UNIVERSITY OF KWAZULU-NATAL

The role of information systems integration in achieving Batho Pele within the KZN Provincial Public Service

BY

Vusi Blessing Bongani Mhlongo

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Supervisor: Prof M. Maharaj

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Declaration

I, Vusi Blessing Mhlongo, declare that:

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(ii)   This dissertation has not been submitted for any degree or examination at any other university.

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Signature

Acknowledgement

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Abstract

A major responsibility confronted the Government of National Unity (GNU) in 1994 was to undo the apartheid legacies of poverty, inequality and racial segregation in order to create a single, and efficient public service that delivered on the basic needs of all citizens (Managa, 2012). Integrated information systems and technologies have been identified as being integral for the acceleration of efficient and effective service delivery (Gershon, 2004).

The objective of this study is to examine integrated information systems (IS) as a means of achieving Batho Pele within the KwaZulu-Natal Provincial Government (KZNPG). This research looks at how integration of information systems in the KZNPG can enhance the levels of service delivery through effective and optimal utilisation of integrated IT/IS resources and the alignment of processes to Batho Pele Principles. The KZNPG subscribes to Batho Pele (a Sotho word which means "People first") principles and procedures. The Batho Pele policy provides a formalised structure in accelerating the delivery of public services to citizens and process improvement initiatives by national government (Government Gazette Notice 1459 of 1997). Objectives for the study and research questions were formulated after an in-depth literature review. The literature review serves to provide both the information integration framework and the e-government integration framework; and to establish what evidence, as discovered by other researchers, exist on information integration.

The questionnaire was developed in line with the research objectives, and was distributed to approximately four hundred KZNPG staff members identified as IT end-users who form part of the target population. A total number of one hundred and forty-four questionnaires were returned. Data was collected using a self administered questionnaire and the SPSS software package was used to analyse the data. Descriptive frequency analysis and frequency bar graphs results were used to present the data. Bivariate Spearman's correlation showed that there was a positive association between integrated systems and service delivery. The findings of the study indicated that information systems (IS) integration can help achieve Batho Pele within the KZNPG. Other findings suggested that KZN Provincial government lacks adequately trained IT resources to properly achieve its stated goals.

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List of Acronyms and Abbreviations

BAS	Basic Accounting System
BEE	Black Economic Empowerment
CRM	Customer Relationship Management
EA	Enterprise Architecture
EAI	Enterprise Application Integration
EGI	E-Government Integration
E-Government	Electronic Government
E-procurement	Electronic Procurement
EA	Enterprise Architecture
EAI	Enterprise Application Integration
IS	Information Systems
IT	Information Technology
IT/IS	Information Technology and Information Systems
KZN	KwaZulu-Natal
KZN CoGTA	KwaZulu-Natal Corporative Governance and Traditional Affairs
KZNPG	KwaZulu-Natal Provincial Government
LAN	Local Area Network
LGTAS	Local Government Turnaround Strategy
NSD	New Service Development
PERSAL	Personal Salary System
SAM	Strategic Alignment Model
SISA	Strategic Information Systems Alignment
SOA	Service Oriented Architecture
SPSS	Statistical Package for the Social Sciences
TCP/IP	Transmission Control Protocol/ Internet Protocol
WAN	Wide Area Network

The role of information systems integration in achieving Batho Pele within the KZN Provincial Public Service

1. Introduction

1.1. Background of the Study

Despite the relative successes of the post-apartheid South African Government, the country still faces serious challenges of unemployment, poverty and inequality. These are some of the key factors that have culminated in citizens taking to the streets to raise their dissatisfaction over the problem of poor service delivery. (Managa, 2012). The public sector in South Africa is undergoing a modification of management practices and internal business processes, focusing on the acceleration of service delivery.

This research has been conducted in an endeavor to support and assist provincial government in developing and implementing integrated information systems to achieve Batho Pele principles within KZNPG (KwaZulu-Natal Provincial Government). Batho Pele is a service delivery mechanism devised to address challenges of poverty, inequality, quality of services and put communities at the forefront of operations and planning for the government. According to Baltzan and Phillips (2010), integration of information technology and systems (IT/IS) and information management are issues at the forefront of management as the potential source of improving efficiency in business processes and transformation of service delivery. The national and provincial government acknowledge that in a highly complex and dynamically developing technological age, information systems (IS) integration is the common problem within government and externally. The reason is that the basic processes in provincial government are not consistent across government structures to support the successful utilisation of integrated information systems (Lam, 2005).

The performance of IS integration must be strategically aligned to KZNPG governmental performance. KZN CoGTA (KwaZulu-Natal Corporate Governance and Traditional Affairs) is at the centre of the KZN Provincial local government drive to accelerate service delivery for communities through provincial departments and

municipalities. KZNPG and KZN CoGTA will be used in some discussions inter-changeably. According to the Constitution of the Republic of South Africa No. 108 (1997), KZN CoGTA is mandated to Support, Intervene, and Monitor the KZN Provincial government and KZN municipalities.

1.2. Problem Statement

Poor service delivery has elicited protests all over the country, which have brought local government under the spotlight. Over the years, exceptionally high levels of violence and vandalism have marked the majority of these protests, as people vent their frustration and anger (Koelble & LiPuma, 2009). During 2009, 105 protests were recorded, while 2010 recorded 111 protests in all provinces except for Limpopo Province (Municipal IQ, 2012).

KZNPG subscribes to Batho Pele principles and procedures. The Batho Pele policy provides a formalised structure for enhancing the delivery of public service which requires KZN CoGTA to set standards in terms of quality and timeliness for the delivery of services. Batho Pele, a paraphrase from Sotho for "People First', is a service-orientated programme for civil servants, to endeavor for better service delivery (Government Gazette Notice 1459 of 1997, 1997). Through this initiative, public servants have the obligation to be accountable for poor levels of service they deliver.

These factors exert greater pressure on KZNPG to expedite and accelerate service delivery cost-effectively through IT/IS intervention at all levels of management activities (operational, managerial, and strategic) that they support. Also, public sector and government departments experience difficulty in information technology implementation due to the lack of experience, lack of training and know-how in evaluating the implementation of IT/IS (Lam, 2005). Taking a best practice approach is a significant start in improving service quality.

KZN Provincial departments operate as silos with independent and stand-alone IT/IS. The status quo of provincial department's IT infrastructure and systems result in diverse topologies and dissimilar platforms. The decentralization of IT/IS in local government with common mandate and common objectives results in dissemination of unstructured information management with ineffective management reporting for

Provincial Government on the status and progress of each KZN Provincial department. IT/IS in the government plays an integral part in accelerating service delivery and is a key and vital resource across any business discipline (Gershon, 2004).

KZN Provincial government is required to define and document each process they employ and to show how service quality assurance and improvement are built into it (Brown, Bessant, Jones, & Lamming, 2006). KZN Local Government uses different legacy information management systems to execute operational activities and business processes. According to Yakhou and Rahali (1992) an integrated information system is sharing of information and jointly executing business activities accordingly in all functional areas.

According to Alter (2002), a mutual collaboration of activities responsive to distinct processes is called integration. Information systems play a role in both aspects of integration. Firstly, information systems support integration in communications. Secondly, information systems effectively integrate fragmented information on each business process. Klischewski (2004), suggests that there are two types of integration approaches namely: (1) Information integration which aims at facilitating information flow; while (2) process integration looks at interdepended steps and stages of process performance across the enterprise.

Coordinating these activities require benefits management and other process models to realise IT/IS benefits. Benefits Management is a collaborative approach for value creation, by creating transparency in demand that drives the execution of participants of supply chains to optimize value for citizens and customers (Bozarth, 2007).

The study will benefit SITA, which is a State Information Technology Agency responsible for IT advisory, support, implementation and monitoring of local government and municipalities. SITA has SLAs (Service Level Agreements) with the provincial government and a few municipalities for IT/IS support. The main beneficiary of the study is KZN CoGTA (Corporate Governance and Traditional Affairs), which is mandated to provide people-centered sustainable co-operative governance, a focal point for the acceleration of service delivery responsive to the requirements of the citizens.

1.3. Research Objectives

The aim of the study is to examine integrated information systems in order to achieve Batho Pele principles within KZN Provincial Government. This research looks at how information integration and process integration at provincial government can enhance the levels of service delivery through effective and optimal utilisation of technological resources. In the study of IT/IS integration, enterprise integration (EI) presents a value proposition to KZN Provincial government, since IS integration offers prospect to leverage IS into processes and offer a seamless view of their information (Lam, 2005).

The aim of this study is to establish whether integrated information systems (IS) can enhance the levels of service for KZN Provincial government. The study attempts to address the following research objectives:

- To examine factors impacting on the service delivery at Provincial local government.
- To determine the importance of integrated systems in improving the service delivery at Provincial local government.
- To establish how strategic alignment between integrated systems and Provincial local government strategic objectives can improve service delivery.
- To establish the problems associated with IT/IS in improving service delivery.
- To make recommendations to improve service delivery through integrated technology.

The research questions are as follows:
- What factors impact on service delivery at Provincial local government?
- What is the importance of integrated systems in improving the service delivery at Provincial local government?
- Can strategic alignment between collaborative technologies and Provincial local government strategic objectives improve service delivery?
- What are the benefits of utilisation of e-government at Provincial local government?
- What are the problems associated with IT/IS in improving service delivery at Provincial local government?

1.4. Focus of the Study

The focus of this research lies within the theory of information systems (IS) integration, business process integration and business process improvement. Each of this concepts is interconnected.

1.4.1. Information Systems (IS) Integration

Information systems integration focuses around enabling information flow by offering access to structured informational means across enterprise and technical parameters (Klischewski, 2004). Information systems integration eliminates the duplication of IT systems and infrastructure and breaks down the barriers between inter-departmental functions (Palaniswamy & Frank, 2000). Therefore the questionnaire was designed to establish the relationship between IS integration and the impact on service delivery.

1.4.2. Process Integration

The objective of this research is to highlight the significance of information flow to progressive business process, and draw upon current IS literature to describe process integration and derive four principles of process integration namely: timeliness, accessibility, granularity of information flows and transparency (Berente, Vandenbossch, & Aubert, 2009).

1.4.3. Batho Pele - Process Improvement Principle

Batho Pele is a service delivering mechanism devised to put communities at the forefront of operations and planning for the government. The introduction of Batho Pele by the Cabinet was aimed at improving national and provincial governement processes of delivering cost effective public services to citizens. Therefore, the vital objective of the transformation of public service is the acceleration of service delivery (Government Gazette Notice 1459 of 1997).

1.5. Writing Conventions

This section outlines a brief overview of the writing conventions in the dissertation and concludes this chapter. Every chapter in the dissertation begins with a diagrammatic representation (See Figure 1) of where the particular chapter is situated within the overall dissertation.
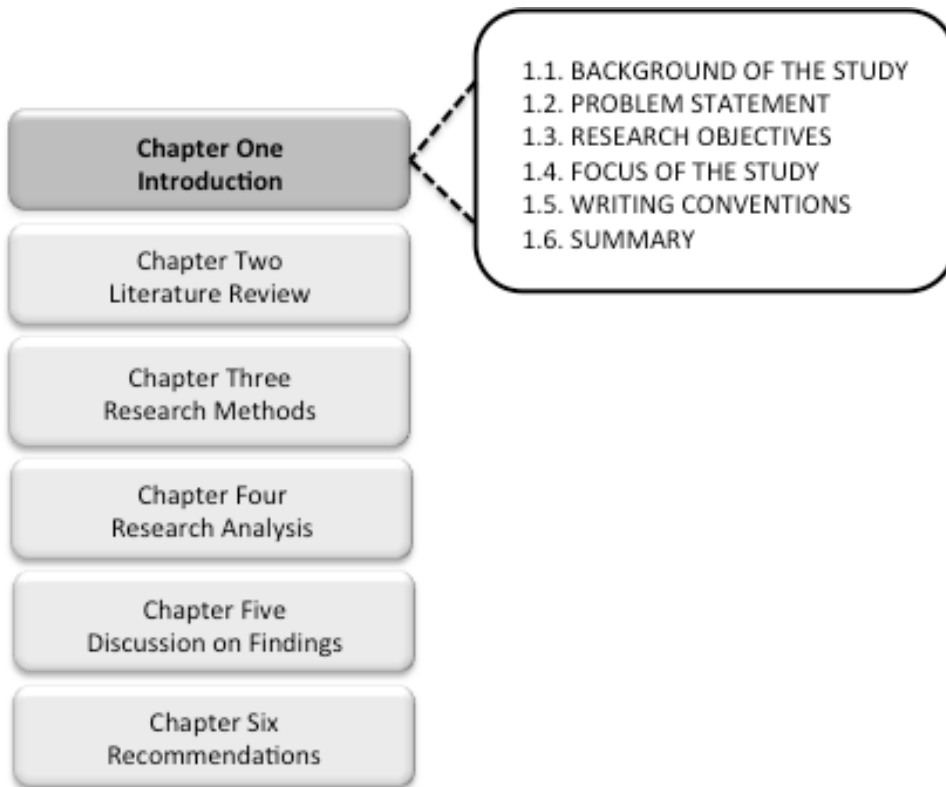
Figure 1 : Example diagram used in each Chapter

- All abbreviations will be written in full the first time they appear in each chapter;

- Tables, graphs and figures are numbered sequentially in order of appearance.

1.6. Summary

The introduction served as an overview of the study. The literature review that follows provides the reader with an in-depth understanding of how information systems (IS) integration improves service delivery through Batho Pele principles. Theoretical frameworks on IS integration and e-government architecture will be discussed. The research methodology explains the tools and techniques used for obtaining results. Results will be analysed, based on the questionnaire administered. Thereafter, recommendations will be presented.

2. Literature Review

2.1. Background

This chapter is the result of desktop-based literature review on the investigation of IS integration in achieving Batho Pele principles. Figure 2, presents the outline of the literature review and where the chapter is on the overall research.
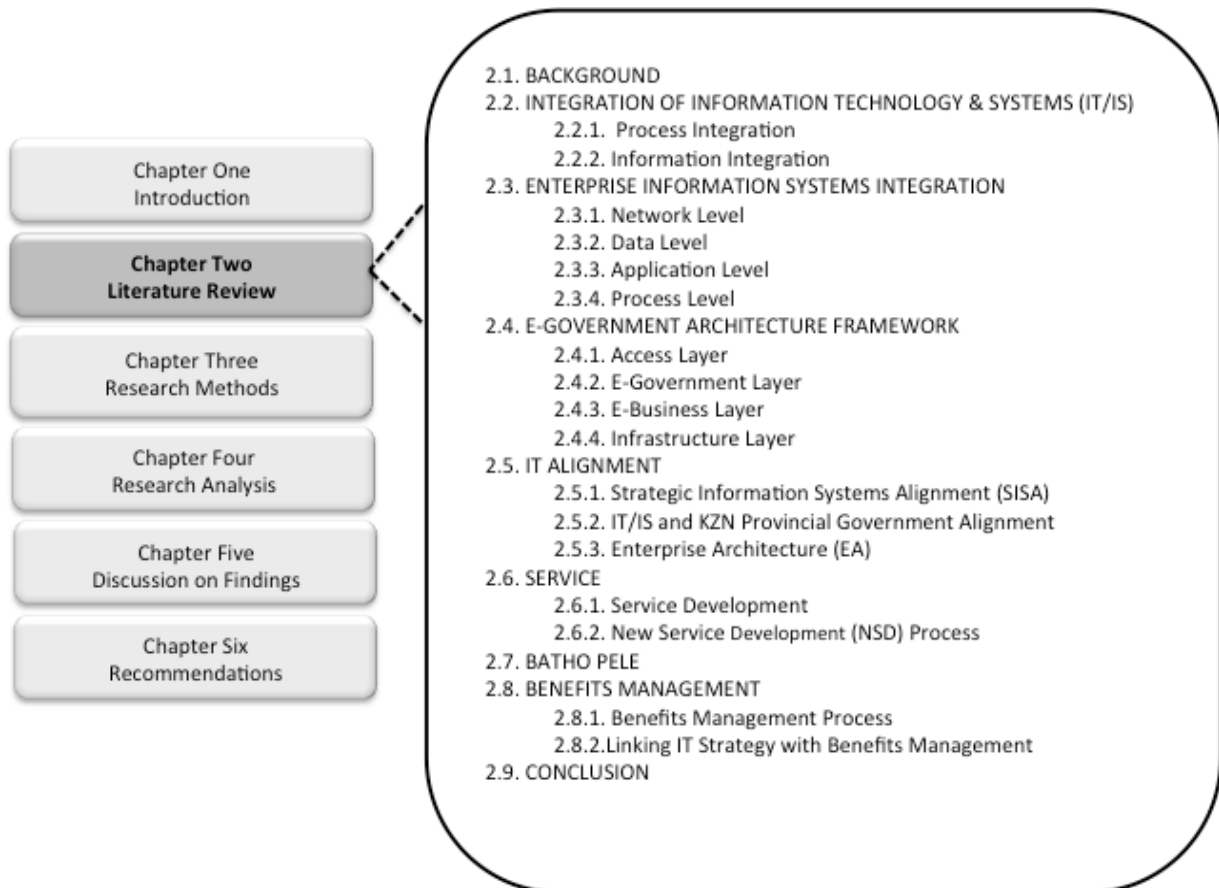
Figure 2 : Literature Review Outline

The establishment of local spheres of government has resulted in a number of interventions developed to strengthen KZN Local government ability to deliver service. These interventions include business process improvement initiatives through Batho Pele, Local Government Support Programmes, training and development on various municipal and local government management information systems. According to the Constitution of the Republic of South Africa No.108 (1997), these support measures were designed for government to fulfill their municipal and local government operational objectives.

