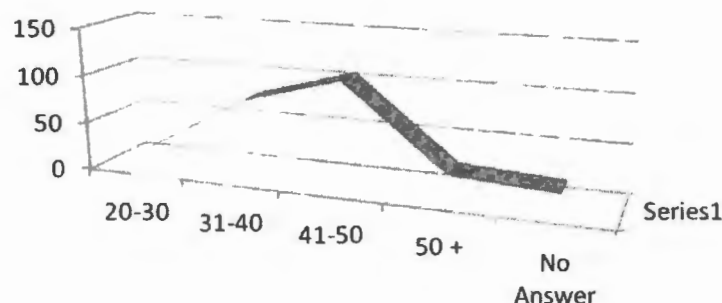
Given the information in Table 4.1, most of the respondents 145 (58%) have Metric qualifications. The role of IT is vital for management decision in respect to service delivery. The low levels of qualifications indicate low skills with the NWPG. This is bound to have an effect on the level of service delivery owing o the fact that most of the employees will be learning how to perform vital functions on the job. IT requires significant qualifications above Matric and therefore results shown indicate the lack of such skills and qualifications. This also poses a threat with regard to replacement of specialised skills such as IT in an environment of high staff turn over.

Figure 4.3: Gender profiles of the respondents



Figure 4.3 indicates a balanced representation of employment opportunities by gender. There are 129 (51.6%) female and 121 (48.4%) male employees. The results shown arise because of the empowerment policies promulgated within Government Departments. Recent policies encourage the equal employment opportunities of women through women empowerment policies. This is in line with the NWPG service delivery policy considering that the most afflicted in society are the women and children.

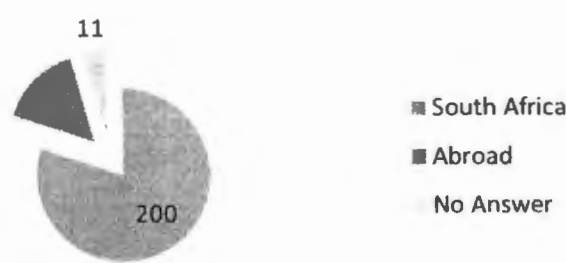
Figure 4.4: Age of the respondents



The graph above shows a high number of respondents in their middle age category. Respondents were randomly selected from all Government Departments including the IT Division. The intention was to target employees who were in decision-making positions such as directors, managers and supervisors. Most of such employees will fall within the middle age range shown by the results. The lower age range consisted mostly of IT Division employees who occupy technical positions. The Government provides secure job security whereby most employees are willing to remain within the employment of the civil service up until retirement. This is common most especially for non-technical skills

and may therefore not be representative of technical skills such as IT. According to the Two Factor Theory of Motivation, people are motivated to work because of their unsatisfied needs, which include job security. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004).

Figure 4.5: Citizenships of the respondents



The results in Figure 4.5 indicate that citizens occupy most 200 (80%) of the positions in the NWPG. The results showed 39 (15.6%) of the positions are occupied by abroad. The term ‘abroad’ is used to signify positions occupied by employees who are non-citizens or foreigners expects. Employment regulations reserve most of the job opportunities for locals or citizens only. Foreigners expect are mostly allowed to occupy positions regarded as scarce skills. These include skills such as IT and engineering skills. The ‘abroad’ category shown in the Figure above is therefore bound to be made up mostly of employees in the IT Division. Eleven (4.4%) respondents chose not to indicate their citizenship. This may have been composed mostly of foreign employees who may feel prejudiced to reveal their origins.

Figure 4.6: Place of abode of the respondents



Figure 4.6 show 160 (64%) grow up in the urban area, while 84 (33.6%) of the respondents indicated, they grow up in the rural area. Respondents within the urban area are bound to have a better perception of the use of IT for the delivery of services. This is because of the

exposure to technological advancements. The delivery of service problem is mostly abounding in rural areas where unfortunately appreciation for the use of IT may be limited. Lack of appropriate infrastructure and technology will continue to exacerbate delivery of service problem especially on the rural areas.

Table 4.2: Time worked of the respondents

Less than a year	0
1-5 years	42
6-10 years	103
11-15 years	44
More than 16 years	48
No Answer	13

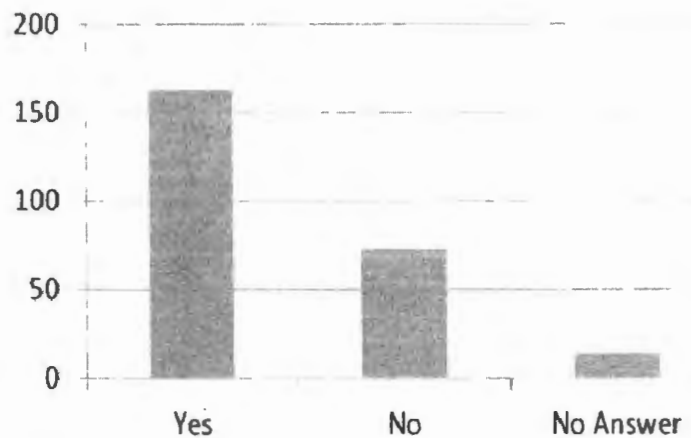
The results in table 4.2 indicate that most of the respondents from the 250 respondents, 103 (41.2%) have been in the service of the state Departments for a period between 6-10 years. Overall the results indicated that more of the respondents had actual been in the service longer than those who had not. This is because of the targeted sample that was mainly of people who were in decision-making positions. These respondents were in stations that could articulate the challenges faced by the IT Division and the impact this has had on the level of delivery of services in the North West Province. People tend to work long in the State Departments because of the job security offered by Government as indicated in the Two Factor Theory of Motivation; people are motivated to work because of their unsatisfied needs, which include job security. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004).

4.4 Frequency Tables and Figures on IT and IT service delivery

The following section looks at the frequencies of occurrences using Figures and Tables. Included in the section are frequencies on IT contributions to effective delivery of services in the NW Government, IT help desk solved user queries efficient enough, the hardware efficient enough to help answer the queries, experienced problems with network that impacts on service delivery. Frequencies on IT Division loss of expertise affects its functions, coping with present expertise, competitive salary packages help with retention of IT staff members and the incentives' of IT staff help with retention have also been included in the section. Other frequencies look at organisational structures/ career progression contribute to IT staff turnover, IT Division budget, link between the

Department of Provincial Treasury strategic plan and the IT Division budget and SITA constraints affect the performance.

Figure 4.7 IT contributions to effective delivery of services in the NW Government



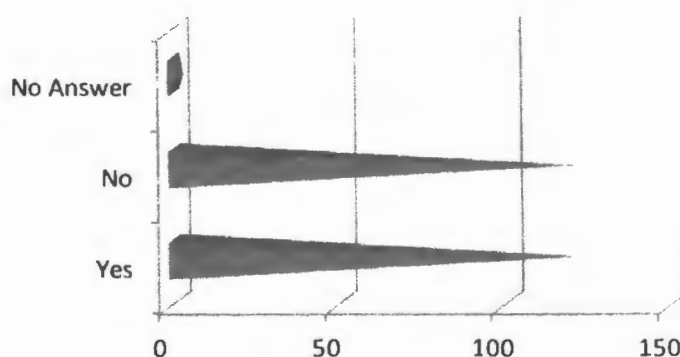
Out of the 250 respondents, the majority of the respondents indicated that IT contributes to service delivery. The affirmative response could be because of the improved running of the front and back office using IT. The use of IT may have improved response time to queries and may have reduced the amount of work that previously was done manually. Using IT has the propensity of reaching most of the community targeted for delivery of services. The response was enchanting considering the usually apathy attributed to change in the way particular functions are conducted in organisations. In the past, the NWPG has received challenges concerning changes even as simple as those affecting software improvements. The Departments have experienced resistance to change over new ways of performing functions such as the change of the financial management system. Previously the departments used Walker Financial System, which was a centralised financial system. There has been immigration to a new system call Basic Accounting Systems (BAS), which is decentralised. This has received resistance from users. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004).