Chapter 3 of the Constitution (1997) determines that three spheres (national, provincial and local) of government are distinctive, inter-dependent and interrelated, and are bound by the principles of co-operative government and intergovernmental relations. Further to these general principles, the Constitution defines the following key duties for provincial departments (KZN CoGTA) responsible for local government and municipalities: Support, Intervention, and Monitoring (Constitution of the Republic of South Africa No. 108 of 1996).

One of the mandates aimed specifically at the KZN CoGTA, is the Local Government Turn Around Strategy (Local Government Turnaround Strategy, 2011). This strategy was developed to accelerate operational efficiencies in provincial government, and was submitted to the Executive Committee of the Cabinet on 02 December 2009, with the below-mentioned strategic objectives:

- Local government is equipped with public services supply to meet the demand for service delivery responsive to communities.

- Local government that is accountable, effective, clean and transparent.

- Develop professionalism in all spheres of government.

- Develop national policy, monitor and support.

- Fortify partnerships between communities, civil society and local government.

The LGTAS (Local Government Turn Around Strategy) places interest in multiple approach interventions, focusing on annual department and municipal performance assessments, financial viability and the accountability of municipalities (Local Government Turnaround Strategy, 2011). Key interventions, with emphasis on mobilizing society and government, have been set up to move the objectives forward.

The above-mentioned turn-around strategic objectives of KZN Provincial government require a holistic approach that will accelerate the level of services internally and externally. The aim of the study is to examine the importance of an integrated systems approach in information management at the KZN Provincial government. The study will investigate how the integration of IT/IS for the KZN Provincial government can enhance the extraction of information and data from KZN

departments and the conversion of that data into executive management information for local government.

The research will look into details of the following theoretical frameworks for the effective implementation of integrated IT/IS for KZN Provincial government to improve service delivery: -

- Enterprise Information Integration Framework;
- E-government integration framework;
- New Service Development process and
- Benefits Management.

The status quo suggests that provincial government is underutilising IT/IS service and infrastructure at their disposal. Methodologies and strategic tools have been developed to ensure successful organisational development and the re-engineering of process to ensure that the gap between KZN Provincial government organisational demand and IT/IS supply is closed. This can be achieved through the strategic alignment of KZN Provincial government strategic objectives with IT/IS objectives for the department. According to Porter (1998), strategy can be seen as the alignment of activities and resources of a business to the environment in which it operates. The following section looks at the integration of IS and business process to achieve acceptable level of service delivery.

2.2. Integration of Information Technology (IT) and Information Systems (IS)

To obtain operational effectiveness and efficiencies, to lower costs, to accelerate service delivery and improve citizen relations, all departments of the KZN Provincial government must work together towards a harmonious, congruent goal. Inter-government communication and information systems are the LGTAS components identified towards mobilizing government and society to improve the provincial government systems (Local Government Turnaround Strategy, 2011).

Integration allows the unlocking of information to make it available to any user, anywhere, and anytime. Various enterprise process improvement initiatives stress better integration, yet process integration can relate to several things. Notwithstanding decades of research relating to integration, Barki and Pansonneault (2005) established that the concept of organisational integration was still under-theorised. They describe the view of organisational integration as "the extent to which isolated and inter-dependent activities establish a unified whole", where activities represent independent functional components in an organisational process chain.

Technical and organisational performances of various KZN Provincial government administrative components need to be interrelated. This involves both cooperation and interoperability. With cooperation indicating to common cross-enteprise strategy and interoperability indicating technical means which enable IT systems to exchange messages. Klischewski (2004) states that given these two enablers; integration is the result of both cooperation and interoperability. Within the context of this study integration represents the state of readiness to provide services which are possible through connecting interrelated components which were isolated before.

Integration involves a great degree of responsiveness between interrelated functional components, suggesting fast access to and interpretation of messages for components that are observed to be highly integrated, Barki and Pansonneault (2005). Berente *et al*. (2009) indicated that integration between functional enterprise components require different levels (network, data, application and process) of implementation effort as highlighted in Section 2.3 of the Enterprise Information Integration framework, depending on the nature of business process that integration supports. For the purpose of this study, the researcher has emphasised process and information integration. In practice these two integration approaches overlay and complement of each other.

2.2.1. **Process Integration**

Process integration is defined as the integration of business and information flows (Themistocleous, Irani, & O'Keefe, 2001). Process integration aims at interconnected phases and steps of process performance across enterprise and/or technical parameters. On enterprise level, process integration is described as an

organisational form that combines the interdependence of tasks, people, business units and functions needed to deliver "product or service" to citizen or customer (Earl, 1994).

Process integration encompasses the minimisation of communication and coordination effort between activities of process (Berente, Vandenbossch, & Aubert, 2009). A key indicator of the level of integration is related to the time associated with the flow of information between distributed activities. The researcher has derived four principles of process integration (see Table 1) from the literature on information integration and organisational integration namely: (1) timeliness; (2) accessibility; (3) transparency; and (4) granularity (Berente, Vandenbossch, & Aubert, 2009).

Principle	Definition
Accessibility	This principle addresses the syntactic aspect of process flow and the ability to access information from each required point in a process.
Timeliness	This principle refers to the frequency of the information passed from one activity to another (Wakayama, Kannapan, Khoong, Navathe, & Yates, 1998).
Transparency	This principle refers to ease of information flow from one activity in a process to another (Barki & Pinsonneault, 2005).
Granularity	The provision of information exchange in the process at the right level of detail (Volkoff, Strong, & Elmes, 2005).

Table 1 : Process Integration Principles (Berente, Vandenbossch, & Aubert, 2009)

2.2.2. Information Integration

The purpose of the study is to investigate information systems (IS) integration in achieving Batho Pele Principles. In this research information systems integration is described as the way in which the KZN Provincial government applications and data are shared through different communication network for organisational use (Bhatt,

2000). In this study the fundamental purpose of IS integration is to provide reliable information support throughout the KZN Provincial government to respond to vigorous challenges in government. Information Systems integration focuses on enabling information flow by offering access to structured informational means across enterprise and technical parameters (Klischewski, 2004). Currently, integration is contemplated to be a driving force of IT expenditure, the purpose of information integration has become complex owing to heterogeneity of appropriate data and also the need for information processing speed.

In studying the role of IS integration, researchers have only examined two aspect of IS integration namely: data integration and communication networks integration (Madnick, 1995). Table 2 briefly describes the two basic aspects of IS integration.

IS Integration type	Characteristics
Data integration	One of the significant characteristics of IS integration is the way in which various enterprises can share a variety of databases for coordinating their activities.
Communication networks integration	The way in which various information systems communicate with other using enterprise-wide IS to **coordinate** present and future activities dependent on network scalability and connectivity

Table 2 : IS Integration types (Madnick, 1995)

2.3. Enterprise Information Systems Integration Framework

Since the mid-1980, the subject of information systems (IS) integration and its role in business process improvement has been of considerable interest to business managers and researchers (Bhatt, 2000). This research examines the role of information systems integration in achieving Batho Pele principles. Both private and public sector organisations are experiencing difficulty in dealing with heterogeneous information systems that utilise various data representation syntax (format) and apply different meanings (semantics) to data (Giachetti, 2004). The KZN Provincial

Government faces the challenging task of integrating their disparate information systems, business processes and inter-departmental units for enhancing operation and attainment of Batho Pele.

Lim *et al.* (1997) defined integration as, 'integration of several business processes to make the running of these processes as if there is only one business process. Despite decade of research associated with the idea of integration, Barki and Pinsonneault (2005) found that the concept of organisational integration was still ill-defined and under-theorised. They define the notion of organisational integration as "the extent to which distinct and interdependent organisational component constitute a unified whole", where the components represent functional units along an organisational process chain.

Information systems literature illustrates how information technology can support integration across inter-departmental units or the whole organisation through process integration, data integration, application integration and systems integration (Davenport, Harris, & Cantrell, 2004). The objective of the enterprise information integration framework is to decompose the organisation to reveal and define integration types (Giachetti, 2004). The four levels of enterprise integration framework are platform/network, data, application and process level. Figure 3 highlights the enterprise integration framework.
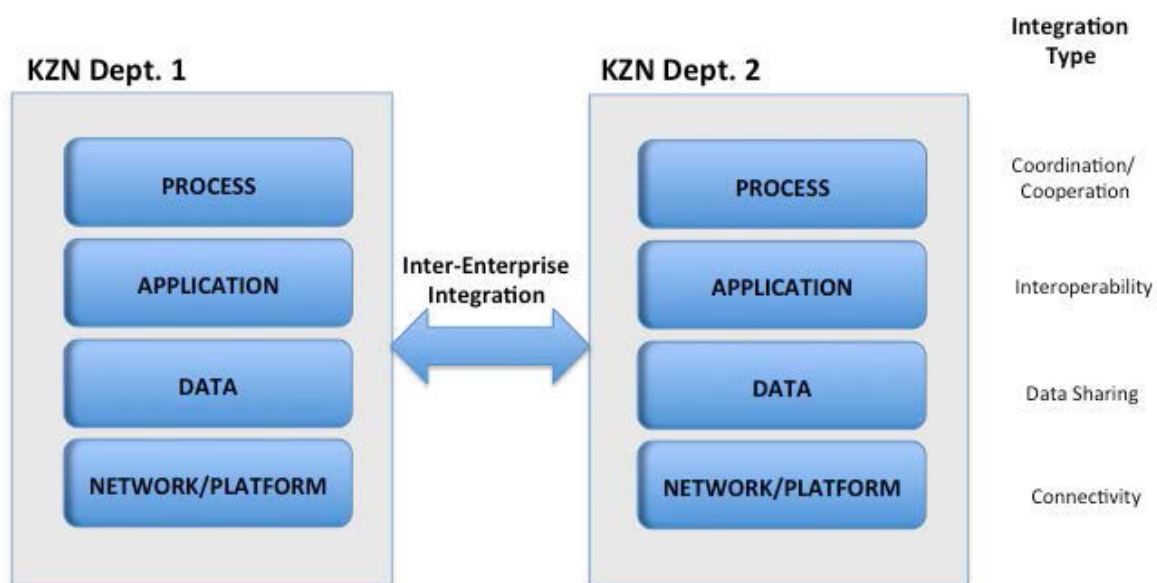
Figure 3 : Enterprise Information Integration Framework (Giachetti, 2004)

There are two types of integration approaches namely: (1) Information integration which aims at facilitating information flow; while (2) process integration looks at interdepended steps and stages of process performance across the enterprise, Klischewski (2004).

2.3.1. Network Level

The entry-level for enterprise integration framework is the network/platform level. According to Bhatt (2000) the foremost advantage of network integration lies in its capability to coordinate. Flexible networks permit an enterprise to coordinate previously isolated activities. The integration issue at this level is physical heterogeneity of devices, hardware and their operating systems in a physical network. The objective of the network/ platform level is connectivity, which simple ensures that information and messages can be sent from one system to the other. At this level, connectivity refers to linkage between application, modules and systems. Network connectivity for the KZN Provincial government has been achieved through standard protocols such as TCP/IP and other networking technologies.

2.3.2. Data Level

At the data level, information systems design principles require the isolation of data from algorithms and business logic. Data level integration focuses on the data sharing between multiple enterprises, applications and resources. This level specifies the details the enterprise system uses to complete its business functions. The integration objective of this level is the sharing of data where two or more organisational units exchange information with each other. According to Batini *et al.* (1986), the approaches illustrated on this level are for data schema integration described as "the activity of integrating the schema of proposed or current database into global unified schema".

Gooodhue (1992) found that the value of data integration is not always positive; a shared data model is most appropriate when the organisation system being modelled is stable. This has generated interest for researchers to find more flexible methods for data integration, which combines concepts from message-based integration with data schema integration. Extensible Markup Language (XML) is developing as a data exchange standard between organisations by identifying the content of data for electronic documents (Cert, Fratenale, & Paraboschi, 2000). By developing the standardisation of data codes and definition, the KZN Provincial

government will progress to the level of integrated systems development. The standardisation of data codes and definition supports in fulfilling the requirements of future information needs, (Bhatt, 2000).

2.3.3. **Application Level**

Applications are programs or information systems designed to provide a service (Giachetti, 2004). Every programming language or application utilises local defined messages and data formats which result in heterogeneity. The objective of integration in this level is interoperability which overcomes the problem of heterogeneity. Interoperability is an essential requirement to support the development of distributed systems and component-based applications. Middleware is an application that provides an interface that hides the complexity of networking, application interoperability and distributed computing from users, (Schantz & Schimdt, 2001).

Interoperability of applications are realised through the application programme interface (API), which describes a service an application provides and how those services are accessed. The Interface Definition Language (IDL) describes the public interface to an object which services two objectives: (1) it notifies the client of the services offered as well how to invoke the services; (2) it notifies communication infrastructure of the format and syntax of the access method. IDL can possibly wrap any application, even legacy applications which are difficult to integrate into the enterprise (Bullinger, Faehrich, & Linsamaier, 1998). Currently, the KZN Provincial Government has standardized on using BAS (Basis Accounting Systems) as financial management and PERSAL (Personal Salary Systems) systems across all KZN departments, which currently lacks integration with other programs or applications.

2.3.4. **Process Level**

Process integration essentially needs information integration as a platform, and therefore requires the appropriate transfer of usable information (Berente, Vandenbossch, & Aubert, 2009). Process integration aims at coordinating process performance stages and interrelated steps across organisational and technical borders in order to support new services based on control of process flow and overarching monitoring (Klischewski, 2004). The overall objective of process level integration is to coordinate the dependencies that arise between resources, objects

and process activities in order to achieve an efficient and effective process. Coordination involves managing the dependencies and the control structure of the process. Progressively, researchers now acknowledge the need to consider the function of coordination more closely in enterprise integration (EI).

Workflow management systems are process level information systems devised to systematise business process by controlling and coordinating information between participants and the flow of work (Storh & Zhoa, 2001). Berente *et al.* (2009) state that Enterprise Resource Planning (ERP) is another process level system designed to coordinate all the information, resources and tasks required to complete business process. Enterprises that have effectively implemented ERP have reported benefits of better customer satisfaction, (Themistocleous, Irani, & O'Keefe, 2001).

2.4. E-Government Architecture Framework

Integration is a critical success factor for realising an established level of e-government (Golden, Hughes, & Scott, 2003). In recent years, ambitious e-government programs have been launched in different countries. President George W Bush of the US signed an e-government Act in law, indicating a major phase towards revolutionising public sector IT in the US (CIO, 2004). Eventually, e-government seeks to integrate and make a unified set of government services available to end-users. This research seeks to investigate the role of integrated information systems in achieving Batho Pele principles.

E-Government has numerous drivers which include better efficiency, government improvement, citizen empowerment, increased access to public sector services, reduced corruption, greater transparency and improved levels of service (Schware & Theil, 2003). A survey by James (2000) reported that 60 per cent of respondents believed that government organisations would be more effective if citizens could use the internet to register their cars, pay parking tickets, fill out forms and apply for permits. About 50% thought it would be a good idea to allow citizens to vote online and have government auctions on the Internet. Through an integrated web-portal, it will be possible for citizens and businesses to complete a transaction with

government agencies without having to visit several separate ministries/departments in separate physical locations.

In addition, e-government strategy is allowing government agencies to interact directly and work better with citizens and businesses, regardless of their localities within the physical world. This comprises digitising supply chain services from and to businesses in order to enhance the quality of service, accessibility, and cost effectiveness (Heeks, 2001). In this section, the researcher decided to analyse application and information management infrastructure through discussing the framework of e-government architecture. The importance of the framework layers and technologies of e-government architecture is discussed below.

A government department planning to implement an e-government program and formulate its IT strategies must assess its business models and choose suitable technology solutions that deliver on central government policy (Lam, 2005). The e-government architecture defines the standards, infrastructure components, applications, technologies, business models and guidelines for electronic commerce among and between organisations that facilitates the interaction of the government and promote group productivity (Ebrahim & Irani, 2005).
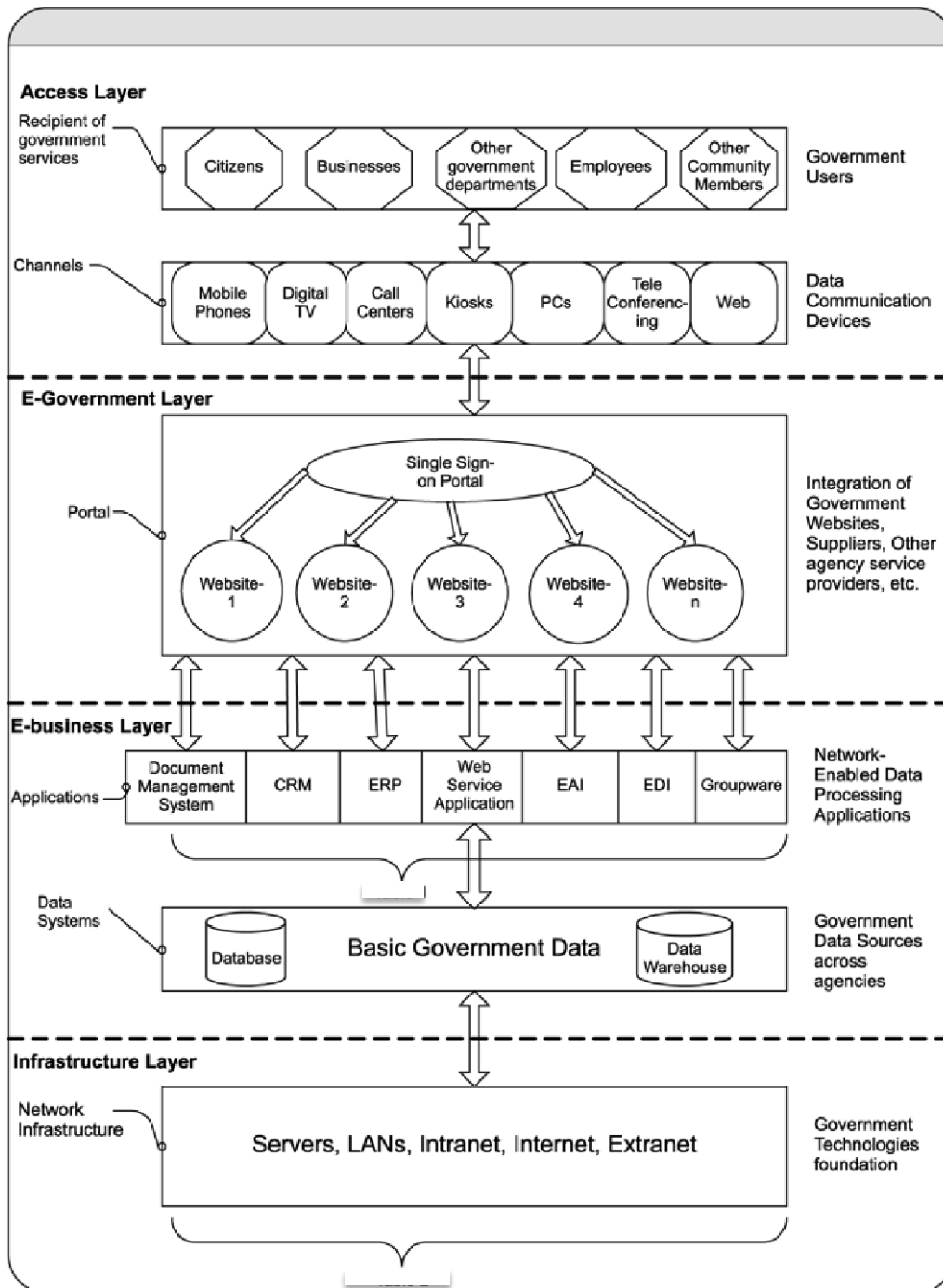
Figure 4 : Framework of E-Government Architecture (Ebrahim & Irani, 2005)

Although there are major differences in the structure of government agencies, public sector institutions need to adopt common systems infrastructure to support integration of their systems in a way that enables them to build a platform for sharing their knowledge resources.   For example, an e-government portal requires a common and integrated architecture framework that allows different local

government departments, provinces, and municipalities to share and exchange data, independent of formats, devices and underlying architecture (Sharma & Gupta, 2002). Since e-government goes beyond the IT infrastructure, the contribution of this study is to provide an integrated architecture framework for e-government that signify the alignment of IT infrastructure with business process management in the KZN Provincial public service.

The e-government architecture framework depicted in Figure 4 is organised into four layers linked through two-direction arrows which present the hierarchical level of e-government implementation and portray the logical connection of each relevant layer that allow two-way transmission of data and services. Figure 4 presents the e-government architecture which is divided into four (4) layers namely: access, government, business, and infrastructure layers.

2.4.1. Access Layer

The access layer involves the channel that KZNPG users can use to access various public sector services. Access channels are important components in e-government as they consist of online and offline channels. Government users are managing and controlling this layer. However, it is important that KZN Provincial government provides a common way of finding all government information and services, maintain channel coordination, create a common look and feel across different channels, and comply with the guidelines of technical standards (Cabinet Office, 2000).

2.4.2. E-Government Layer

The e-government layer focuses on the integration of digital data for various organisations into a government services web-portal. This may result in better access to government resources, decreases transactional and service-processing costs, and supports organisations to provide high quality services (Ho, 2002). According to Chan and Chung (2002), this layer enables the user to use the web browser to get all KZNPG information needed through a single window. One of the specific priorities for the intervention framework mentioned in the Local Government Turn Around Strategy (CoGTA, 2009) was the establishment of single window of coordination for local government. Citizens can search on-line for information they request to see, as opposed to the information government want to present to them. This layer relates to access and information, which are the principles of Batho Pele

mentioned in Section 2.7. This layer allows citizens' access to materials in the order that they desire (West, 2004).

2.4.3. E-Business Layer

The e-business layer is focused on implementing ICT tools and applications to strengthen the sharing of knowledge, processing of information and network of trust that exist within and between enterprises (Moodley, 2003). The e-business layer provides a solid basis for the development of a single e-government portal and also enables the relationship and interaction between government-to-government and government to-enterprise. This layer delivers unified and real-time communication between their systems at both a process and data level. Integrating disparate IT components and applications inside and outside the enterprise parameters remain time consuming and costly, due to the heterogeneous state of KZN Provincial government ICT environment (Themistocleous, Irani, & O'Keefe, 2001).

Legacy systems and other applications across the government ICT environment need to be upgraded to a web-enabled level to improve their process functionalities beyond organisational parameters and to attain complete communication between all information systems and processes. Web services are standards-based and suited to build common infrastructure to reduce the barriers of enterprise integrations, hence, enable e-government systems to collaborate with each other regardless of underlying infrastructure (Haung & Chung, 2003).

2.4.4. Infrastructure Layer

Forming an information society by utilising applications and tools for e-business layer is an efficient manner requiring a technology infrastructure that spreads out to all segments of government organisation. Table 3 presents infrastructure layer components which offer essential technologies, such as a LAN that support integration with current hardware resources and mobile devices which support current ICT provision.

Technology	Description	Characteristics
LAN	ICT network focused in a specific geographic area, like, regional government offices	• Interconnect with different devices. • Enable sharing of citizen file. • Enable Data or information exchange among devices (Kurose & Ross, 2003).
Server	High end and resourceful computer that runs and host government programs and applications	• High speed data access of government information. • Communication processing across government network (Stallings, 2000).
Internet	Direct connectivity over LAN or ISP provided through collection of global and public communication network.	• Enable government information access to citizen, which is on of the principles of Batho Pele. • Delivers low cost communication (Singh, 2002).
Intranet	An IP (Internet Protocol) technology that allows sharing of computer services on internal website within an organisation	• Improve communication and connectivity with an enterprise (Chan & Chung, 2002).
Extranet	Dynamic WAN(wide area network) that connects enterprise supplier, employees, citizen and other stakeholders	• Support Government-to-Government. • Support SCM (Supply Chain Management) with business (Singh, 2002).

Table 3 : Infrastructure Layer Components

2.5. IT Alignment

The previous section presented an overview of information systems and e-government integration frameworks, which can be impossible to achieve without the alignment of information systems and overall KZN Provincial government strategy. According to Ahmed *et al.* (2010), a fundamental benefit of strategic alignment is a perception of higher business value of IT/IS. This section presented theoretical views on strategic IS alignment for KZNPG to achieve integration of business process and information systems for KZN.

Laudon and Laudon (2006) developed an IT alignment model that seeks to establish components required for successful business alignment. Figure 5 depicts the model, which clearly outlines the interdependence of business strategy to IT components, and interoperability of ICT (Software, Database and telecommunication).
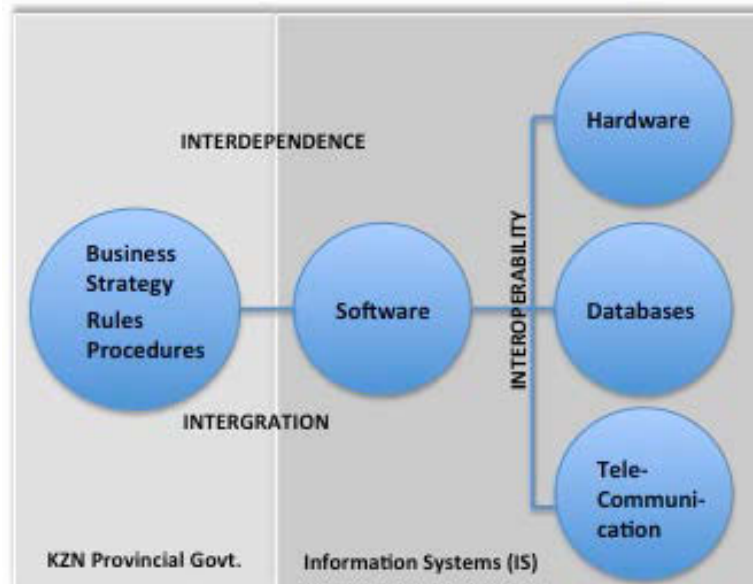
Figure 5: IT Alignment Components (Laudon & Laudon, 2006)

Changes in KZN Provincial government strategy, processes, and rules increasingly need changes in hardware, software, databases, and telecommunications (see Figure 5). The relationship between IS and the enterprise results from the developing reach and scope of system projects and applications (Ahmed, Aloufi, Issa-Salwe, & Kabir, 2010). The KZN Provincial government needs to understand what evaluation tools methods are available for alignment to be feasible. IS strategy can be described as a strategy to deploy information systems that acknowledges enterprise requirements, in other words 'demand' for the information and systems to support the overall business strategy and its plan to gain or maintain the advantage (Bhatnagar, 2007).

2.5.1. Strategic Information Systems Alignment

In order for KZN Provincial government to utilise integrated information systems, it is vital to have strategy that describes the systems and offer a means to support them. Strategic Information Systems Alignment (SISA) is an operational way of developing and maintaining information systems integration that support the business operations

for the KZN Provincial government (Ahmed, Aloufi, Issa-Salwe, & Kabir, 2010). The objective of Strategic Information Systems Alignment (SISA) is to help deploy IS solutions to integrate with KZN Provincial government's overall strategy. SISA helps in the transformation of information into functional form for coordinating the workflow within organisation, and assists in decision-making process (Laudon & Laudon, 2006).

Before setting an IS integration framework, KZN Provincial government should formulate an information systems planning framework that induces all important components required to draw up an IT strategy that would be coherent with the overall provincial government strategy.

2.5.2. IT/IS and KZN Provincial Government Alignment

The strategic alignment model (SAM) proposed by Henderson and Venkatraman (1993) is one of the most cited strategic alignment models (Chan & Reich, 2007). SAM consists of two main constructs: strategic fit and functional integration. For the purpose of our study, functional integration is referred to, as IS Integration.
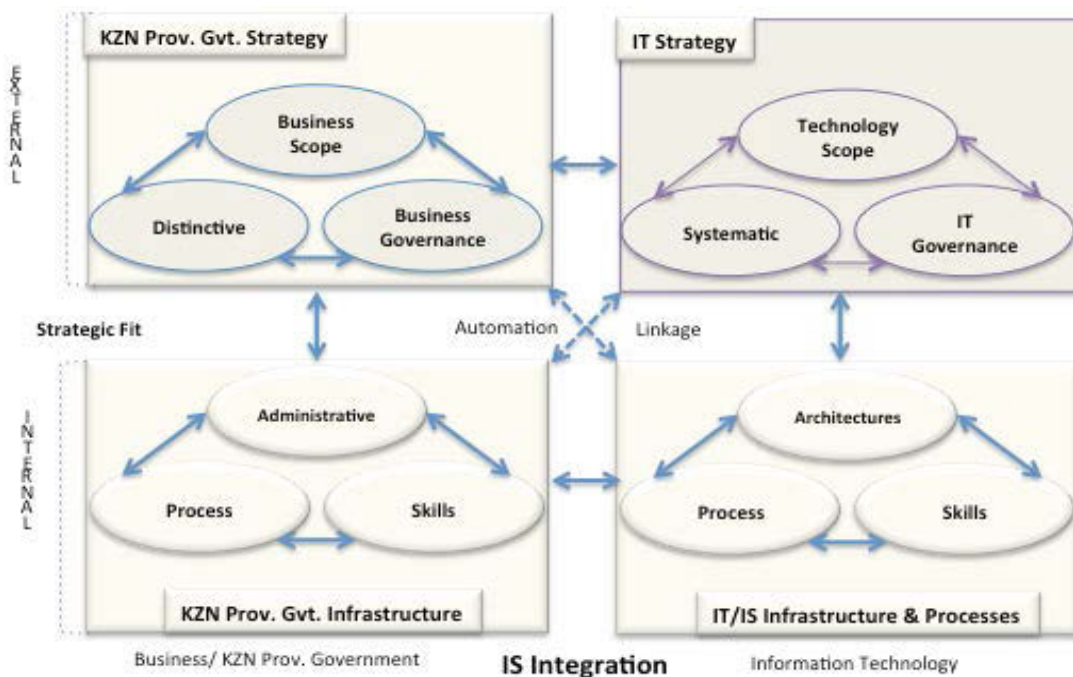
Figure 6 : Strategic Alignment (Henderson & Venkatraman, 1993), (Ahmed, Aloufi, Issa-Salwe, & Kabir, 2010)

Strategic fit denotes to the relationship between internal and external domains (see figure 6). Functional integration refers to two type of integration between business

and IT domains, previously discussed in Section 2.3 and 2.4 respectively. Henderson and Venkatraman (1993) established a strategic alignment model depicted in Figure 6 covering the four domain linkages in local government namely: the business strategy, information strategy, business process and information technology process. Two major perspectives were identified in aligning the four domains.