Figure 4.8 IT help desk solved user queries efficient enough



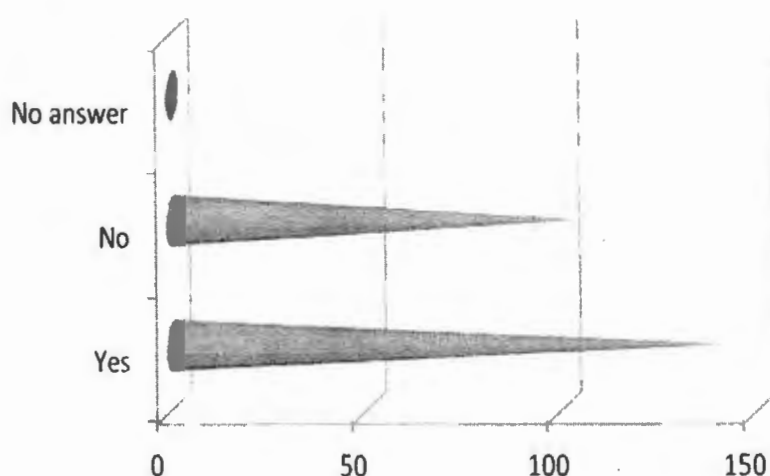
From the 250 responses received, 144 (57.6%) indicated that the IT desk has solved user queries efficiently. Ninety-nine (39.6%) respondents indicated that the IT desk has not solved user queries efficiently. Albeit the encouraging response from the majority, the number of disgruntled responses remain daunting. The percentage of disgruntled respondents remains significant implying that the IT Division may be failing to meet its mandated obligation. This could be because of the apathy to change management and could be because of the lack of appropriate skills to articulate the use of IT in the various Departments. As cited above, to satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004). The reduction of the number of negative response to this question would suggest an improvement in the functions of the IT Division. Another cause of disgruntlement from respondents could be caused by the pressure being faced by the IT Division because of the high turnover of employees in the Division. This has limited the number of employees dealing with queries and has resulted in the limited amount of expertise because of repeated retraining.

Figure 4.9 Hardware efficient enough to help answer the queries



The response from the 250 respondents indicated an almost equally number of respondents who feel the hardware is efficient enough to help answer queries as those who felt the hardware was not adequate. This could be because some people are using older machines and some are using the latest hardware and this is why they think that the hardware is or is not efficient enough to help answer all the queries quickly. This implies that the current hardware being used by the IT Division may actually not be efficient enough to help answer all queries faced by the Department. To improve on this, there is a need to do an audit of the current stock of hardware and to acquire the latest hardware that can satisfy the current demand. On other hand, the audit may also help to determine whether the cause of the inefficiency of hardware is being caused by the lack of expertise on the part of users. This will therefore require training or retaining of the current users of the hardware. According to Smit and Cronje (2004: 345 - 348) the motivation for work leads them to develop behaviour such as acquiring skills needed by their employers.

Figure 4.10 Experienced problems with network that impacts on service delivery



Results from the 250 respondents on whether they experienced problems with network that impacts on service delivery indicated that the majority did experience problems. However, a significant number of respondents indicated that they did not encounter any problems. The problems received included the lack of quick response from the call centre or delayed response. This has affected the level of service delivery of the Departments. The reliance on technology, more especially IT, with regard to service delivery covers most functions of the Departments involved. Any lapses in the network of the IT Division will thus directly result in the disruption of the quality of the service delivery.

Figure 4.11 IT Division loss of expertise affects its functions

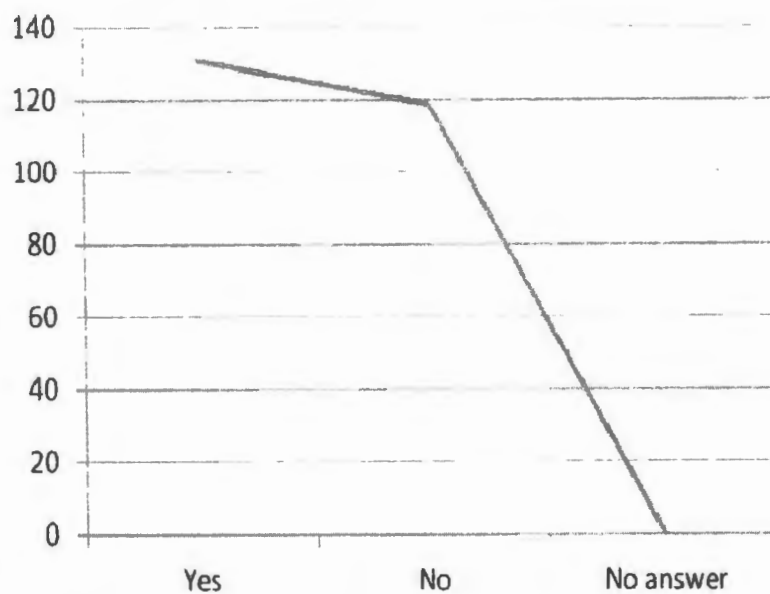
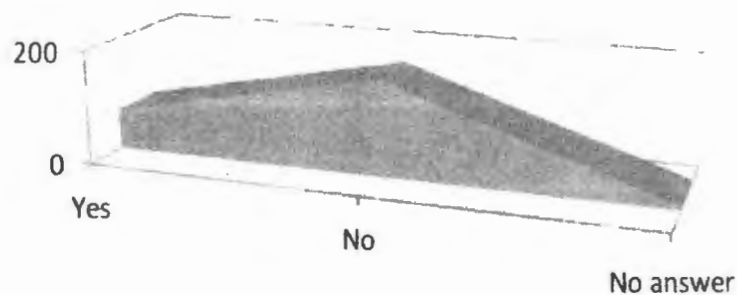


Figure 4.11 shows that there has been a high turnover of staff in the IT Division. This has however been closely matched by respondents who feel the loss of expertise has had no effect on the function of the Division. The Division has encountered problems with operations resulting from the loss of expertise, which include problems of network as shown in Figure 4.9. Loss of expertise has contributed to the loss of experienced staff that is familiar with the operations of the Division. According to Smit and Cronje (2004: 345-348) the motivation for work leads them to develop behaviour such as acquiring skills needed by their employers. Problems being faced by the IT Division with regard to the network may be attributed to the lack of labour, caused by the high turnover of staff. The other cause of the poor network can be attributed to the continuous training of new staff due to the turnover problem cited. This has caused the absence of continuity and follow-up from the IT Division. A number of officials in decision-making positions sometimes fail to acknowledge the effect of the loss of expertise in the Division because they feel this may reflect on their management abilities.

Figure 4.12 Present expertise be coped with



The results in Figure 4.12 show a high number of respondents who indicated that the present expertise cannot be coped with. Those who indicate that the expertise can be coped with however closely match this. The exodus of IT staff is real, which attests the result in the negative. The second motivation focus identified by the Two Factor Theory of Motivation, cited above, is the job content itself, such as opportunity for achievement. This is referred to as the hygienic factors which may lead to dissatisfaction. It is the motivation that produces motivation and satisfaction and the more attention given to this, the higher the motivation, satisfaction and productivity of the individual. Staff at operational level is left to deal with functional duties because of the staff turnover. This has an effect on the operational and functional strategies of the IT Division. Most of the respondents who indicate that the present expertise in the IT Division can be coped with are mostly those in senior management position, who feel stating otherwise will impinge badly on their management abilities. Respondents from service department who rely on the effective running of the Division attest to the reality of the matter. This coincides with the problem statement made earlier.

Table 4.3 Competitive salary packages help with retention of IT staff members

Yes	95
No	153
No answer	2

The result in Table 4.3 indicates that competitive salaries will not help retain IT staff members. Most of the IT staff members leaving the IT Division find themselves joining the private sector. The Two Factor Theory of Motivation indicates that people are motivated to

work because of their unsatisfied needs (Smit & Cronje 2004). It is believed that the conditions, including salaries, offered by the private sector is more lucrative than that offered by Government. This therefore implies that if competitive salaries were to be offered to IT staff members, the retention would improve. In that sense, it is expected that the 95 (38%) respondents who indicated that competitive salaries would have an effect on the retention, where from the IT Division. On the other hand, the majority of the respondents, 153 (61.2%) may have been made up of respondents from other Departments. It is expected that the majority of the other respondents (i.e. those making up the 61.2%) would also expect competitive salaries, thereby declining to attest the stated assumption only common to IT staff members.

Figure 4.13 Incentives' of IT staff help with retention



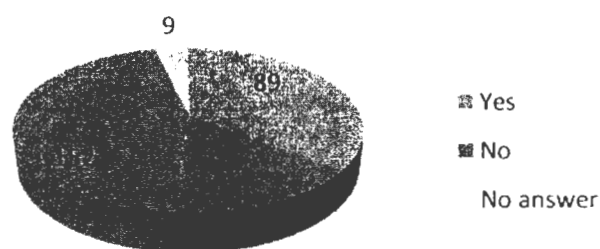
Results shown in Figure 4.13 indicate incentives of IT staff cannot help with retention. As stated in 4.11 above, most IT staff members leaving the Division join the private sector, which offers lucrative incentives. Competitive incentives will have a positive effect on the retention of IT staff members. As indicated above, the Two Factor Theory of Motivation indicates that people are motivated to work because of their unsatisfied needs (Smit & Cronje 2004). The majority of the respondents cannot attest this because they too are subjected to the uncompetitive incentives offered by Government compared to the private sector. Whereas most IT staff members are in a position to join the private sector that offers better incentives, most of the other staff in service Departments cannot. This disparity may be the cause of the negative response concerning the impact competitive incentives will have on the retention of IT staff members.

Table 4.4 Organisational structures/career progression contribute to IT staff turnover

Strongly disagree	28
Disagree	59
Strongly agree	56
Agree	93
No Answer	14

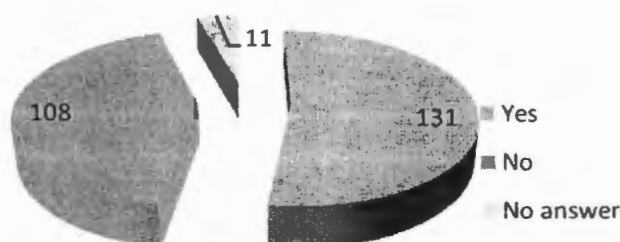
The results in Table 4.4 indicate that mostly respondents agree that the organisational structures and lack of career progression is an obstacle to people in IT. The higher one progresses in the organisational structure, the better the incentives become. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit and Cronje, 2004). This implies that most employees yearn for an elevation within the structure. Most of the IT staff members are limited to technical functions within Government. This tends to preclude their advancement along the organisation structure, thereby subjecting them to mediocre conditions of service. Lack of competitive conditions, which can only be attained in higher positions of the organisation structure, elude IT staff, leaving no option but to leave for greener pasture. This is in resonance with the original assumption that lack of competitive salaries and incentives will lead to a high IT staff turnover.

Figure 4.14 IT Division budget



The majority of the respondents 152 (60.8%) indicated that the IT Division budget was inadequate. It is assumed that the inadequacy the respondents refer to is with regard to the procurement of latest hardware or machines. This situation is unfortunate because it is not the hardware that is expected to do the job as such, but more so the impute of the staff. This is explained by the Two Factor Theory of Motivation under hygienic factors, which include the content of job conditions of work, company policy and others (Robbins, Odendaal and Roodt, 2003). This stems from the assumption that the current processing power of the hardware currently in use is underutilised. Any increase for hardware will have no significant change in the manner in which the hardware is used. It may even further hamper the delivery of service because of the retraining process of staff that will be need on the new hardware, while delivery of service suffers.

Figure 4.15 Link between the Department of Provincial Treasury strategic plan and the IT Division budget



The result in Figure 4.15 indicates that 131 (52.4%) of the respondents agreed that there ought to be a link between the Department of Provincial Treasury strategic plan and the IT Division. Other the other hand response an almost match number of respondents refuted the link or had no answer. The close match between responses indicates that little understanding is given to this issue. The IT Division operates under the Department of Provincial Treasury. For the strategic plan to be effective, it must be linked to the functions of the Departmental budgets including the IT Division. The strategic plan of the Department of Treasury originates from the budgets provided by Service Departments.

Table 4.5 SITA constraints affect the performance

Strongly disagree	38
Disagree	59
Strongly disagree	41
Agree	93
No Answer	19

The results in Table 4.5 show that the majority of respondents agree that there are constraints affecting the Service Institution Training Authority (SITA). One of the mandated SITA is to provide training to institutions such as Government in matters pertain to improved service delivery and use of improved technology. It is pertinent that this mandate is not being effectively managed. Despite the high investment made in matters such as IT, the levels of service delivery continues to be below par. An evident contributing factor to this below par performance is largely due to skills deficiency. This can directly be linked to the SITA. Money is invested in skills levels without commensurate returns. For this to be redressed, the manclate of such SITAs must be reviewed and implemented. According to Smit and Cronje (2004: 345-348) the motivation for work leads employees to develop behaviour such as acquiring skills needed by their employers.

4.5 The measures of association

4.5.1 Standard deviation, mean, and correlation

The following section looks at the correlation of the data presented. To ascertain authenticity of the correlation, the mean, standard deviations and p-values have also been discussed in the section. Correlation analysis is a technique that describes the relationship between variables and measures the extent to which a change in one variable is attributed to a change in another. Correlation often measured as a correlation coefficient indicates the strength and direction of a linear relationship between two random variables (Welman & Kruger 2001: 209-212). S: (n) correlation coefficient, coefficient of correlation, correlation (a statistic representing how closely two variables co-vary; it can vary from -1 (perfect negative correlation) through 0 (no correlation) to +1 (perfect positive correlation). Below is an indication of correlation ranges:

Small 0.1 to 0.3

Medium 0.3 to 0.5

Large 0.5 to 1

For the purpose of this study, correlation that is above the value of 0.5 will be considered to show a strong correlation. The p-value is the probability that the current result would have been found if the correlation coefficient would be zero.

Table 4.6: Max, min, mean, SD, correlation, p-values and correlation of determination between age and position of the respondent

Summary statistics:

Variable	Obs.	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Age	5	0	5	18.00	108.0	50.0	41.07
Position	5	0	5	2.00	111.0	50.0	42.73

Correlation matrix (Pearson):

Variables	Age	position
Age	1	0.96
Position	0.96	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	Age	position
Age	0	0.01
Position	0.01	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (R^2):

Variables	Age	position
Age	1	0.91
Position	0.91	1

The table above shows the maximum and minimum numbers and the mean for the number of respondents in the age frequency and the position frequency. These numbers show that the mean for the age lies represents a number of 50 each. It also tells the reader that no answer was the minimum and the 41-50 years frequency as the most. No answers were included because people are afraid to answer because of the fear of victimisation and because the lack of making a decision – a sign in the new SA and this is important for the study's results. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency. The position of the respondent shows similar results. The mean for the position lies represents a number of 50 each. The results show the minimum number answer as 2 and the maximum for supervisors as 111. The results show the minimum number answer as 18 and the maximum number of age as 108. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a near perfect correlation – the older one gets the higher the position one could expect. This is normal in any situation, except that in SA there is a drive for Black Economic Empowerment (BEE). The correlation is 0.96 and this is at a level of 95%. The p-value is below 0.5 and this means that there is a relationship between the age and the position. In addition, one should remember that the correlation and the coefficient of determination all support this statement. This simple calculation is done to ensure that the results conform to the normal expectation that one would show.

The results shown in the table indicate a strong correlation between the age and the position held in the respondents. The desired people of the sample were directors, managers and supervisors. This was so because at this level of position, the respondent was able to articulate with the challenges surrounding the IT Division and the impact on the delivery of service by the NWPG. Elderly people occupy most positions in the Provincial Government as the results suggested. Despite the introduction of the BEE and Affirmative Action policies by the Government, which would have favoured the entry of younger people in these positions, the older people in employment at the time of the introduction of such policies seem to have benefited. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004). This therefore explains the prevailing situation where the average age is advanced.

Table 4.7 Max, min, mean, SD, correlation, p-values and correlation of determination between age, years in the department and position.

Summary statistics:

Variable	Obs.	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Years	5	0	5	13.00	103.00	50.00	32.72
Age	5	0	5	18.00	108.00	50.00	41.07
Position	5	0	5	2.00	111.00	50.00	42.73

Correlation matrix (Pearson):

Variables	years	Age	position
Years	1	0.49	0.50
Age	0.49	1	0.96
Position	0.50	0.96	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	years	Age	position
Years	0	0.40	0.39
Age	0.40	0	0.01
Position	0.39	0.01	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (R^2):

Variable	s	years	Age	position
Years		1	0.24	0.25
Age		0.24	1	0.91
Position		0.25	0.91	1

The table above shows the maximum and minimum numbers and the mean for the number of respondents in the age frequency and the number of years frequency. These numbers show that the mean for the age lies represents a number of 50 each. It also tells the reader that no answer was the minimum and the 41-50 years frequency as the most. It shows the standard deviation as large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency. The number of years in service of the respondent shows similar results. The mean for the position lies represents a number of 50 each. The results show the minimum number answer as 13 and the maximum number of years as 103. The results show the minimum number answer as 18 and the maximum number of age as 108. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a correlation of the number of years in service and age is 0.49, which is a medium correlation according to the criteria as set above. The older one gets the longer they stay in service. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit & Cronje, 2004). The correlation is not statistical significant since the p-value (significant value) is shown as 0.39, which is more than 0.5 and therefore deduces that there is no significant linear correlation between the two variables. This suggests that the age of the respondents do not have significant impact on the number of years they have served in the Department.