The first perspective relates to BP (Business Process) as referred to as KZN Provincial Government Process or ITS (IT Strategy), which is the enabling factor of business strategy influencing the IT/IS infrastructure and processes. The second perspective, IT/IS Infrastructure and Process (IT Process) or BS (Business Strategy) also referred to as KZN Provincial government strategy is the driving force of IT strategy affecting KZN Provincial Government Process (business process).

2.5.3. Enterprise Architecture (EA)

Establishing a single point of entry for the support, monitoring and intervention in the KZN Provincial government requires strategic alignment of IS and business process. Government agencies are progressively implementing enterprise architecture (EA) to align business process with information systems (IS) and objectives of the organisation (Harmon, 2003). Architecture is an instrument to direct information systems (IS) integration developments and make sure that the individual efforts are coordinated (Aagesen, Janssen, Krogstie, & Van Veenstra, 2012). Traditionally, the objective of enterprise architecture is to operationally align enterprise strategies with their business processes and the coordination of their resources (Ebrahim & Irani, 2005).

For the purpose of the study, focus will be on one of the EA models famous for successful implementation of IS Integration. Service oriented architecture (SOA) is an organisational-driven topology method that enables a business as connected, recurring activities or services (Baltzan & Phillips, 2010). SOA benefits organizations and departments modernise their information systems environment by guaranteeing that IT systems are adaptive, easy, cheaper and economically viable to support ever increasing departmental needs. SOA assists organisations, enhancing the scalability of their business processes, strengthening of fundamental information technology

architecture and information technology reclamation by integrating dissimilar systems and data sources.

KZN Provincial government should quickly respond to departmental changes with agility, leverage existing investments in applications and applications infrastructure to address newer departmental requirements; and support new channels of interactions with customers or citizens, partners and other government organs.   The crucial technical concepts of SOA are (Dialogic, 2010):

- *Service*s – organisation activities, including processes.

- *Interoperability* – the capacity for different computers, using different operating systems and on different platforms, to work together, exchanging information in standard ways without any changes in functionality and without physical intervention (McNurlin & Sprague, 2003).

- *Loose coupling or Cloud Computing* – the ability of an on-demand integration of services to form compound service, or disengagement of functionality.

2.6.   Services

This section presents an overview of the service since the study examines the impact of IS integration in improving service delivery. In terms of the new developmental mandate, provincial departments and municipalities are firmly embedded in local communities and committed to working with citizens to find new sustainable ways to meet their social, economic and material needs while improving their lives through efficient service delivery mechanisms (Raga & Taylor, 2006).

Batho Pele is regarded as a service delivery improvement process that all South African government agencies subscribe to. National government is encouraging provincial departments to find innovative ways of delivering service to their constituencies effectively (Local Government Turnaround Strategy, 2011). The study investigates the impact of integrated IT/IS for KZN CoGTA in delivering quality services to stakeholders.

What is significant about service is the relevant dominance of *intangible attributes* in the make-up of the "service product".   Services are intangible, perishable, and highly variable each time it is delivered and inseparable from the provider (Kumar & Gupta, 2006). According to Bitner and Zeithaml (2004) a service is all intangible economic output that is not physical product, used at the time it is produced. The characteristics of service have to be thoroughly understood by KZN Provincial government so that appropriate operations and structures are created to be able to produce and offer services efficiently to citizens.

The KZN CoGTA as a face of KZNPG is mandated to support, intervene, and monitor local government and municipalities as service stipulated in Chapter 3 (1997). Services often have to be produced in the presence of the customer. According to Kumar (2006), services have the following attributes; intangibility, perishability, inseparability and variability. KZN CoGTA must consider four (4) service characteristics as depicted in Figure 7, when designing a service delivery programme.
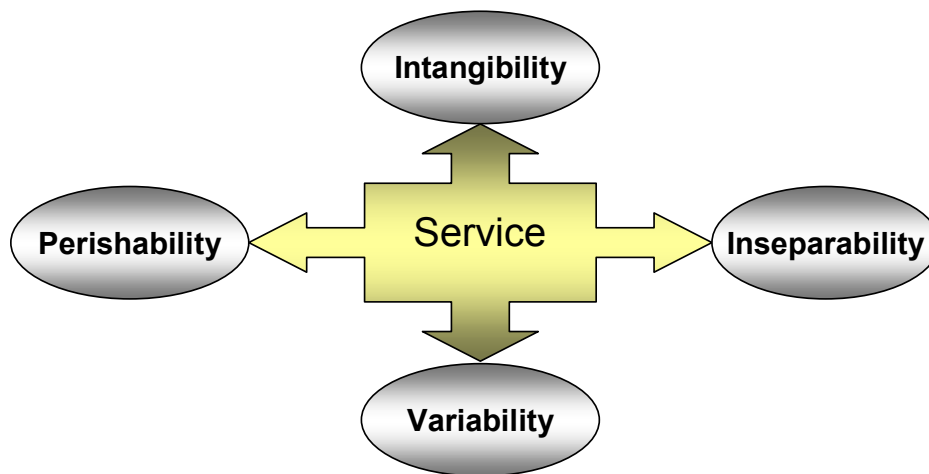
Figure 7 : Characteristics of Service (Kumar & Gupta, 2006)

- **Intangibility.** That simply means that a service is invisible.
- **Inseparability.**   Services are inseparable from their provider, whether providers are people or machine.
- **Variability.**   Services depend on who provides them and when and where they are provided, and are highly variable. Services organisations can take three steps towards quality control, as citizens are aware of variability. They are:

- Recruitment and training;
- Standardization of services; and
- Monitor citizens' satisfaction (Kotler, 2004).

- **Perishability.** Services cannot be stored for future use (Kumar & Gupta, 2006).

For service, "the process is the product" because the citizens participates directly in the service delivery (Fitzsimmons & Fitzsimmons, 2006). Therefore, the success of innovative and integrated technologies, especially for the frontline office, depends on the citizens' perception. Innovation is a destroyer of tradition; thus, it requires a high degree of planning to ensure success. The implementation of innovative technology for KZNPG will eventually augment the level of services delivery to customers. E-government which is supported by IS integration is another innovative service. It provides a wide variety of information to citizens and businesses through the Internet. Through an integrated web-portal, it will be possible for citizens and businesses to complete a transaction with government agencies without having to visit several separate ministries/departments in separate physical locations (Ebrahim & Irani, 2005). By stipulation, the service benefits of e-government will improve departmental processes, save time and meet business requirements at less cost. The comparison between traditional service and electronic service is highlighted in **Table 4.**

Feature	Electronic Service	Traditional Service
Service encounter	Screen-to-face	Face-to-face
Availability	Anytime	Standard working hours
Access	From home	Service location
Market area	Worldwide	Local
Ambiance	Electronic interface	Physical environment
Competitive differentiation	Convenience	Personalization
Privacy	Anonymity	Social interaction

Table 4 : Comparison of Electronic & Traditional Service (Fitzsimmons & Fitzsimmons, 2006)

2.6.1. Service Development

In chapter one, it was mentioned that government, through KZN CoGTA which is mandated to ensure the quality of service rendered by KZNPG and municipalities, is under threat of national strikes and protests. Some of the challenges of service delivery may be overcome with service development innovation. Innovation is viewed both as a process of creating something new and also the actual outcome (Johnson, Menor, Roth, & Chase, 2000). For KZN CoGTA the service outcome need not be a new service but rather some degree of modifications to an existing IT/IS service, which is viewed as incremental innovation. With IS integration comes e-government solutions, a new service and radical innovation to KZN Provincial government that enables citizen to transact online rather than over the counter as outlined in Table 5.

An e-government strategy is a fundamental component in revolutionising government services, through identifying and developing new service development, organisational structure, the ways of interactions with citizens and business, and reducing cost and layers of organisational business processes.

South African citizens in the past have made suggestions on the improvement of services to government, which was viewed as fulfilling one of the principles of Batho Pele, which is consultation (Constitution of the Republic of South Africa No. 108 of 1996, 1997). Table 5 highlights the categories and classification of service innovation within two major categories.

New Service Category	Description
Major Innovation	**Radical Innovation** New service and not defined. These innovations are usually driven by technology. E-government is an example of major technological innovation
New service for the market presently served	New service offering to existing customers.
Service line extension	**Incremental Innovation** Augmentation of the existing services such as online

	payment of rates, electricity and water.
Service improvements	Modifications in the services features currently offered.
Style changes	The most common of all "new service", these are observable changes that have effect on emotion, attitude, and customer perception.

Table 5 : Levels of Service Innovation (Johnson, Menor, Roth, & Chase, 2000)

2.6.2. New Service Development (NSD) Process

Trends in customer demographics and customer literacy suggest new service innovation, development and advances in information technology. These suggestions and ideas form inputs to the "development" stage of the new service development (NSD) cycle shown in Figure 8. The development and analysis stages together represent the planning phase where capabilities are evaluated. The final two stages, design and launch, characterize the execution stage of the NSD. In the execution stage, cross-functional enhancement and the service delivery design inputs become significant to success (Fitzsimmons & Fitzsimmons, 2000). Obviously, during the development and analysis stages, the NSD process has to be aligned to respective framework suggested above for successfully development of new service through IS integration.

The importance of enablers to facilitate the NSD process is presented in the middle of Figures 8.
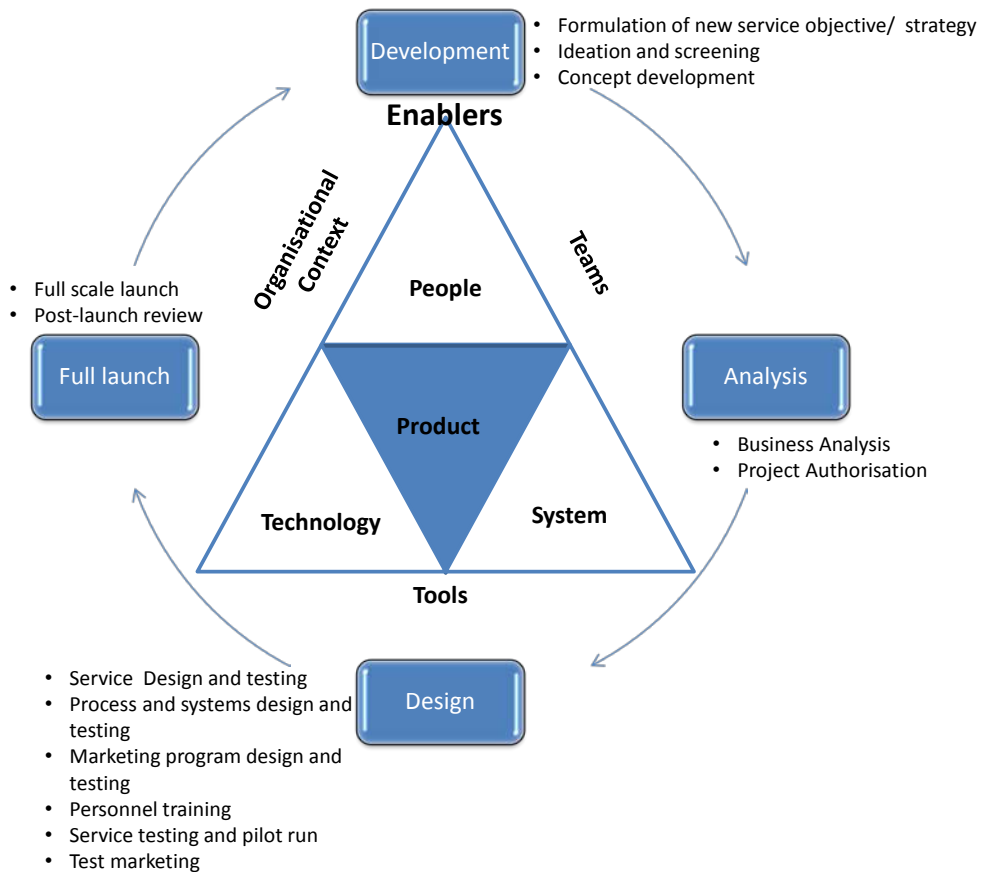
Figure 8 : NSD Process Cycle (New Service Development, 2000)

2.7. Batho Pele

In 1995, the GNU (Government of National Unity) adopted Batho Pele principles meant to redress the imbalance of the past by promoting equality in the provision and delivery of services (CoGTA, 2009). Batho Pele ("People First") initiative is concerned with service-level standards, and explicitly specifies that the citizens should be informed of the level of service they should expect to receive. This principle presents the method of public service delivery benchmarking that seeks to progressively go through several processes to monitor and evaluate service delivery, with a view to ensuring that systems are constantly being improved. The recurrent phases include: measuring existing levels of service; assessing whether and where improvements are required; and implementing steps to ensure that the improvements are made (KZN Education, 2012).

Then the Public Service and Administration department issued a White Paper on the Public Service Delivery Transformation (Batho Pele White Paper). The purpose of Batho Pele White Paper is to add a policy structure and a matter-of-fact execution strategy for the modification of Public Service Delivery (Government Gazette Notice 1459 of 1997).

As mentioned in Section 2.6 that Batho Pele is the government intervention in the accelerating service delivery to citizens. Section 2.6 presented a theoretical review of "service" and outlined some important concepts. This section will only present a brief overview of Batho Pele principles for the purpose of the study.

The White Paper on the Transformation of the Public Service (WPTPS), issued on 24 November 1995, mentioned eight priorities for transforming public service, amongst which Service Delivery Transformation is key (Constitution of the Republic of South Africa No. 108 of 1996). South African public services transformation will be adjudicated above all by one principle: effective delivery of services that meet the fundamental needs of all citizens. Therefore, the vital objective of the transformation of public service is the acceleration of service delivery (Government Gazette Notice 1459 of 1997). The eight principles of Batho Pele (Public Service Act, 1994) are depicted in Table 6**.**

PRINCIPLE	DESCRIPTION
Consultation	KZN Province government should frequently and thoroughly discuss not only the service currently provided but also the provision of novel elementary services to those who previously lacked access.
Setting Standards of Services	The quality of services and standards of services offered by national and provincial government should be made known to civilian users, comprising of novel elementary services previously denied to previously disadvantage individuals (CoGTA, 2009).
Increase Access	One of the primary objectives of Batho Pele is to offer a platform and structure for making resolutions about improving public services to the majority of South Africans who were and still are lacking access to services .
Ensuring Courtesy	The Public Service Commission dispensed the code of practice for all Public Servants which makes it a priority that courtesy and treatment for the community and public is paramount. (Public Service Act, 1994).
Information	KZN Local government must make available full, detailed and current information of services they offer, and who is eligible for services.
Openness and Transparency	With regards to public service delivery, openness and transparency lie in the need to augment assurance and trust between the public sector and society or citizens they serve (Public Service Act, 1994).
Remedy mistakes and failures	The ability and readiness to take corrective action when things go wide off the mark is needed to complement the process of setting standards and is also an essential statutory principle.
Value for money	Refining service delivery and spreading access of civil services to all citizens must be realized in conjunction with the Government's growth strategy for plummeting expenditure in public service and making a better and more efficient public service (Local Government Turnaround Strategy, 2011).

Table 6 : Batho Pele Principles (CoGTA, 2009)

2.8. Benefits Management

In considering the activities required to manage the delivery of benefits, it is assumed that the IT-based systems are delivered to specification, i.e. technical implementation is achieved successfully. It is assumed that the change control processes in the development methodology can deal with this. Benefits management should be the enabling apparatus for running the activities of change.

2.8.1. Benefits Management Process

The benefits management process applies throughout the entire investment collection, however, as the matters related with delivery of benefits become more complex its value escalates.