Table 4.8 Max, min, mean, SD, correlation, p-values and correlation of determination and correlation of determination between efficient solution of queries, hardware good enough and network efficiency

Variable	Observations	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Efficient	3	0	3	7.00	144.00	83.33	69.83
Hw	3	0	3	3.00	124.00	83.33	69.57
Network	3	0	3	0.00	144.00	83.33	74.63

Correlation matrix (Pearson):

Variables	efficient	hw	network
efficient	1	0.95	1.00
Hw	0.95	1	0.97
Network	1.00	0.97	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	efficient	hw	network
efficient	0	0.20	0.04
Hw	0.20	0	0.16
Network	0.04	0.16	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (R^2):

Variables	efficient	hw	network
efficient	1	0.90	1.00
Hw	0.90	1	0.94
Network	1.00	0.94	1

The table above shows the maximum and minimum numbers and the mean for the number of respondents in the efficiency frequency and the hardware frequency. These numbers show that the mean for the efficiency lies represents a number of 83.33 each. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency. The position of the hardware shows similar results. The mean for the position lies represents a number of 83.33 each. The results show the minimum number answer as 7 and the maximum for efficiency as 144. The results show the minimum number answer as 3 and the maximum number of hardware as 124. It shows the standard deviation as very large. This could be showing that the sample was picked at

random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a near perfect correlation of the efficiency and hardware is 0.95, which is a strong correlation according to the criteria as set above. The results shown in the table indicate a strong correlation between the efficiency and the hardware. According to the criteria set above, those correlations that are above the absolute value of 0.5 will be considered to show a strong relationship. The correlation is not statistical significant since the p-value (significant value) is shown as 0.20, which is more than 0.5 and therefore deduces that there is no significant linear correlation between the two variables. This suggests that efficiency does not have a significant impact on the hardware used in the Department. This can be linked to the Two Factor Theory of Motivation under hygienic factors, which include the content of job conditions of work, company policy and others (Robbins *et al.*, 2009).

Similar, the table above shows the maximum and minimum numbers and the mean for the number of respondents in the networking frequency and the hardware frequency. These numbers show that the mean for the efficiency lies represents a number of 83.33 each. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency. The position of the hardware shows similar results. The mean for the position lies represents a number of 83.33 each. The results show the minimum number answer as 0 and the maximum for networking as 144. The results show the minimum number answer as 3 and the maximum number of hardware as 124. It shows the standard deviation as very large. This could be showing that the sample was picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a near perfect correlation of networking and hardware is 0.97, which is a strong correlation according to the criteria as set above. The results shown in the table indicate a strong correlation between the efficiency and the hardware. According to the criteria set above, those correlations that are above the absolute value of 0.5 will be considered to show a strong relationship. The correlation is not statistical significant since the p-value (significant value) is shown as 0.16, which is more than 0.5 and therefore

deduces that there is no significant linear correlation between the two variables. This suggests that networking does not have a significant impact on the hardware used in the Department. The complaints about hardware are efficiently solved suggesting that they is no impact networking has on the hardware currently used by the Departments.

Table 4.9 Max, min, mean, SD, correlation, p-values and correlation of determination between the contribution of IT to service delivery, efficient help desk and loss of expertise but still deliver good service

Summary statistics:

Variable	Obs	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
IT							
Contribute	3	0	3	14.00	163.00	83.33	75.04
efficient	3	0	3	7.00	144.00	83.33	69.83
loss experts	3	0	3	0.00	131.00	83.33	72.42

Correlation matrix (Spearman):

Variables	IT Contri bute	efficient	loss experts
IT			
Contribute	1	1.00	1.00
efficient	1.00	1	1.00
loss experts	1.00	1.00	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	IT Contribu te	efficient	loss experts
IT			
Contribute	0	0.33	0.33
efficient	0.33	0	0.33
loss experts	0.33	0.33	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (Spearman):

Variables	IT Contribut e	efficient	loss experts
IT			
Contribute	1	1.00	1.00

efficient	1.00	1	1.00
loss			
experts	1.00	1.00	1

The table above shows the maximum and minimum numbers and the mean for the the contribution of IT to service delivery, efficient help desk and loss of expertise frequencies. These numbers show that the mean for the IT to service delivery represents a number of 83.33 each. The mean for the efficient help desk represents a number of 83.33 each. The mean for the loss of expertise represents a number of 83.33 each. The results show the minimum number answer as 14 and the maximum for IT to service delivery as 163. The results show the minimum number answer as 7 and the maximum number of efficient help desk as 144. The results show the minimum number answer as 0 and the maximum number of service delivery as 131. It shows the standard deviations as very large. This could be showing that the samples were picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The Table shows perfect correlations between all the variables in spite of the position of help desk and loss of expertise, deliver service is still good (correlation between IT contribution and efficient service is for example 1.0, representing a perfect correlation). The IT contributes well to giving a good service although some expertise was lost and it is still efficient. In light of such results, more than half of the respondents think that the loss of expertise is high. The correlation results are not statistical significant since the p-values (significant value) are shown as 0.33 for all the results, which is more than 0.5 and therefore deduces that there is no significant linear correlation between the two variables. This suggests that the efficient help desk and loss of expertise does have a significant impact on the contribution of IT to service delivery. It is the motivation that produces motivation and satisfaction and the more attention given to this, the higher the motivation, satisfaction and productivity of the individual (Robbins *et al*, 2009).

Table 4.10 Max, min, mean, SD, correlation, p-values and correlation of determination between IT staff turnover, SITA constraints and age of respondents.

Summary statistics:

Variable	Obs.	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
staff turnover	5	0	5	14.00	93.00	50.00	30.60

sita							
constraints	5	0	5	19.00	93.00	50.00	27.91
Age	5	0	5	18.00	108.00	50.00	41.07

Correlation matrix (Pearson):

Variables	staff turnover	sita constraints	Age
staff turnover	1	0.95	0.25
sita constraints	0.95	1	-0.01
Age	0.25	-0.01	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	staff turnover	sita constraints	Age
staff turnover	0	0.01	0.68
sita constraints	0.01	0	0.99
Age	0.68	0.99	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (R^2):

Variables	staff turnover	sita constraints	Age
staff turnover	1	0.91	0.06
sita constraints	0.91	1	0.00
Age	0.06	0.00	1

The table above shows the maximum and minimum numbers and the mean for the the contribution of IT staff turnover, SITA constraints and age of respondents frequencies. These numbers show that the mean for the IT staff turnover, SITA constraints and age of respondents a number of 50.00 each. The results show the minimum number answer as 14 and the maximum for IT staff turnover as 93. The results show the minimum number answer as 19 and the maximum number of SITA constraints as 93. The results show the minimum number answer as 18 and the maximum number of age of respondents as 108. It shows the standard deviations as large. This could be showing that the samples were

picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a near perfect correlations between SITA constraints and IT staff turnover. According to the criteria set above, those correlations that are above the absolute value of 0.5 will be considered to have a strong relationship. The correlation is statistically significant since the p-value (significance value) is 0.01, which is less than 0.05 and therefore deduces that there is significant linear correlation between the two variables. The positive correlation between SITA and the staff contributes to a turnover on staff. This maybe because the staff may not have a free hand in terms of IT decisions might force staff to look elsewhere for a job. According to Smit and Cronje (2004: 345-348) the motivation for work leads employees to develop behaviour such as acquiring skills needed by their employers.

Table 4.11 Max, min, mean, SD, correlation, p-values and correlation of determination between loss of IT expertise, enough IT expertise and retain IT staff

Summary statistics:

Variable	Obs	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Loss experts	3	0	3	0.00	131.00	83.33	72.42
enough expertise	3	0	3	9.00	169.00	83.33	80.60
retain staff	3	0	3	2.00	153.00	83.33	76.17

Correlation matrix (Spearman):

Variables	Loss experts	enough expertise	retain staff
Loss experts	1	0.50	0.50
enough expertise	0.50	1	1.00
retain staff	0.50	1.00	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

p-values:

Variables	Loss experts	enough expertise	retain staff
Loss experts	0	1.00	1.00
enough expertise	1.00	0	0.33
retain staff	1.00	0.33	0

Values in bold are different from 0 with a significance level $\alpha=0.05$

Coefficients of determination (Spearman):

Variables	Loss experts	enough expertise	retain staff
Loss experts	1	0.25	0.25
enough expertise	0.25	1	1.00
retain staff	0.25	1.00	1

The Table above shows the maximum and minimum numbers and the mean for the contribution of loss of IT expertise, enough IT expertise and retain IT staff of respondent's frequencies. These numbers show that the mean for the loss of IT expertise, enough IT expertise and retain IT staff of respondents have a number of 83.33 each. The results show the minimum number answer as 0 and the maximum for loss of IT expertise as 131. The results show the minimum number answer as 9 and the maximum number of enough IT expertise as 169. The results show the minimum number answer as 2 and the maximum number of retain IT staff as 153. It shows the standard deviations as very large. This could be showing that the samples were picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a positive correlation between loss of IT expertise and enough IT expertise. According to the criteria set above, those correlations that are between 0.3 and 0.5 will be considered to have a medium relationship. This positive correlation between loss of IT expertise and enough IT expertise contributes to a mixed feeling of staff. The more people leave the less expertise there will be. The correlation is not statistically significant since the p-value (significance value) is 0.25, which is higher than 0.05 and therefore deduces that there is no significant linear correlation between the two variables. The Table shows that there is a perfect positive correlation between the retention of staff and enough expertise. The consequence of the working behaviour leads to satisfaction or dissatisfaction in the workplace. The theory above states employees who are dissatisfied may leave their job or lack promotion. The rest of the employees who perform according to their employers' satisfaction continue to satisfy the rest of their needs by staying in the same company. The correlation is not statistically significant since the p-value (significance value) is 1.00, which is higher than 0.05 and therefore deduces that there is no significant correlation between the retention of staff and enough expertise.

Table 4.12 Max, min, mean, SD, correlation, p-values and correlation of determination between post respondent is in, SITA constraints and IT Staff turnover

Summary statistics:

Variable	Obs	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Post	5	0	5	2.00	111.00	50.00	42.73
sita constraints	5	0	5	19.00	93.00	50.00	27.91
staff turnover	5	0	5	14.00	93.00	50.00	30.60

Correlation matrix (Pearson):

Variables	post	sita constraints	staff turnover
Post	1	0.23	0.49
sita constraints	0.23	1	0.95
staff turnover	0.49	0.95	1

Values in bold are different from 0 with a significance level alpha=0.05

p-values:

Variables	post	sita constraints	staff turnover
Post	0	0.70	0.41
sita constraints	0.70	0	0.01
staff turnover	0.41	0.01	0

Values in bold are different from 0 with a significance level alpha=0.05

Coefficients of determination (R²):

Variables	post	sita constraints	staff turnover
Post	1	0.05	0.24
sita constraints	0.05	1	0.91
staff turnover	0.24	0.91	1

The table above shows the maximum and minimum numbers and the mean for the post respondent is in, SITA constraints and IT Staff turnover frequencies. The numbers show that the mean for the post the results on the respondent is in, SITA constraints and IT Staff turnover of 50.00 each. The results show the minimum number answer as 2 and the maximum for loss of results on the respondent is in as 111. The results show the minimum number answer as 19 and the maximum number of SITA constraints as 93. The results show the minimum number answer as 14 and the maximum number of IT Staff turnover as

93. It shows the standard deviations as large. This could be showing that the samples were picked at random and the next research project should try to use a type of stratified sample to ensure an equal range in each frequency.

The table shows a positive correlation between the post respondent is in and the IT Staff turnover. The theory above states employees who are dissatisfied may leave their job or lack promotion. The rest of the employees who perform according to their employers' satisfaction continue to satisfy the rest of their needs by staying in the same companyAccording to the criteria set above, those correlations that are between 0.3 and 0.5 will be considered to have a medium relationship. The correlation is not statistically significant since the p-value (significance value) is 0.41, which is higher than 0.05 and therefore deduces that there is no significant linear correlation between the post respondent is in and the IT Staff turnover.

4.5.2 t-Test

A t-test is any statistical hypothesis test in which the test statistic follows a researcher's t distribution if the null hypothesis is true. It is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. When the scaling term is unknown and is replaced by an estimate based on the data, the test statistic (under certain conditions) follows the researcher's t distribution. A test of the null hypothesis that the difference between two responses measured on the same statistical unit has a mean value of zero. For example, suppose we measure the size of a cancer patient's tumour before and after a treatment. If the treatment is effective, we expect the tumour size for many of the patients to be smaller following the treatment. This is often referred to as the "paired" or "repeated measures" t-test.

Table 4.12.1 T-test for significance test between post the respondent occupies, SITA constraints and staff turnover

Summary statistics:							
Variable	Obs	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Post	5	0	5	2.00	111.00	50.00	42.73
SITA constraints	5	0	5	19.00	93.00	50.00	27.91
staff turnover	5	0	5	14.00	93.00	50.00	30.60

One-sample t-test / Two-tailed test (post):

95% confidence interval on the mean:

	] -3.05 , 103.05 [
Difference	50.00
t (Observed value)	2.62
t (Critical value)	2.78
DF	4
p-value (Two-tailed)	0.06
alpha	0.05

The test interpretation in this instance is explained as follows. The hypotheses formed were:

H_0 : The difference between the means is equal to 0.

H_a : The difference between the means is different from 0.

As the computed p-value is greater than the significance level $\alpha=0.05$, one should accept the null hypothesis H_0 . The risk to reject the null hypothesis H_0 while it is true is 5.90%. This means that there is a 95.1% chance that there is a great dependency between the post the respondent occupies, the SITA constraints and the staff turnover. It means that if something happen to one of the items mentioned then it will influence the other one. The SD of the SITA constraints is smaller than the other two. SITA constraints might lead a high significance to more resignations. According to Smit and Cronje (2004: 345-348) the motivation for work leads employees to develop behaviour such as acquiring skills needed by their employers.

Table 4.12.2 Continuing**One-sample t-test / Two-tailed test (sita constraints):****95% confidence interval on the mean:**

	] 15.34, 84.66 [
Difference	50.00
t (Observed value)	4.01
t (Critical value)	2.78
DF	4
p-value (Two-tailed)	0.02
Alpha	0.05

Test interpretation:

H_0 : The difference between the means is equal to 0.

H_a : The difference between the means is different from 0

As the computed p -value is lower than the significance level $\alpha_a=0.05$, one should reject the null hypothesis H_0 , and accept the alternative hypothesis H_a . The risk to reject the null hypothesis H_0 while it is true is lower than 1.61%.

The t -test is the most commonly used method to evaluate the differences in means between two groups. For example, the t -test can be used to test for a difference in test scores between a group of patients who were given a drug and a control group who received a placebo. Theoretically, the t -test can be used even if the sample sizes are very small (e.g., as small as 10; some researchers claim that even smaller n 's are possible), as long as the variables are normally distributed within each group and the variation of scores in the two groups is not reliably different. As mentioned before, the normality assumption can be evaluated by looking at the distribution of the data (via histograms) or by performing a normality test. The equality of variances assumption can be verified with the F test, or you can use the more robust Levene's test. If these conditions are not met, then you can evaluate the differences in means between two groups using one of the nonparametric alternatives to the t -test.

The p -level reported with a t -test represents the probability of error involved in accepting our research hypothesis about the existence of a difference. Technically speaking, this is the probability of error associated with rejecting the hypothesis of no difference between the two categories of observations (corresponding to the groups) in the population when, in fact, the hypothesis is true. Some researchers suggest that if the difference is in the predicted direction, you can consider only one half (one "tail") of the probability distribution and thus divide the standard p -level reported with a t -test (a "two-tailed" probability) by two. Others, however, suggest that you should always report the standard, two-tailed t -test probability.

Table 4.13 Linear Regression

Summary statistics:

Variable	Obs	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
staff turnover	5	0	5	14.00	93.00	50.00	30.60
sita constraints	5	0	5	19.00	93.00	50.00	27.91

**Regression of variable staff
turnover:**

**Goodness of fit
statistics:**

Observations	5.00
Sum of weights	5.00
DF	3.00
R ²	0.91
Adjusted R ²	0.88
MSE	114.57
RMSE	10.70
MAPE	17.96
DW	1.85
Cp	2.00
AIC	25.15
SBC	24.37
PC	0.21

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	1	3402.29	3402.29	29.70	0.01
Error	3	343.71	114.57		
Corrected Total	4	3746.00			

Computed against model

Y=Mean(Y)

Model parameters:

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
Intercept	-2.25	10.72	-0.21	0.85	-36.35	31.86
sita constraints	1.04	0.19	5.45	0.01	0.43	1.66

**Equation of the
model:**

staff turnover = -2.24646983311939+1.04492939666239*sita

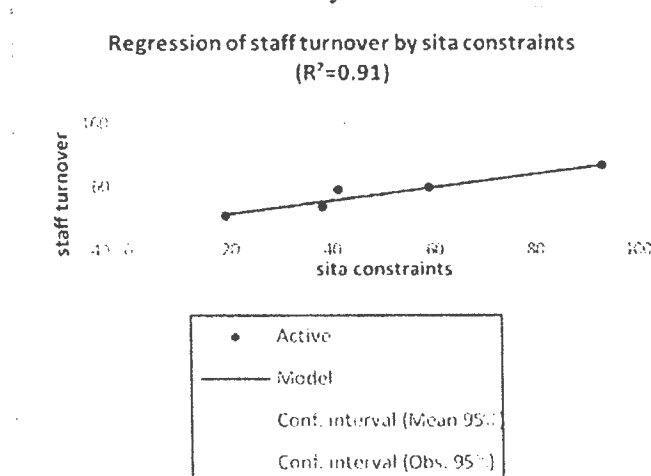
constraints

**Standardized
coefficients:**

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
sita constraints	0.95	0.17	5.45	0.01	0.40	1.51

This test is the one that tests for a line by using the least squares method to calculate the straight line that best fits the data and returns an array. F is below 5 and it can be used to determine whether the observed relationship between the dependent and independent variables occurs by chance. In this instance it is a more than 95% chance that the relationship occurs. One can see there is a line that can be equated to staff turnover due to SITA constraints. The R is below 1 and this shows a strong association. This is portrayed by the figure below:

Figure 4.16 Regression of staff turnover by SITA constraints



Overview. The levels or values of the predictor variables in an analysis describe the differences between the n subjects or the n valid cases that are analyzed. Thus, when one speaks of the between subject design (or simply the between design) for an analysis, one is referring to the nature, number, and arrangement of the predictor variables.