The input to the process provides the first understanding of the range and complexity of the task involved. The benefit management process techniques focus on the association between process modifications, supporting technology, structure and functioning practices to identify the finest approach of understanding the optimal benefits from investment (Ward & Daniel, 2006). The process also recognises and includes some of the best practices developed by Total Quality Management (TQM) and business improvement and process excellence methods (such as Six Sigma). The five stages in the benefit management process and interdependencies are highlighted in Figure 9**.**
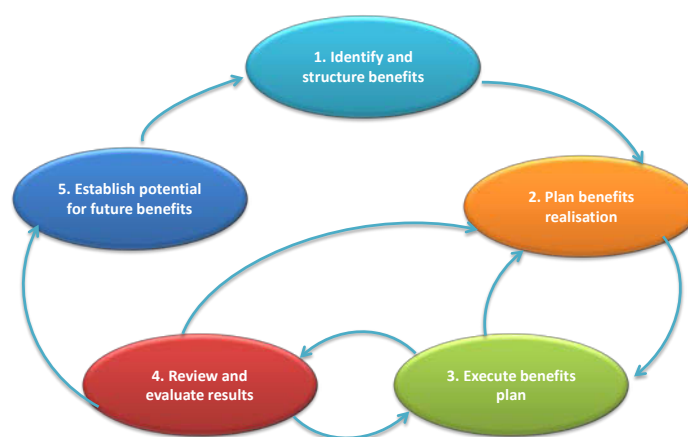
Figure 9 : A Process model for Benefits Management (Ward & Daniel, 2006)

(1) Identify and Structure Benefits

Identifying the prospective and attainable gains includes a process of identifying KZN local government service delivery enhancements that IS integration and associated

33

changes could deliver to investment goals. The aim of the first stage of the process is to identify acceptable investment goals that ensure it communicates to the enablers for change in government; and comprehending how an integration of information technology functionality and departmental modifications can cause the benefits to be realised.

(2) Planning Benefits Realisation

The primary objective of this phase is the development of a detailed benefit plan and feasibility study for the investment, which requires the go-ahead and approval from the departmental EXCO (Executive Committee). In order for this stage to be successful, the following should be achieved:

- Clearly defined and acceptable description of each benefit and changes with obligations for delivery;
- Measurement and establishment of all benefits with approximations of ROI (return on investment);
- Assessment to ascertain the current baseline at the beginning of the investment; and
- A detailed and comprehensive documented network of benefit dependencies to depict all benefits.

(3) Executing the Benefits Plan

Observing growth events and results of the benefits plan is as vital as the information technology growth plan. It is also imperative that key performance indicators (KPI) are established to measure and evaluate benefits realised against key milestones. Similarly, it may become obvious that envisioned benefits are no longer achievable or pertinent and the benefits plan should be modified accordingly, along with consequent reduction in the IT/IS functionality or business change.

(4) Reviewing and Evaluating the Results

One of the influences that distinguish effective from ineffective organisation in their implementation of information technology is the management determination and capability to assess information technology investment after completion. A survey of approaches to managing IT/IS benefits in 60 major organisations revealed that only

26% of the companies always reviewed a project after completion to determine whether benefits were delivered, (Ward, Hemingway, & Daniel, 2005).

(5) **Establishing the Potential for Further Benefits**

Therefore, upon reviewing, it is key to consider what other enhancements are now likely to result in the deployment of the systems and related changes and in view of the anticipated levels of organisation performance that have been realized. These benefits may be achievable through further business changes alone or may require more IT/IS investments.

2.8.2. Linking IT Strategy with Benefits Management

IT Strategy sets the direction for the IT function in an organization by ensuring that maximum IT capital expenditures are spent on value creation activities for the business and creating maximum value. Delone and McLean (1992) propose a widely used framework for measuring the success of implemented information systems and identify six important factors significant for the successful implementation of information systems. The six factors are system use, individual and organisational impact, information quality, user satisfaction and systems quality.

The Delone and McLean IS Success Model has, notwithstanding certain mentioned weaknesses, quickly become one of the leading information systems assessment tool in IS related research, in part due to its simplicity (Urbach, Smolnik, & Riempp, 2009). Delone and McLean (2004) revised their framework. They suggest the inclusion of service quality to the measures of information and systems quality as mentioned in Figure 10. The main descriptor of information systems success is depicted as net benefit.
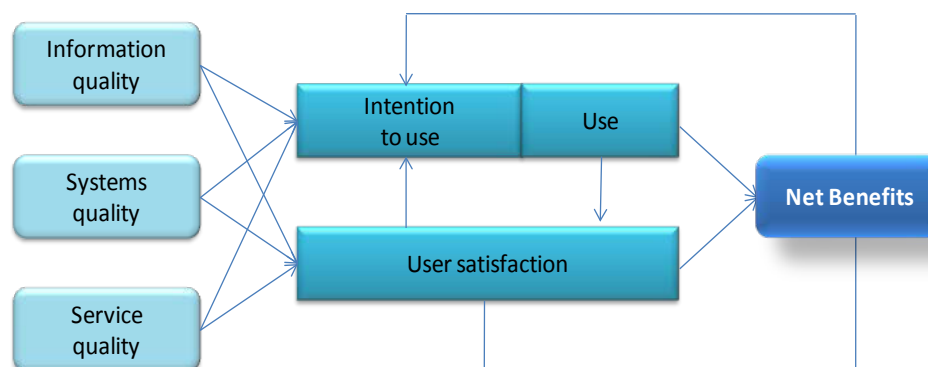
Figure 10 : DeLone and McLean Information Systems Success Model (DeLone & McLean, 2004)

This model assists organisations to establish value creation from IT/IS deployment, referred to as net benefit. This study looks at how integration of IT/IS can accelerate the service delivery for KZN Provincial government using current and existing systems and IT infrastructure. The aim of information systems integration in provincial government is to improve business processes and departmental performance that in turn accelerates service delivery (Bhatt, 2000). The holistic approach highlighted in Figure 11 describes the components that contribute to benefit management.
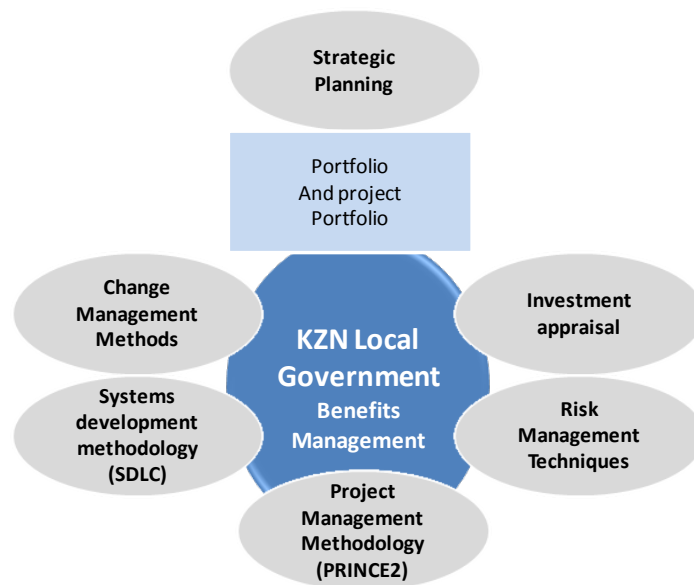
Figure 11 : The Context of Benefits Management (Ward & Daniel, 2006)

Benefit management methodology draws on the idea of strategic change management designed by Pettigrew and Whipp (1991), by recognizing that the process by which a major change is managed requires relevancy to the content of change involved. IT primarily enables change and must be appropriate to the prevailing external and internal organisational context.

2.9. Conclusion

Throughout this chapter, a considerable amount of theory and literature has been examined with the primary intention of increasing the understanding on the role of information systems (IS) integration in achieving Batho Pele principles. This chapter sought to provide a literature review of both IS and e-government integration frameworks.

At theoretical level, information systems (IS) integration was discussed as data architecture and communication networks. Enterprise IS integration was discussed and models KZN Provincial as four levels, and distinguishes integration challenges found at each level. Next, the e-government integration architecture framework was examined which described standards, and classified the infrastructure elements, applications and technologies that are the guidelines for e-government adoption. In ensuring that IS integration succeeds, a strategic alignment model was discussed. The principles of Batho Pele were explained.

The last section of the literature review, the benefit management process was discussed as mechanism that focuses on the association between process modifications, technology, structure and functioning practices to identify the finest approach to understanding the optimal benefits from IS integration investment. In order to substantially address all the research questions, it was necessary to undertake a survey that is explained in Chapter 3. The next chapter discusses the research methodology, data collection strategies and data analyses methods.

3. Research Design and Methodology

3.1. Background

This chapter addresses the objectives of the study, research design i.e. type of study, data collection methods, instrument design, respondent selection and data analysis i.e. how the data was processed. Figure 12 presents the outline of the research design and methodology and where the chapter is on the overall research.

Chapter One
Introduction

Chapter Two
Literature Review

Chapter Three
Research Methods

Chapter Four
Research Analysis

Chapter Five
Discussion on Findings

Chapter Six
Recommendations

3.1. BACKGROUND
3.2. RESEARCH DESIGN
    3.2.1. Research Types
    3.2.2. Research Approach
    3.2.3. Research Philosophy
    3.2.4. Research Strategy
3.3. TARGET POPULATION
3.4. SAMPLING
    3.4.1. Sampling Frame
    3.4.2. Sampling Technique
3.5. DATA COLLECTION
    3.5.1. Questionnaire
    3.52. Administration of Questionnaire
    3.5.3. Collection of Questionnaire
3.6. DATA ANALYSIS
    3.6.1. Descriptive Statistics
    3.6.2. Frequency Distribution
    3.6.3. Representation of the Data
    3.6.4. Validity
    3.6.5. Reliability
3.7. CONCLUSION

Figure 12 : Research Design & Methodology Outline

The purpose of the study is to discover new facts on the role of information systems (IS) integration in achieving Batho Pele principles that can contribute to the general body of knowledge. In addition, however, as Saunders *et al*. (2003) note, business research "desires to address organisational matters and to provide a process for solving managerial problems".

Extensive literature has been reviewed on the subject of information systems integration in KZN Local Government to improve service delivery with the adoption of Batho Pele principles. This section of the research highlights research design,

methodology and strategies. The survey method is popular in business and management research. The method allows the compilation of sizeable data from a substantial population in a more cost-effective way. A comprehensive, self-administered questionnaire was formulated.

3.2. Research Design

According to Zikmund (2003), there are four basic research methods for descriptive and casual research: survey, experiment, secondary data studied and observation. The purpose of the research is to deliver information needed to answer problems and to respond to the decision-making environment. The primary aim of this exploratory study is to closely study the impact of integrated systems in achieving Batho Pele within KZN Provincial government, collect data on the phenomenon, and through analytical and deductive process, explain the relationship among enhanced level of services and technology.

Research methodology is essentially a decision-making process. Research methodology refers to the holistic tactic obvious in the research process from the hypothetical substance to the plans that are in the gathering and scrutiny of the data.
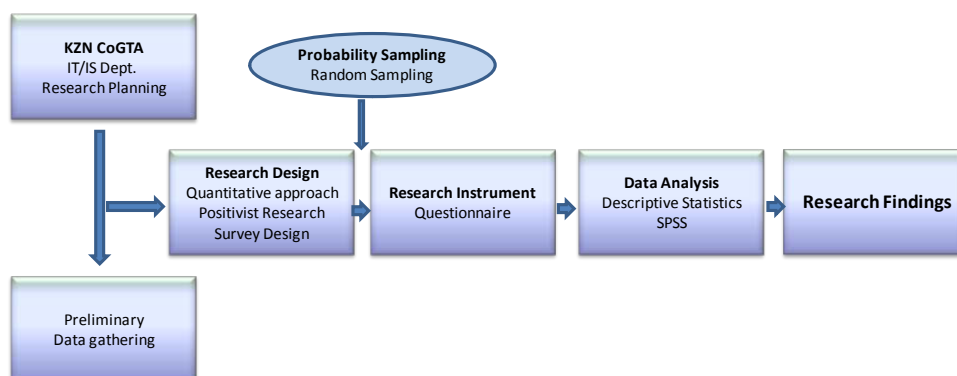
Figure 13 : Research Design (McBurney, 2002)

Figure 13 depicts the research design that will be employed to derive a conclusion for this research. For the purpose of our study, we will use quantitative research. This type of research has the capacity to describe, predict and explain social, psychological and biological phenomena.

3.2.1. Research Type

The research is a continuous process, and the researcher conducted the research at a strategic provincial government planning level. A research program refers to the alignment of the research objectives with KZN Provincial government organisational strategic objectives. The nature of the data dictates the methodology. The discussion of the research type includes the approach, philosophy and strategy.

3.2.2. Research Approach

The objectives of the study required a diagnostic analysis for this organisational behavior study (Zikmund, 2003). The study used positivistic (quantitative) research methods to collect data onto a questionnaire in order to balance the weaknesses of one with the strength of the other and also to increase the reliability and validity of the findings. A quantitative research method was used because it provides a more statistical and graphical understanding of the data collected therefore better explaining the investigation of IT integration in achieving Batho Pele principles.

The approach also used the correlational research, as they are two independent variables (IV), which are, the service delivery and information systems (IS) integration. Neither descriptive nor exploratory study does what correlational studies do, which is to deliver some suggestion of the relation of two or more related things to one another, or how fit will the result be generalised by one or more. Correlational study utilises an arithmetical catalogue termed the correlation co-efficient, which is the measurement of strengths of this relationship (Salkind, 2000).

3.2.3. Research Philosophy

In this hypothesis, facts and causes were emphasised; the information was in numbers that can be computed and generalised accordingly; the scientific process is the rule for generalising the statistical data; and the end result is articulated in arithmetic terminologies. The researcher undertook a commonly, quantitative study, supported by hypothetico-deductive method that makes us believe the world is composed of noticeable, computable facts, though the prediction that "objective reality manifests from social facts" and "variables can be recognised and relationship computed" is problematic. Hypothesis testing is deductive in nature because the study tests if a general theory ("IS integration has a positive influence in the acceleration of service delivery through Batho Pele principles") is capable of explaining particular problem (Bougie & Sekaran, 2010).

3.2.4. Research Strategy

Saunders *et al*. (2003) states that research strategies are: experiment, survey, case study, grounded theory, action research, cross-sectional and longitudinal studies, or exploratory studies.

The research approach and philosophy have required the researcher to use survey method, since survey is a widely used method of gathering scientific information. Survey method observes the connection and occurrence between psychological and sociological variable and enters into paradigms such as values, principles, preconceptions, preference, and belief (Salkind, 2000). The individualities of the population for the study will be generalised through the use of survey method.

3.3. Target Population

A population is a total collection of elements about which we wish to make inferences (Coopers & Schindler, 2003). A population is the entire collection of individuals being considered, while a sample is subclass to the population. S*tatistic* referred to, as quantity computed from a sample and a *parameter* is a quantity computed from population. The questionnaire was developed in line with the research objectives, and was distributed to approximately four hundred KZN Provincial government staff members identified as IT end-users who form part of the target population. A total number of one hundred and forty-four questionnaires were collected.

According to Krishnaswamy *et al*. (2006), the population is represented in terms of sampling units, specific elements, extent and time. The study is aimed at investigating information system integration at KZN Provincial government to accelerate service delivery. The population includes Senior and Strategic personnel, Administration personnel from the KwaZulu-Natal Department of Corporate Governance and Traditional Affairs (KZN CoGTA) who utilise IT services, and therefore does not include KZN Municipalities.

3.4. Sampling

Undoubtedly, survey research yields good results with the effective use of sampling theory and practice. The study is specifically aimed at exploring the impact of integrated technologies to accelerate service delivery. The technique used was complex probability sampling to reduce the amount to be collected, choosing a sub group rather than all possible cases and making research more practical, economical and time effective (Saunders, Phillip, & Thornhill, 2003). Cooper and Schindler (2003) state that there are some convincing aims for sampling: (1) minimise cost; (2) high accuracy on the outcomes; collection of data is quick; and (4) population features are available.

Schofield (2003) states that generalization is likely around processes as long as the research utilises a proper case, which is specifically chosen based upon its "fit with a typical situation". Consequently, typicality is the key element of the population choice of regional KZN Local Government including: Midland Region, Inland Region and Coastal Region.

3.4.1. Sampling Frame

The sampling frame is the complete list from all cases in the population (Saunders, Phillip, & Thornhill, 2003). Here the sampling frame consists of four hundred personnel exposed to IT/IS within KZNPG or KZN CoGTA Head Office in Pietermaritzburg, and regional branches in Durban, Ulundi and Port Shepstone.