Concerning the nature or type of predictor variables, between designs which contain only categorical predictor variables can be called ANOVA (analysis of variance) designs, between designs which contain only continuous predictor variables can be called regression designs, and between designs which contain both categorical and continuous predictor variables can be called ANCOVA (analysis of covariance) designs. Between

designs may involve only a single predictor variable and therefore be described as simple (e.g., simple regression). $r - s$ low and it means that support staff may resign if more SITA constraints are listed or enforced.

4.6 Conclusion

The chapter provided results of the research using statistical methods. Tables, graphs, and statistics have been used to give the results of the survey. The data has also been presented as part of the chapter.

The analysis of the results revealed a strong correlation between the age and the position held in the respondents. The results also indicated that there is no impact networking has on the hardware currently used by the Departments. A positive correlation between SITA and the staff contributes to a turnover on staff is reflected in the results. It is also established that the efficient help desk and loss of expertise does have a significant impact on the contribution of IT to service delivery. The age of the respondents, do not have significant impact on the number of years they have served in the Department. There is no significant correlation between the retention of staff and enough expertise, which implies that there is an impact of retention of staff and enough expertise on the IT Division. The results show there is no significant linear correlation between the post respondent is in and the IT Staff turnover.

The following chapter looks at the recommendations arranged in the order of significance to different stakeholders. The aim has been to guarantee easy comprehension of the recommendations, and to add value to existing literature by identifying gaps where new and further research can be conducted.

Chapter Five

Conclusion and Recommendation

5.1 Introduction

The previous chapters looked at the study on the challenges faced by the IT Division under the Treasury Department of the North West Provincial Government and the impact of such challenges on delivery of service by the Provincial Government.

The purpose of this study was to determine the challenges faced by the IT Division and the extent to which this has affected the service delivery by the various service Departments under the North West Provincial Government.

This chapter consolidates the findings of the research, derived through analysing and interpreting of statistical data, which has been discussed in the previous section. The research questions pertaining to the impact of the IT Division challenges on the NWPG delivery of service are also answered.

5.2 Summary of the Study

The use of IT has become fundamental in Government service departments (Isaacs, 2007). In the NWPG the IT Division has in the past failed to produce optimistic results aimed at fulfilling requirements of other service Department in the NWPG. The budget and financial management process often do not generate adequate information to assist political decision-making. Information such as human resources, economic and social aspects are not provided (National Treasury Budget Review, 2006: 31-33). The impact of the challenges faced by the IT Division on the delivery of service by the NWPG was currently unknown.

The research was aimed at determining the challenges faced by the IT Division, which falls under the Treasury Department and the subsequent impact this has had on the delivery of service by the North West Provincial Government (NWPG).

The study revealed that the the IT Division faced challenges related to staff retention, which had an effect on the efficient help of the Division. The study further revealed that

the loss of expertise does have a significant impact on the contribution of IT to service delivery by the NWPG. The failure to retain staff in the IT Division resulted in there not enough expertise to undertake the functions of the IT Division.

5.3 Response to Research Questions

The main findings of this research in relation to each of the research questions will now be discussed. Each of the questions is followed by a discussion of the findings relating to the question.

Is the IT Division facing challenges that are limiting the North West Provincial Government to cope with the effective and efficient delivery of services to the public?

South Africa is currently experiencing a general skills crisis, especially pertaining to the retention of its top talent or 'knowledge workers' such as IT professionals. This has a negative outcome that influences the economic and social growth of the country (Du Preez, 2002 as *cited* in Kerr-Phillips & Thomas, 2009). Use of IT must be given serious consideration for better service delivery for citizens and business. This will lead to increased local social and economic development and for reducing corruption by increasing transparency and social control (UN-DPEPA, 001:5 as *cited* in Cloete, 2004). The use of IT in Government enhances service delivery improves internal efficiencies (Patel & White, 2009).

It was found in Section 4.6 that out of the 250 respondents, the majority of the respondents indicated that IT contributes to service delivery. The use of IT may have improved response time to queries and may have reduced the amount of work that previously was done manually. Using IT has the propensity of reaching most of the community targeted for delivery of services. In the past, the NWPG has received challenges concerning changes even as simple as those affecting software improvements. The Departments have experienced resistance to change over new ways of performing functions such as the change of the financial management system. Previously the departments used Walker Financial System, which was a centralised financial system. There has been immigration to a new system call Basic Accounting Systems (BAS), which is decentralised. This has received resistance from users.

Section Figure 4.10 further revealed that there has been a high turnover of staff in the IT Division. The Division has encountered problems with operations resulting from the loss of expertise, which include problems of network. Loss of expertise has contributed to the loss of experienced staff that is familiar with the operations of the Division. The high turnover of staff in the IT Division is compounded by finding in Section 4.11, which revealed that the present expertise cannot be coped with the results in the section showed that the exodus of IT staff is a real matter of concern.

The challenges discussed above have limited the North West Provincial Government to cope with the effective and efficient delivery of services to the public using IT through improved internal efficiencies and external communication with the public.

Is the IT Division experiencing a loss in expertise?

Specific barriers associated with the e-Government initialization process are many, including inadequately skilled citizens and Government employees (Marche and McNiven, 2003 as cited in Davison *et al.*, 2005). One of the problems relating to the functioning of the South African system is a lack of sufficient and appropriate administrative, management and technical skills in all three spheres of Government, although this is perhaps more serious at the sphere of local Government (Brand, 2007). South Africa lost an estimated 310 000 citizens, including 50 000 professionals, South Africa is undoubtedly experiencing a skills crisis (Crush, 2002).

The loss of expertise has affected the IT Division of the NWPG as well. Section 4.10 shows that there has been a high turnover of staff in the IT Division. The Division has encountered problems with operations resulting from the loss of expertise, which include problems of network as shown in Section 4.9. Loss of expertise has contributed to the loss of experienced staff that is familiar with the operations of the Division. Certain problems faced by the IT Division such as problems related to the network may be attributed to the lack of labour, caused by the high turnover of staff. The high turnover of staff has led to the continuous training of new staff due to the turnover problem. This has been costly and caused the absence of continuity and follow-up from the IT Division. Results shown in section 4.12 indicate incentives of IT staff cannot help with retention. Section 4.11 indicated that most IT staff members leaving the Division join the private sector, which offers lucrative incentives. Competitive incentives will have a positive effect on the

retention of IT staff members. Results in section 4.14 indicate that the organisational structures and lack of career progression is an obstacle to people in IT. The higher one progresses in the organisational structure, the better the incentives become. Staff will normally seek employment offering better incentives, thereby contributing to the high turnover in the IT Division. To satisfy their needs people look for employment and secure work according to their skills, knowledge and potential (Smit and Cronje, 2004).

Are there budgetary and other constraints faced by the IT Division?

Integrated strategic planning of the IT Division poses a challenge, that needs a coordination of all the directorates within the department of Provincial Treasury and to link the departmental priorities, its objectives with the annual performance plan as well as the budget. It is particularly difficult in the context of medium-term budgeting. Budgeting and resource allocation processes are deeply rooted routines of the Provincial Government that involves the distribution of limited resources to meet the Provincial Government priorities, social, economic needs by means of service delivery (South Africa Management Development Institute, 2006). Resource challenges include budget constraints like under-spending, waste, corruption, inefficiency, ineffectiveness and low productivity (Cloete, 2004). Inadequate Government funding for functions such as the IT Division will contribute to the problem of retaining qualified staff and force dependency on consultancy services (Sleight, 2000). To maintain adequate funding and spending by local Governments, turnaround strategies need to be developed (Lawless, 2005).

The results shown in Section 4.15 indicated that the IT Division budget was inadequate. The results suggested that the budgetary inadequacy was with regard to the procurement of latest hardware or machines. This situation is unfortunate because it is not the hardware that is expected to do the job as such, but more so the impute of the staff. The current processing power of the hardware currently in use is underutilized. Any increase for hardware will have no significant change in the manner in which the hardware is used. As discussed early, it may even further hamper the delivery of service because of the retraining process of staff that will be needed on the new hardware, while delivery of service suffers.

The strategic plan of the Department of Provincial Treasury originates from the budgets provided by the service Departments. Most of the respondents failed to articulate this

aspect as shown by the results in Section 4.16. Section 4.16 showed a close response involving respondents who agreed that there ought to be a link between the Department of Provincial Treasury strategic plan and respondents who indicated otherwise. The IT Division operates under the Department of Provincial Treasury and therefore this strengthens the position of the link between the Department of Provincial Treasury strategic plan and the IT Division budget. Budgetary constraints faced by the Treasury Department will affect the IT Division as well.

5.4 Managerial Guidelines

From the results of this study the following guidelines can be given to departments

- Develop a policy that will allow staff retention to control the staff turnover, and loss of expertise as well as experienced and skilled personnel.
- The existing positions to be advertised to provide opportunities and attract the marketable skills and professional ethos required by the public service and eradicate the risk of a brain drain. This would compound the severe shortage of skills experienced by the Government.
- There should be a revised organisational structure put in place to permit a career development to people in IT. This will allow them to explore their knowledge in higher positions to enhance the IT service delivery in the North West Provincial Government.
- The higher one progresses in the organisational structure, the better the incentives become. Staff members seek employment offering better incentives to motivate and increase their morale.
- Deploy IS, IT and ICT management to be installed to promote information sharing and efficient monitoring and revision of public sector programmes. The consequence of this is that there are few reliable statistics on the staffing and composition of the public service.
- Capacitate the existing personnel to ensure that problem of capacity is addressed whilst becoming more efficient and effective.
- E-Government plays an important role to achieve outstanding performance for reporting purpose in public administration that links ICT to all the stakeholders as well as improves service delivery, increase the efficiency, transparency and accountability of Government.

- Encourage employees to adherence to rules and procedures to ensure efficiency and productivity in the North West Provincial Government.
- Adequate Government funding for functions such as the IT Division will contribute to combat the problem of retaining qualified staff and reduce dependency on consultancy services.
- For the transformation process to succeed such as BAS implementation, it is important that all departments at provincial levels have adequate and equitable financial capacity.
- Managers in the North West Provincial Government to lead and direct the change process in a creative and visionary way in order to overcome staff fear situation, which managerial responsibility is decentralised, it terms of BAS while accountability for performance against specified objectives is increased.
- The service delivery and performance in the North West Provincial Government of the concerning the efficiency, competence, motivation and morale of the workforce.
- The effective mobilisation, development and utilisation of human resources is critical for the success of institution building and management programmes, as well as for the success of the transformation process.
- The issue of human resource development in the North West Provincial Government is guided by the principles of total quality management (TQM).
- TQM is an output-orientated to improve the capacity of IT Division in the North West Provincial Government to meet the needs of clients by continually reorienting organisational structure, behaviour and culture to this purpose.
- Clients may be external service users, or they may be other public service agencies and departments. TQM techniques will therefore be studied, adopted where appropriate, and adapted to suit the specific circumstances of the South African public service.

5.5 Limitations

The issue of service delivery in the North West Provincial Government studied under this research has been limited to challenges faced in the IT Division falling under the Treasury Department. This study has therefore only focused on the North West Province and the service Departments mandated to render the delivery of service in the Province.

5.6 Future Research

The researcher recommends further research in the following areas:

- Specific case study on the use of IT for specific service Departments
- Decentralisation of functions of IT function away from the Provincial Treasury Department
- Training and use of IT by non IT managers for the purpose of increased service delivery

5.7 Conclusion

The chapter discussed the purpose of the study. Each research question has been discussed highlighted followed by a discussion on the findings relating to the questions. The chapter discussed the limitations, ending with recommendations for future research.

The high turnover of staff in the IT Division has affected the delivery of service by the North West Provincial Government resulting in the lack of effective and efficient function of the IT Division. This has mainly been because of the lack of appropriate expertise in the IT Division, which is relied upon by service Department.

Most IT staff leave the IT Division for better jobs in the private sector. This is because of lack of competitive incentives, which include competitive salaries and organizational structure and lack of career progression.

The IT Division is facing budgetary constraints. These should not be construed as constraints affected the procurement of latest hardware. Most of the hardware is currently under utilized and therefore budgetary constraints cannot be attributed to this. There has been a failure to integrate strategic planning of the IT Division, and the Treasury Department with the service Departments. Integration of strategic plans maybe the underlying factor to this challenge faced by the IT Division. The high investment in IT will continue without the desired returns if this is not corrected.

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Appendix A: Matrix used

	Theme #	1	2	3	4	5	6	7	8	9	10	11	12
Source #	Sources/Themes	Definition and Concepts	Research and Design Methods	Use of Information Technology in Government	Government Policy on Use of Information Technology	Cost to benefit of IT in an Organisation and its Ratio	Integration of Government Strategic Planning with IT	Attraction and Retention of IT personnel in SA Government Departments	Budgetary Constraints of IT Department in Government	Provincial and local Government Service Delivery Issues	Developments and future of Information Technology in Government	Government Service Delivery in Relation to IT/Line Departments	International IT in Government Perspective
1	Public Sector Policy in the New South Africa: A Critical Review				1			1		1			
2	Understanding Successful use of Technology in Organisations in Developing Countries: A Structural Perspective			1		1		1					
3	Understanding e-Governance for Development, Institute for Development Policy and Management	1		1			1						1
4	From government to e-government : a transition model		1	1	1		1	1					
5	Facilitating the improved management of waste in South Africa through a national waste					1							

	information system,												
6	Information Systems Development in a Developing Country: Theoretical Analysis of Special Requirements in Nigeria and Africa	1	1										1
7	What users want: Assessing government information preferences to drive information services						1	1	1				
8	A review of provincial environmental impact assessment administrative capacity in South Africa.		1	1			1	1					
9	Maximising the potential of transforming policy failure into policy success: E-government, the digital divide and e-development	1				1	1		1			1	1
10	Lawless, A 2005. Numbers & needs: addressing imbalances in the civil engineering profession. Midrand: SAICE.			1				1	1			1	
11	ICT in Education in South Africa. Survey of ICT and Education in Africa			1	1								
12	e-Government in Africa: Promise and			1	1		1						

	practice												
13	Determinants of Organizational Commitment	1			1			1					1
14	Information Systems and Developing Countries: Failure, Success, and Local Improvisations			1		1						1	1
15	A Study of the Actual and Potential Usage of Information and Communication Technology at District and Provincial Levels in Mozambique with a Focus on the Health Sector		1		1	1		1					1
16	Funding Regional Assemblies : Issues and Challenges.						1		1				1
18	Provincial Government and State Authority in South Africa						1	1	1	1		1	
19	Financial Intergovernmental Relations in South Africa				1		1	1	1				
20	Information Technology in Nepal: What Role for the Government?			1	1	1					1		1
21	M-government : South African Approaches and Experiences			1			1				1	1	

22	Decentralization of Governance and Development, the			1									
23	Thomas, A. 2009. Macro and micro challenges for talent retention in South Africa.	1	1		1			1				1	1
24	Managing the Staff Retention, an information guide for the Government Departments	1		1				1		1			
25	Costs and Benefits of Health Information Technology					1						1	1
26	Impact of Health Information Technology on Quality,			1		1						1	
27	James, T. Towards A Better Understanding of the ICT Sector in South Africa: Problems and Opportunities for Strengthening the Existing Knowledge Base	1	1	1		1		1					
28	The impact of leadership and stakeholders on the success/failure of e-government service: 'Using the case study of e-stamping service in Hong Kong. Government 26, 594-604				1			1				1	

29	Building the next generation of digital government infrastructures, Government			1		1							
30	The role of information technology in achieving the organisation's strategic development goals	1						1					
31	The use of information technology for educational management in Uganda and Botswana, International			1				1				1	1
32	A path analytic model and measurement of the business value of e-government : An international perspective International	1		1	1					1			
33	Managing e-government implementation in China: A process perspective			1								1	1
34	Enhancing public service delivery through information technology			1									
35	Finance Talk 3rd Issue North West Provincial Government Mafikeng			1	1								

36	Medium Term Expenditure Framework Treasury Guidelines: Preparing Budget Proposals for 2007. MTEF			1	1								
37	The Internet and Socio-economic development: Exploring the Interaction, Information			1		1							
38	Strategic and Competitive			1		1							
39	Meadowcroft B. 2008. The Impact of Information Technology on Work and Society					1							
40	2nd Edition. Organisational Behaviour. Global and South African Perspectives	1											
41	Documented migration. Report No. 03-51-03.	1											
42	The global raiders: Nationalism, globalisation and the South African brain drain.			1		1							
43	Trends in international migration among professionals, semi-professionals and miners in South Africa, 1970-1997					1		1					

44	Exploring the antecedents and outcomes of career development initiatives: Empirical evidence from Singaporean employees.							1						
45	Determinants of organizational commitment among U.S. workers.							1						
46	Strategic Planning Module								1					
47	White Paper on the Transformation of Public Service (1995)							1	1					
48	Business Research Methods.		1											
49	Strategic Management and Information Systems						1							
50	State of the Art Marketing Research Chicago:		1											
51	Fundamentals of social research methods: An African perspective.		1											
52	Research Design: Qualitative, Quantitative, and Mixed Methods.		1											
53	Mixed Methods Research: A Research Paradigm Where Time Has Come,	1	1											
54	Determining sample size for research activities.		1											