3.4.2. Sampling Techniques

There are two types of sampling namely: probability and non-probability sampling. A probability sampling technique will be used because generalizations are made about the wider population, i.e. the Head Office and regional offices for KZN CoGTA (Saunders, Phillip, & Thornhill, 2003). In quantitative research, the dominant sampling strategy is probability sampling, which depends on the random selection and representative samples from a larger population. Elements in the population have equal chances of being selected as part of the sample, and there is no bias or predetermination in the selection process.

3.5. Data Collection

Research instruments can be any type of data collection device or procedure designed to collect data. The choice of a data collection method is a crucial point in the research process. Data collection techniques include interviews, questionnaire, observation and a variety of other motivational techniques. The research instrument used was a questionnaire with mostly close-ended questions.

Saunders *et al.* (2003) maintain that commonly it's a good procedure not to rely solely on questionnaire data but to use the questionnaire in conjunction with at least one other data collection technique. A well-constructed questionnaire was designed with question categories consisting of socio-demographic items and orientation items. Questionnaires were distributed in order to provide for the collection of first hand data from respondents who were able to assist with the study by answering the research questions.

This method ensures the collection of primary data, being data that is being collected first hand. Completed questionnaires were collected at all point of delivery (head office and regional offices). A pilot study was performed on the enhancement of the basis of validating the reliability of the questionnaire. The questionnaires were reviewed after the pilot study to avoid ambiguity. The questionnaire has two sections, one with personal particulars and the other section for research questions

3.5.1. Questionnaire Design

According to Krishnaswamy *et al*. (2006), questionnaires are preferred in most surveys because they are less expensive. Questionnaire design is the central issue for survey research. A questionnaire, irrespective of its structure, is the operational map of the researcher's theoretical framework. The questionnaire consisted of 20 questions with two sections; *Section 1*, personal particulars and *Section 2* for research questions. Section 2 has been sub-divided into five components, namely:

a. Batho Pele Principles.
b. Service Delivery Impact.
c. Importance of Information systems (IS) integration.
d. Strategic Alignment.
e. Problem associated with implementing information systems.

The questionnaires used the Likert Scale, which helped to compare variables with a distribution of a well-defined sample group. Likert scale is a type of categorically, non-comparative scale that determines respondent's level of agreement to a series of statements relating to an attitude being measured (Coopers & Schindler, 2003).

3.5.2. Administration of Questionnaires

A letter was sent out to KZN CoGTA obtaining permission for the research. With this method, the researcher distributed the questionnaires by email and hand-delivery. Four hundred questionnaires were administered but one hundred and forty-four questionnaires were returned and processed. The questionnaires were sent to Pietermaritzburg Provincial Head Office, Regional Offices and Chief Information Officer (CIO) for KZN CoGTA for distribution. All IT/IS users of the KZN CoGTA were the population of our study.

3.5.3. Collection of Questionnaires

Completed questionnaires were collected at all points of delivery. The researcher received the responses within six weeks.

3.6. Data Analysis

Data from questionnaires were recorded, analysed and interpreted. Graphs and tables were used to analyse and demonstrate the impact of information systems integration at the KZN Provincial government. The analysis and interpretation of data is an integral part of the research (Saunders, Phillip, & Thornhill, 2003). A summary of descriptive and inferential statistics and exploratory data analysis was employed to analyse the data.

The SPSS computer program was used; information checked, coded and captured onto computer. Descriptive statistics provide simple summaries about the sample and the measures. Descriptive statistics reduce data into a simpler summary (Trochim, 2006). Factor analysis attempts to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables. Factor analysis is often used in data reduction to identify a small number of factors that

explain most of the variance that is observed in a much larger number of manifest variables.

During the data analysis stage, the content of the questionnaire was tested and re-tested for reliability and validity using Cronbach Alpha. Cronbach Alpha was used to indicate how well the items in a set are positively related to one another (Bougie & Sekaran, 2010). The capability to simplify outcomes to a broader group is one of the standard tests of reliability (Gershon, 2004). Data from the questionnaires was recorded, reduced, stored and interpreted as follows: -

- **Recording**. Data was recorded using numerical codes to categorise each item on the research instrument, and we used the Likert Scale as follows:
  - Strongly disagree   =   1
  - Disagree   =   2
  - Uncertain   =   3
  - Agree   =   4
  - Strongly agree   =   5
- **Reducing**. Data was reduced to make it controllable.
- **Storing**. The coded data was arranged, sorted and captured in the data analysis software.
- **Interpretation**. Data is interpreted to provide a meaningful report within the parameters of the research.

3.6.1. Descriptive Statistics
The purpose of descriptive statistics analysis is to acquire adequate information to describe a body of data. This is achieved by understanding the data levels for the measurements that were selected, their distributions, and characteristics of location, spread, and shape. In the case of descriptive statistics, the frequencies will be computed to establish the impact of IS integration in improving service delivery.

3.6.2. Frequency Distribution
Frequencies provide descriptive statistics for a single variable. According to Cooper & Schindler (2003), a frequency distribution is a table that reviews ratio-scaled data into intervals (classes) each with corresponding frequencies.

3.6.3. Representation of the Data

Statistical tables and bar graphs were employed to present and describe results of this survey.

3.6.4. Validity Consideration

Validity means the ability to produce findings that are in agreement with conceptual or theoretical values (Devellis, 2003). By validity, we mean the degree of success of a scale in measuring what it has set out to measure; so that differences between individual scores can be taken as representing true differences in the characteristic under study. The questionnaire was validated at the pilot study stage.

3.6.5. Reliability Testing

Reliability is the extent of constancy between the measurements of two comparative effects. According to Trochim (2006), reliability is the degree to which the measure is consistent or dependable; the degree to which it would give you the same results over and over again, assuming the underlying phenomenon is not changed. During the data analysis stage, the content of the questionnaire was tested and re-tested for reliability.

Additionally, Cronbach's Alpha Coefficient was used to measure internal consistency, since it has the most utility for multi-item scales. Cronbach's alpha measures how well a set of items (or variables) measures a single unidimensional latent construct. When data has a multidimensional structure, Cronbach's alpha will usually be low. According to Cooper and Schindler (2003), what is measured is the degree to which the instrument items are homogenous and reflect the same underlying constructs.

3.7. Conclusion

This chapter presented the research methodology and research design used to conduct this study. This chapter has outlined the aim of this study and its objectives. This survey research, using primary data collected from structured questionnaires and gathering quantitative data, will provide an overview of the impact of IS integration in achieving Batho Pele principle. It also delved into research strategies, the research design, data gathering methods, and construction of the instrument,

recruitment of study participants, validity, administration of questionnaire and how data were analysed. Probability sampling was used to identify the sample, from which data is collected. The SPSS computer program was used; information checked, coded and captured onto computer. Descriptive statistics was used which provide simple summaries about the sample and the measures.

In the next chapter, presentation of the results of this study will be made.

4. Data Analysis

4.1. Introduction

This chapter deals with the presentation of results and provides an analysis of the findings. Figure 14 presents the outline of the data analysis, presentation of data and where the chapter is on the overall research.
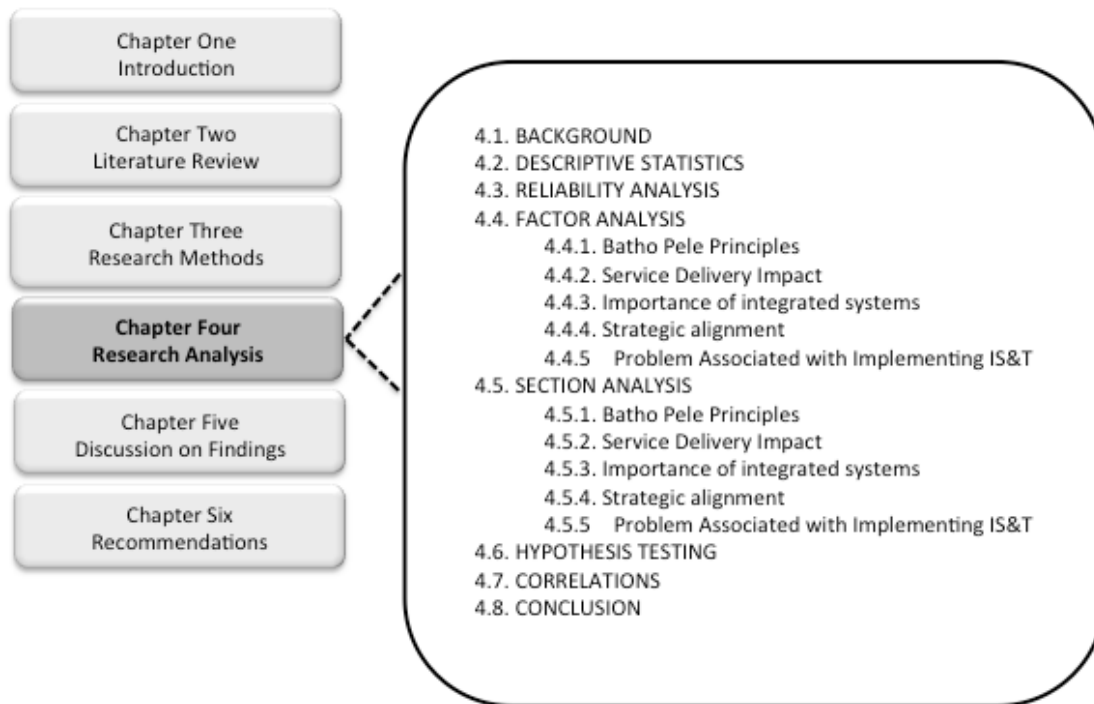
Figure 14 : Data Analysis Chapter Outline

After data was collected from the respondent, it was coded and quantitatively analysed using the SPSS computer software. The reliability of the measuring instrument (questionnaire) was tested using Cronbach's Alpha. Descriptive statistics were used as a means of measuring the impact of using information systems integration in accelerating the level of service delivery.

In addition, inferential statistics such as Chi Square was also examined as part of the data analysis in a bid to test the significant difference between categories of demographic variables in relation to Batho Pele principles. In coherence with this perspective, these various statistical analyses and tests were conducted to answer the research objectives and test the hypotheses that were formulated within the broader framework of answering the research topic.

This chapter presents the results and discusses the findings obtained from the questionnaire in this study. The results are presented in the form of graphs, cross tabulations and other figures.

4.2. Descriptive Statistics

This section presents the descriptive statistics based on the demographic information of the study. Section one of the questionnaire was designed to collect demographic information from respondents. Descriptive statistical methods were used to analyze the demographic grouping of the respondents. Basically, the various responses were tallied and tabulated in order to illustrate the demographic makeup of the chosen sample. Table 7 below looks at the spread of information with regards to the age and gender of the respondents.

| | | | Gender | | Total |
			Male	Female	
Which of the following age brackets do you belong?	Under 21 years	Count	4	7	11
		% of Total	2.8%	4.9%	7.6%
	21 – 34 years	Count	23	39	62
		% of Total	16.0%	27.1%	43.1%
	35 – 44 years	Count	15	25	40
		% of Total	10.4%	17.4%	27.8%
	45 – 54 years	Count	6	15	21
		% of Total	4.2%	10.4%	14.6%
	55 and above	Count	4	6	10
		% of Total	2.8%	4.2%	6.9%
Total		Count	52	92	144
		% of Total	36.1%	63.9%	100.0%

Table 7 : Age and Gender and gender participation

The sample comprised an approximate ratio of 1:2 males to females (36.1%: 63.9%). Amongst both the gender groupings, the majority of the respondents (43.1% overall) were between the ages of 21 to 34 years. The lowest number of respondents was from 55 years and above also comprises an approximate ratio of 1:2 of males and females (2.8%: 4.2%). According to the White Paper on Human Resources Management in the Public Sector (1998), an employee has the right to retire from

Public Service between the ages of 55 to 60 years. This has contributed to the lowest number of respondents (6.9%) between 55 to 60 years.

The racial composition of the sample is given in the figure below.
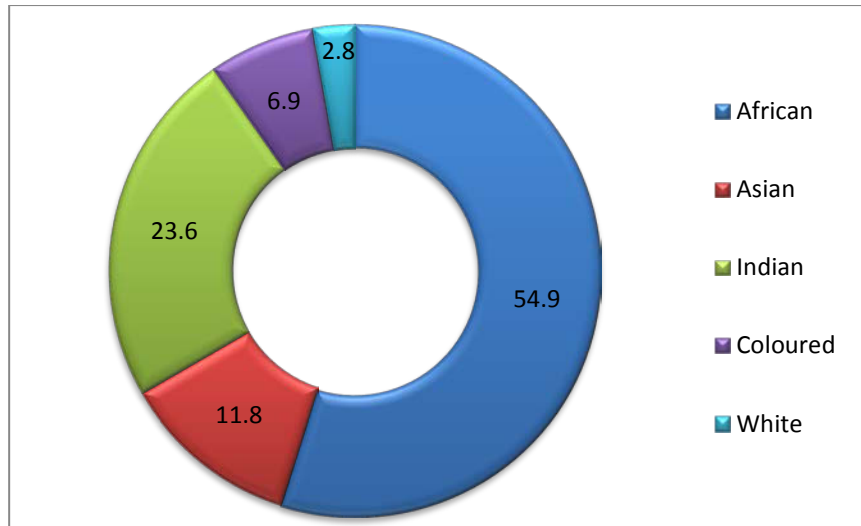
Figure 15 : Race Group

The largest grouping in Figure 15, consisting of approximately 54.9% of the respondents, was African respondents. Black Economic Empowerment (BEE) is a specific government policy to advance economic transformation in order to enhance the economic participation of black people. The reversal of the political and social marginalisation of blacks that gained momentum since 1994 has to be extended to the economic sphere. The Public Sector intends to achieve this through its BEE policy (2003), with the smallest grouping being Whites (2.8%).

The KZN Local Government office that respondents belonged to is given in the figure below.
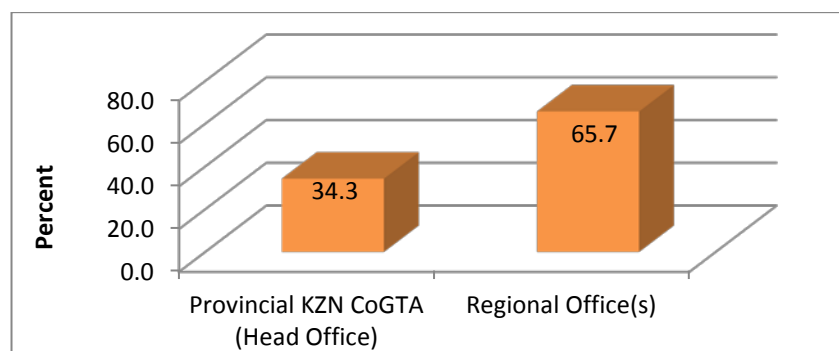
Figure 16 : KZN CoGTA Head office vs. Regional Office

Figure 16 shows the provincial and regional office dispersion of participants in this study. Almost a third of the respondents (34.3%) were from Head Office whilst the remaining (65.7%) respondents were from the Regional Offices.

Figure 17 below indicates the employment period of the respondents employed by KZN Provincial Local Government.
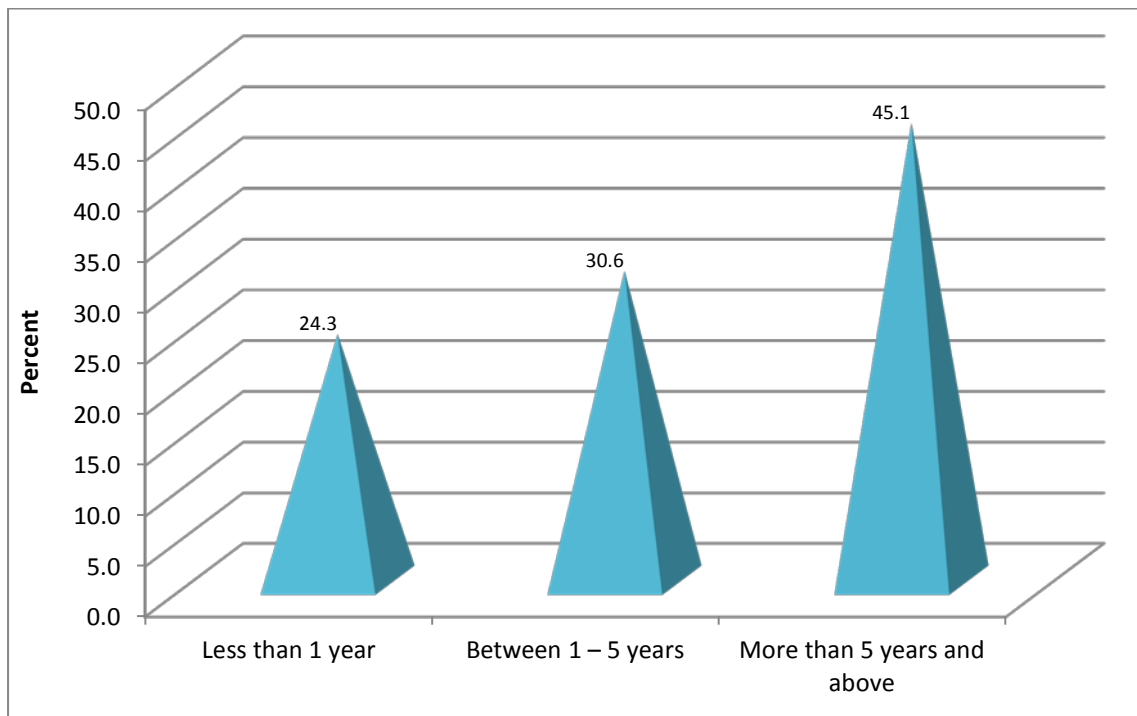
Figure 17 : Years of Service

The above chart reflects the years of service for the participants in the study. According to Figure 17, years of service were analysed as follows:

- Less than 1 year accounted for 24.3%;
- Between 1 -5 years accounted for 30.6%; and
- More than 5 years and above accounted for 45.1%.

A little more than 45% of the respondents indicated that they had been employed for a minimum of 5 years.

In total, more than three quarters of the respondents had been in employment for more than a year. This experience is useful in terms of the ratings provided by the respondents as they have been in the system for a period of time to be able to make educated decisions.

4.3. Reliability Analysis

Reliability analysis is used to validate the questions that make up a factor using Cronbach's (1951) alpha test. According to Reynold and Santos (1999), Cronbach's alpha is a statistics analysis used to measure the internal consistence and reliability of scales that are used to measure construct. The test is based on the inter-item correlation between the items that make up the latent factor. Reynold and Santos (1999) further explain that if a group of items measures an individual latent factor then it would be expected to show a particular correlation structure that is consistent across multiple respondents.

Reliability is computed by taking several measurements on the same subjects. A reliability coefficient of 0.70 or higher is considered as "acceptable" for social research situations (Bougie & Sekaran, 2010). Values of alpha lower that this would indicate that the latent construct is not reliably measured by items that make up the scale or hypothesis in other words, indicating that that the factor is not reliable.

The results are presented below.

Section	Cronbach's Alpha
Batho Pele Principles	.820
Service Delivery Impact	.800
Importance of integrated systems	.835
Strategic alignment	.904
Problem Associated with Implementing IS&T	.944
Overall	**.921**

Table 8 : Reliability Analysis

Table 8 shows the overall reliability statistics table, which highlights the overall Cronbach's Alpha at .921. There is a high degree of acceptable, consistent scoring for the different categories of this research. All of the categories have (high) acceptable reliability values.

4.4. Factor Analysis

According to Decoster (2004), factor analysis is a collection of methods used to examine how underlying constructs influence the response on a number of measured variables. Factor analysis may be used to validate a concept of a latent construct that is being researched.

A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors. For example, as part of a provincial survey on implementing technology to achieve Batho Pele principles, participants answered five separate sub-questions regarding demographics: Batho Pele principles, service delivery impact, importance of integrated systems and strategic alignment. Each question, by itself, would be an inadequate measure of attitude towards Batho Pele principles, but *together* they may provide a better measure of the attitude. Factor analysis can be used to establish whether the five measures do, in fact, measure the same thing. If so, they can then be combined to create a new variable, a factor score variable that contains a score for each respondent on the factor.

4.4.1. Batho Pele Principles
The rotated component matrixes for the different sections are given below.

Batho Pele Principles	Component
	1
Consultation	.519
Service Standards	.728
Value for money	.829
Information	.868
Access	.843

Table 9 : Factor Analyses - Batho Pele Principles

4.4.2. Service Delivery Impact

	Component	
	1	2
Employees understand "Batho Pele" principles to improve the level of service KZN Public Service.	.888	.136
KZN Public service employees are committed to perform their duties and responsibilities.	.877	.189
Performance Review on employees can improve Service Delivery.	.294	.797
KZN Public service employees are working according to standard operating procedures (SOP).	.820	.208
Good working condition increases job satisfaction thus improving service delivery.	.083	.898

Table 10 : Factor Analyses - Service Delivery Impact

4.4.3. Importance of integrated information systems

	Component
	1
The applications system can communicate with other Administration systems within KZN Public Service.	.812
Integrated IT systems increase KZN Public Service organizational performance and efficiency.	.789
KZN Public service employees are adequately trained to manage and control operational systems.	.802
Integrated systems save time and money.	.714
Integrating IT Systems will provide for a higher quality working life within KZN Public Service.	.809

Table 11 : Factor Analyses - Importance of integrated systems

4.4.4. Strategic alignment

	Component
	1
The IT systems are adequate and address all local government requirements for KZN Public Service.	.908
KZN Public service employees are aware of strategic objectives of public services.	.907
Information systems implemented are aligned to KZN Local government objectives.	.898
Applications system deployed are measured against strategic objectives.	.926
Applications system should have Management reporting capability on strategic decision making for Senior Management.	.556

Table 12 : Factor Analyses - Strategic alignment

4.4.5. Problem Associated with Implementing IS&T

	Component
	1
The IT systems are user-friendly and easy to operate.	.883
IT Users are trained to use application systems provided for KZN Public service.	.926
End-users are involved at the early stages of technology implementation.	.917
The KZN Local Government has enough technical support to manage implemented applications system.	.904
The KZN Local Government recruits qualified IT personnel.	.894

Table 13 : Factor Analyses - Problem Associated with Implementing IS&T

Factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors

It is noted that the statements per section (component) of all but one section, loaded perfectly along their respective components. There was no splitting of the components. This implies that the construct was developed precisely and that the measurements did measure the component to which they belonged.

On the other hand, Table 10 of Factor Analyses present the component of Service Delivery Impact splits into 2 sub-components. The statements highlighted in yellow are procedure related and the ones in blue are assessment (satisfaction level) related. The first sub-component represents the "Batho Pele" principles and procedures highlighted in yellow and the second the represents the service delivery or satisfaction level highlighted in blue.

4.5. Frequency Analysis

The tables and graphs below indicate the percentage responses for each statement of each Batho Pele Principles. This section is concerned with five of the eight principles of Batho Pele namely: - value for money, consultation, service standards, information and access. The level of importance of each Batho Pele principle is measured and below-mentioned are the results.

	Not as important	Uncertain	Important
Consultation	0.7	9	90.3
Service Standards	1.4	10.4	88.2
Value for money	2.8	7.6	89.6
Information	2.8	4.9	92.3
Access	4.2	5.6	90.2

Table 14 : Frequency Analyses - Batho Pele Principles
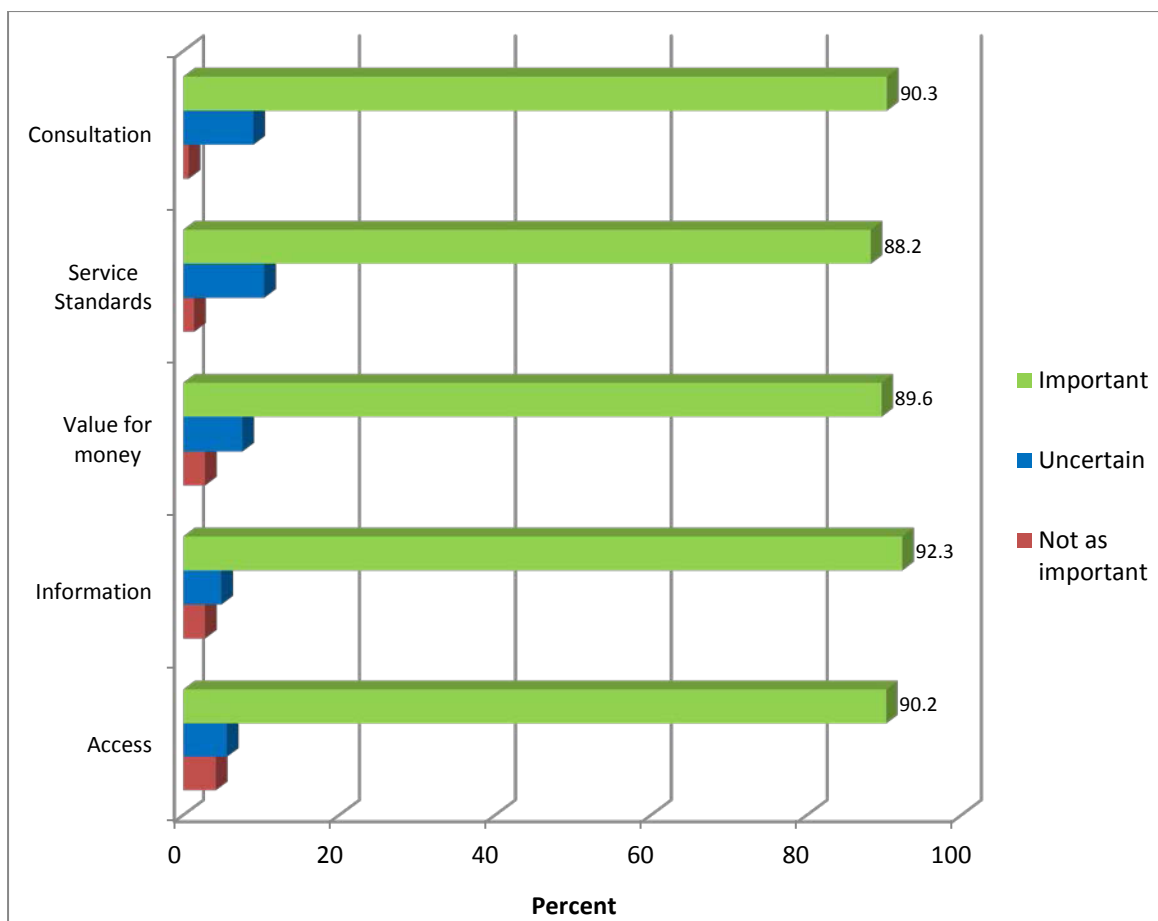
Figure 18 : Batho Pele Principles

Respondents were asked to indicate the level of importance of the Batho Pele Principles. Figure 18 illustrates that the overall level of importance ranking is 91%. This indicates a high level of importance allocated to each statement in this category. All employees in local government should subscribe to Batho Pele Principles. The White Paper on the Transformation of the Public Service (WPTPS), issued on 24 November 1995, mentioned eight priorities for transforming public service, amongst which Service Delivery Transformation is the key (Constitution of the Republic of South Africa No. 108 of 1996). The South African public services transformation will be adjudicated above all by one principle: effective delivery of services that meet the fundamental needs of all citizens. Therefore, the vital objective of the transformation of public service is the acceleration of service delivery (Government Gazette Notice 1459 of 1997).

4.5.1. Service Delivery Impact

This section deals with the testing of hypotheses that have an impact on the level of service delivery. The statements are more focused on KZN Local Government employees understanding Batho Pele; committed to perform their responsibilities; good working condition and adherence to standard operating procedures.

	Agree	Uncertain	Disagree
Employees understand "Batho Pele" principles to improve the level of service KZN Public Service.	76.4	11.1	12.5
KZN Public service employees are committed to perform their duties and responsibilities.	77.8	9.7	12.5
Performance Review on employees can improve Service Delivery.	92.8	4.3	2.9
KZN Public service employees are working according to standard operating procedures (SOP).	68.1	17.4	14.5
Good working condition increases job satisfaction thus improving service delivery.	94.4	2.1	3.5

Table 15 : Frequency Analyses - Service Delivery Impact
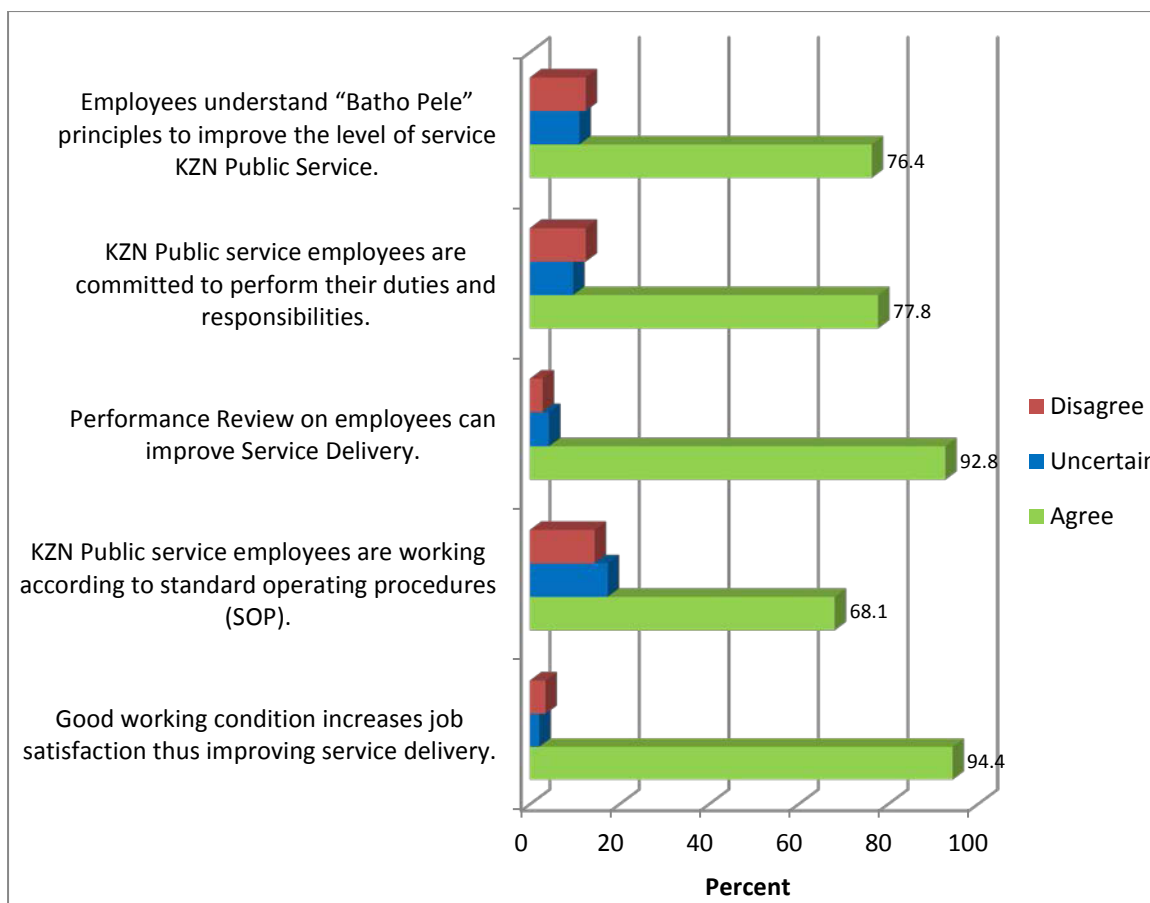
Figure 19 : Service Delivery Impact

There is also a high level of agreement with the statements that comprise this section. The average value is 82%.