55	Qualitative research methodologies Practical research planning and design		1										
56	Information and communication technology in education: A curriculum for schools and program of teacher development			1			1	1					
57	Research Methodology for the Business and Administrative Science.		1										
58	Research Methodology for the Business and Administrative Science.		1										
59	The eluding definitions of records and records management: is a universally acceptable definition possible?		1										
60	Multi method research: A synthesis of systems.		1										
61	UNDP, 2007. Annual Report, Making Globalisation work for all.			1			1						
62	Hildreth P. Wright P. & Kimble C. (1999). Knowledge Management : Are We Missing Something? In Brooks L. and Kimble C. Information Systems - The Next	1											

	Generation. Proceeding s of the 4th UKAIS Conference , York, UK												
63	Smit, P. J & Cronje, G. J., 2004. Manageme nt principles. Guta and Co. Cape Town.		1										

Appendix B: Questionnaire construction

Research Questions	Survey Questions	Variables(s) and or Relationships measured	Statistical Test
1. Is the IT Division facing challenges that are limiting the North West Provincial Government cope with the effective and efficient delivery of services to the public?	1.1 Can IT contribute to the effective and efficient delivery of services in the North West Provincial Government?	Ordinal/Nominal Variables 1.1 Yes/No	Descriptive statistics, frequency tables, bar charts
	1.2 In the North West Provincial Government, is there IT use for the purpose of service delivery to the public?	1.2 Yes/No	Descriptive statistics, frequency tables, bar charts
	1.3 Is the use of the IT Division of the North West Province Government contributing to the effective and efficient delivery service to the public?	1.3 Strongly Disagree, Disagree, Strongly agree, Agree, Don't know	Normal and distribution curve, bar charts, frequency tables
	1.4 Is the IT Division providing	1.4 Yes/No	Descriptive statistics, frequency

	effective service to the North West Provincial Departments? 1.5 Is the IT Division response to Departmental queries efficient? 1.6 Is the IT Division receiving effective feedback from the North West Provincial Departments?	1.5 Strongly Disagree, Disagree, Strongly agree, Agree, Don't know 1.6 Yes/No	tables, bar charts Normal and distribution curve, bar charts, frequency tables Descriptive statistics, frequency tables, bar charts
2. Is the IT Division experiencing staff turnover?	2.1 Is the IT Division turnover affecting its functions? 2.2 Is the IT Division losing experienced and valuable staff members? 2.3 Can competitive salary packages help in the retention of IT staff members? 2.4 Can training and development of IT staff help in the retention of staff members? 2.5 Is the organizational structure and of	2.1 Yes/No 2.2 Yes/No 2.3 Yes/No 2.4 Yes/No 2.5 Strongly Disagree, Disagree, Strongly agree, Agree, Don't know	2.2 Descriptive statistics, frequency tables, bar charts 2.3 Descriptive statistics, frequency tables, bar charts 2.4 Descriptive statistics, frequency tables, bar charts Descriptive statistics, frequency tables, bar charts Normal and distribution curve, bar charts, frequency tables

	career progression contributing to IT staff turnover?		
3. Are there budgetary constraints faced by the IT Division?	3.1 Is the IT Division budgetary constraints?	3.1 Yes/No	Descriptive statistics, frequency tables, bar charts
	3.2 Is the budgetary allocation for the IT Division adequate?	3.2 Yes/No	Descriptive statistics, frequency tables, bar charts
	3.3 Is there a link between the Department of Provincial Treasury strategic plan and the IT Division budget?	3.3 Strongly Disagree, Disagree, Strongly agree, Agree, Don't know	Normal and distribution curve, bar charts, frequency tables
	3.4 Can budgetary constraints affect the performance of the IT Division?	3.4 Yes/No	Descriptive statistics, frequency tables, bar charts
	3.5 Is the budgetary constraints linked to the attraction and retention of IT Division staff?	3.5 Yes/No	Descriptive statistics, frequency tables, bar charts

Appendix C: Questionnaire

P. O. Box 7017

Mmabatho

2735

Dear Respondent

I am an employee of the North West Provincial Government in the Department of Provincial Treasury (Accounting Services Division) and currently completing the research component of a Masters in Business Administration (MBA) with the North West University (NWU).

Towards this end, I would really appreciate your input in The Use of Information Technology in Service Delivery in the North West Provincial Government. I have attached a questionnaire which will assist me in collating the required data.

May I request for your assistance in the following:

- 1) Please complete the questionnaire to the best of your ability and;
- 2) Kindly forward it to other decision makers within your area. For follow-up purpose, kindly copy me when you forward the questionnaire to colleagues.

The questionnaire's closing date is the 16th of April 2010.

Thanking you in advance for your contribution in this regard.

Kind Regards,

Kelebogile Beauty Tsatsinyane

018-387 3277

073 471 9778

Prof Sarn Lubbe: Supervisor

lubbessi@unisa.ac.za

FOR OFFICE USE ONLY: Respondent Code: _____

VOLUNTARY QUESTIONNAIRE

Graduate School of Business

University of North West (Mafikeng Campus)

Researcher Kelebogile Beauty Tsatsinyane

Supervisor: Prof Sam Lubbe

Note to the respondent

- The researcher needs your help to understand Information Technology Division challenges and its impact on service delivery of the North West Provincial Government.
- Although the researcher would like you to help, you do not have to take part in this survey.
- If you do not want to take part, just hand in the blank questionnaire at the end of the survey session.
- What you say in this questionnaire will remain private and confidential. No one will be able to trace your opinions back to you as a person.

The questionnaire as four parts:

Part 1 asks permission to use your responses for academic research.

Part 2 asks general personal particulars like your age, gender and home language.

Part 3 asks about the role of the Information Technology Division challenges and its impact on service delivery of the North West Provincial Government.

How to complete the questionnaire

1. Please answer the questions as truthfully as you can. Also, please be sure to read and follow the directions for each part. If you do not follow the directions, it will make it harder for us to do our project.
2. The researcher only asks you about things that you should feel comfortable talk about. If you don't feel comfortable answering a question, you can indicate that you do not want to answer it. For those questions that you do answer, your responses will be kept confidential.
3. You can mark each response by making a tick or a cross, or encircling each appropriate response with a PEN (not a pencil), or by filling in the required words or numbers.

Thank you very much for filling in this questionnaire.

Part 1: Permission to use my responses for academic research

I hereby give permission that my responses may be used for research purposes provided that my identity is not revealed in the published records of the research.

Initials and surname _____

Signed: _____

Postal address: _____

Postal code: _____

Contact numbers: Home: _____ Cell: _____

No.	PART 2: GENERAL PERSONAL PARTICULARS <i>Please tell us a little about yourself</i> Please mark only ONE option per question below.	9.	Can IT contribute to the effective delivery of services in the North West Provincial Government? Yes ☐ No
1.	I am: African Coloured Indian Oriental White a member of another ethnic group: ☒ I do not want to answer this question	10.	Has the IT help desk solved user queries efficiently? Yes ☐ No
2.	I am a: Director Manager Supervisor Other (Please Specify) _____	11.	Is the hardware efficient enough to help answer the queries without causing a delay? Yes ☐ No
3.	I have: a degree a post-graduate degree ☒ Matric I do not want to answer this question	Part 3: Information Technology Division challenges and its impact on service delivery of the North West Provincial Government.	
4.	I am a: Female Male I do not want to answer this question	12.	Have you experienced problems with the network that would impact on service delivery? Yes ☐ No
5.	I am _____ years old. I do not want to answer this question	13.	Is the IT Division loss of expertise affecting its functions? Yes No
6.	I grew up in: ☐ In South Africa ☐ Abroad _____ ☐ I do not want to answer this question	14.	Can the present expertise be coped with? Yes No
7.	I grew up in: ☐ a rural area ☐ an urban area ☐ I do not want to answer this question	15.	Can competitive salary packages help in the retention of IT staff members? Yes No
8.	How many years of service do you have with the department/organisation ☐ 1-5 years ☐ 6-10 years ☐ 11-15 years	16.	Can incentives of IT staff help in the retention of staff members? ☒ Yes

	☐ More than 16 years		No
17.	Is the organisational structure and of career progression contributing to IT staff turnover? ☐ Strongly Disagree ☐ Disagree ☐ Strongly agree ☐ Agree ☐ Don't know	19.	Is there a link between the Department of Provincial Treasury strategic plan and the IT Division budget? Yes ☐ No
18	Is the IT Division budget sufficient? Yes ☐ No	20.	Can SITA constraints affect the performance of the IT Division? ☐ Strongly Disagree ☐ Disagree ☐ Strongly agree ☐ Agree ☐ Don't know