The highest levels of agreement were for "Performance Review on employees can improve Service Delivery" and "Good working condition increases job satisfaction thus improving service delivery" (92.8% and 94.4% respectively). An employee's individual perceptions, experience of work and task outcomes or accomplishments are important aspects for their work motivation, which affects positive performance (Sharpley, 2002). Obviously, employees that are satisfied with their working condition are likely to perform better in their duties.

The smallest value is 68.1% for "KZN Public service employees working according to standard operating procedures (SOP)". In general, local government employees lack commitment to their duties. Table 15 summarises the responses.

4.5.2. Importance of integrated information systems

The emphasis of this section is to investigate the significance of the integration of information systems for KZN Local government.

	Agree	Uncertain	Disagree
The applications system can communicate with other Administration systems within KZN Public Service.	77.6	11.2	11.2
Integrated IT systems increase KZN Public Service organizational performance and efficiency.	82.5	13.3	4.2
KZN Public service employees are adequately trained to manage and control operational systems.	62.5	19.4	18.1
Integrated systems save time and money.	84.5	12.7	2.8
Integrating IT Systems will provide for a higher quality working life within KZN Public Service.	81.9	13.9	4.2

Table 16 : Frequency Analyses - Importance of integrated systems
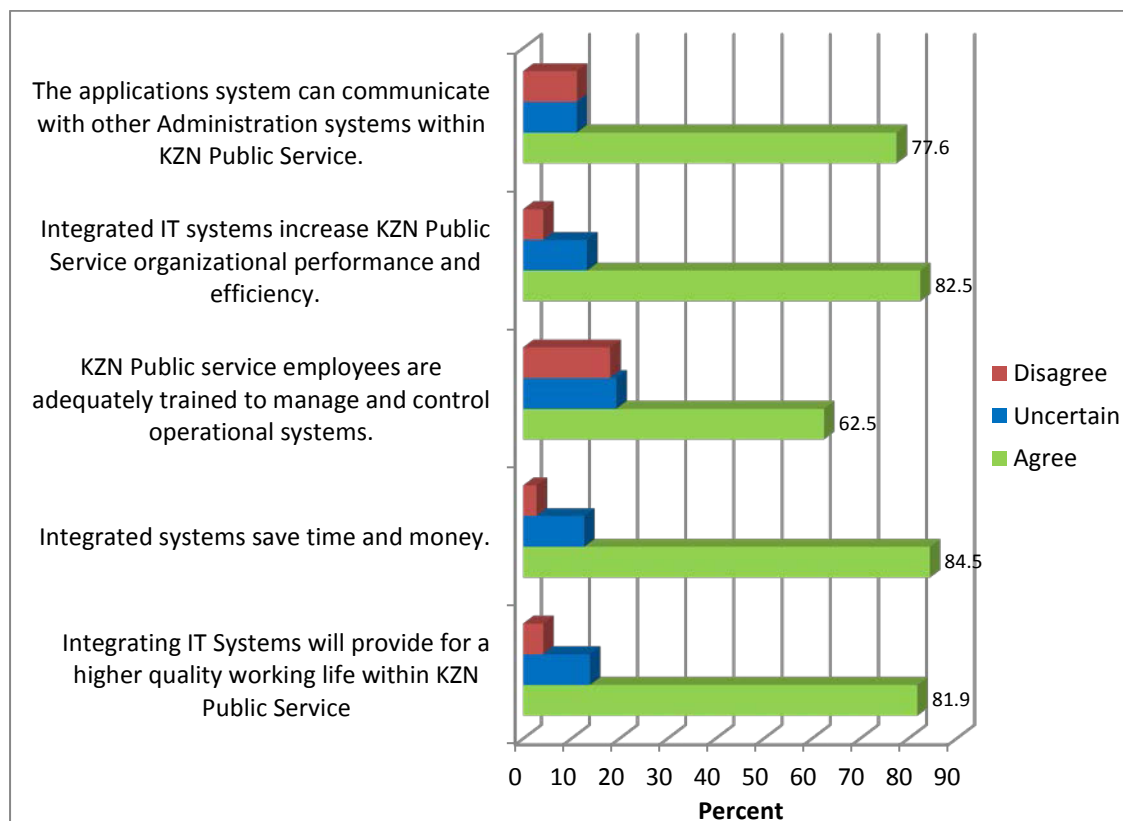
Figure 20 : Importance of integrated systems

As can be seen in Figure 20, the average level of agreement for this section is 78%. This indicates that respondents, for the most part, are in agreement with all of the

statements. The lowest value (62.5%) relates to staff being adequately trained. To overcome lack of technology resources, one approach is rely on training, which represent a systematic effort by organization to facilitate the learning of job-related knowledge and behavior (Colquitt, Lepine, & Wesson, 2009).

4.5.3. Strategic Alignment

This section looks at strategic alignment between information technology and KZN Local government strategic objectives.

	Agree	Uncertain	Disagree
The IT systems are adequate and address all local government requirements for KZN Public Service.	71.5	14.6	13.9
KZN Public service employees are aware of strategic objectives of public services.	64.8	18.3	16.9
Information systems implemented are aligned to KZN Local government objectives.	62.9	22.4	14.7
Applications system deployed are measured against strategic objectives.	59.0	27.8	13.2
Applications system should have Management reporting capability on strategic decision making for Senior Management.	81.9	13.9	4.2

Table 17 : Frequency Analyses - Strategic alignment
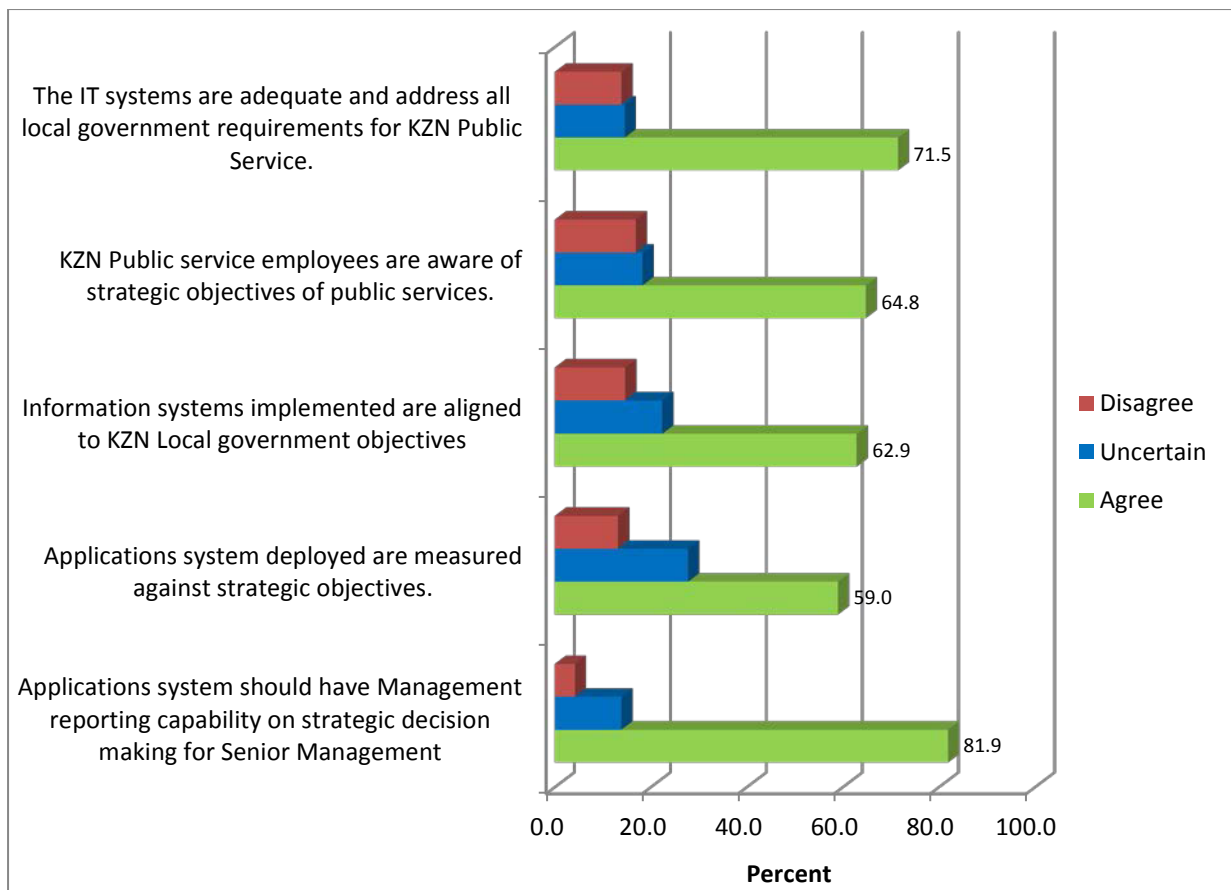
Figure 21 : Strategic Alignment

The average level of agreement in this section is 68%. The highest levels of agreement were "Application systems should have management reporting capabilities" and "IT systems are adequate and address all local government requirements" (81.9% and 71.5% respectively).

The middle three statements have similar scores, whilst the last has the highest level of agreement. This statement deals with management decision-making issues, whilst the middle three are more operationally related. The statement with the lowest value (59%) is for "Application systems deployed are not measure against strategic objective." According to Ward and Daniels (2006), the benefit management process techniques focus on the association between process modifications, supporting technology, structure and functioning practices to identify the finest approach of understanding the optimal benefits from investment. The benefit management approach ensures that any organisational investment (IS integration system) is measured against an organisational objective.

4.5.4. Problem associated with implementing IS&T

This section summarises the problems associated with the implementation of information systems and technology.

	Agree	Uncertain	Disagree
The IT systems are user-friendly and easy to operate.	77.1	8.3	14.6
IT Users are trained to use application systems provided for KZN Public service.	66.0	15.3	18.7
End-users are involved at the early stages of technology implementation.	56.9	20.8	22.3
The KZN Local Government has enough technical support to manage implemented applications system.	30.6	15.3	54.1
The KZN Local Government recruits qualified IT personnel.	67.3	17.4	15.3

Table 18 : Frequency Analyses - Problem associated with implementing IS&T
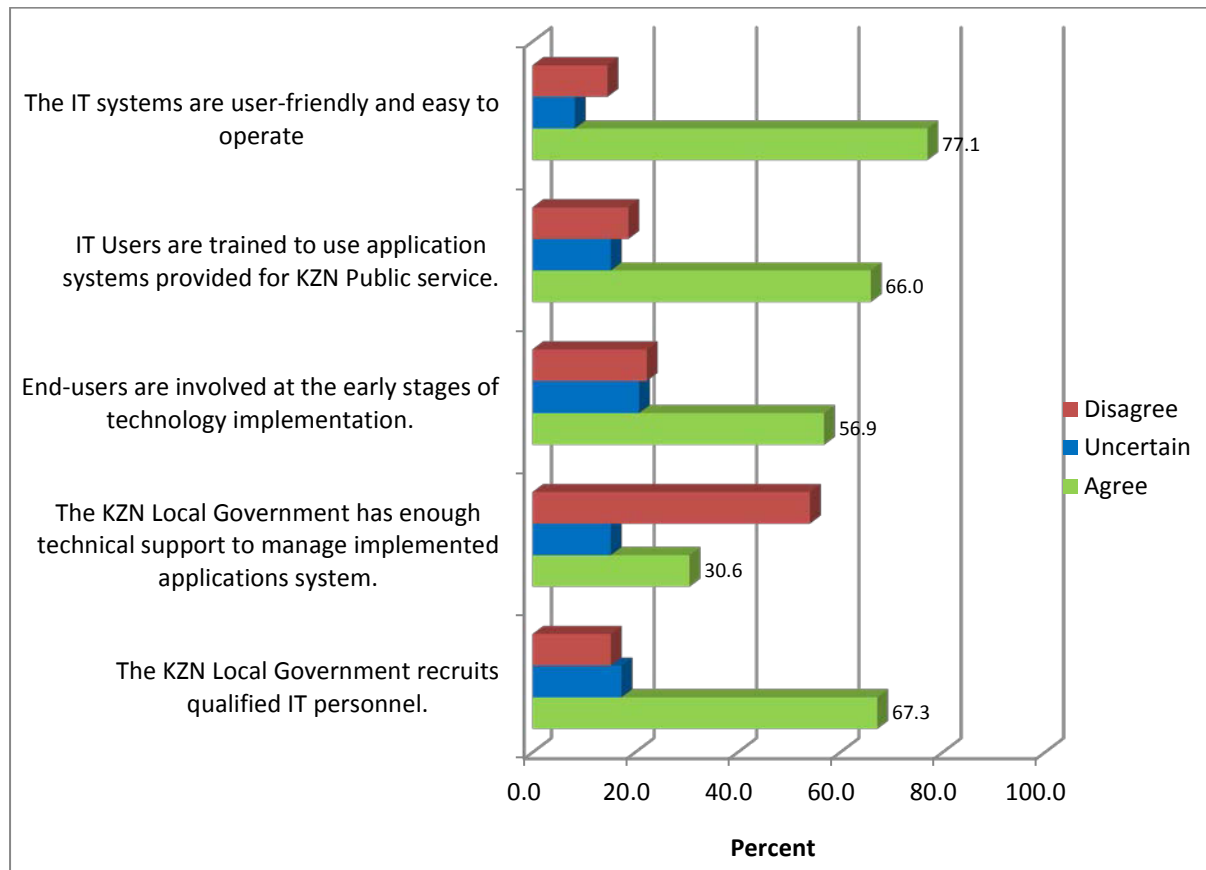
Figure 22 : Problem associated with implementing IS&T

Even though most respondents agree that the local government recruits qualified IT personnel (67.3%), more than half (54.1%) indicated that there wasn't enough technical support. In information technology, technical support refers to the service required to support and maintain availability and access of application and systems (O'Brien & Marakas, 2006). Without technical support, KZN CoGTA will fail to maintain operational efficiencies of applications implemented. This will in turn affect the level of service delivery since most government processes have been automated, streamlined and integrated to maximize return on investment.

The table above obviously illustrates that a majority of respondents are pessimistic about the technical resources available for KZN Local government. The majority of the respondents with 54.1% disagreed that KZN local government has technical resources; 20.8% uncertain; and finally 30.6% agreed that there are adequate technical resources.

4.6. Hypothesis Testing

The traditional approach to reporting a result requires a statement of statistical significance. A **p-value** is generated from a **test statistic.** A significant result is indicated with "$p < 0.05$".

The Chi square test was performed to determine whether there was a statistically significant relationship between the variables (rows vs. columns). The null hypothesis states that there is no association between the two. The alternate hypothesis indicates that there is an association.

The table summarises the results of the chi square tests.

	In which KZN Local Government office do you belong to?	Gender	Race	Age	How long have you been employed by the KZN Provincial Local Government?
Consultation	0.059	0.104	0.696	0.449	0.129
Service Standards	0.908	0.197	0.254	.000*	0.085
Value for money	0.636	.015*	0.208	.013*	0.447
Information	0.665	0.067	0.486	.001*	0.185

Access	0.323	.010*	0.762	.001*	0.364
Employees understand "Batho Pele" principles to improve the level of service KZN Public Service.	0.774	0.383	0.27	0.724	0.318
KZN Public service employees are committed to perform their duties and responsibilities.	0.89	0.593	0.128	0.395	0.362
Performance Review on employees can improve Service Delivery.	0.222	0.199	0.966	0.569	0.639
KZN Public service employees are working according to standard operating procedures (SOP).	0.681	0.571	0.591	0.398	0.365
Good working condition increases job satisfaction thus improving service delivery.	0.123	0.499	0.977	0.204	0.181
The applications system can communicate with other Administration systems within KZN Public Service.	0.808	0.206	0.8	0.327	0.087
Integrated IT systems increase KZN Public Service organizational performance and efficiency.	0.75	0.382	0.302	0.641	0.497
KZN Public service employees are adequately trained to manage and control operational systems.	0.422	.555	0.494	0.391	.008*
Integrated systems save time and money.	0.27	0.274	0.053	0.189	0.85
Integrating IT Systems will provide for a higher quality working life within KZN Public Service	.017*	0.711	0.076	0.763	0.226
The IT systems are adequate and address all local government requirements for KZN Public Service.	0.929	0.72	.002*	0.703	0.143
KZN Public service employees are aware of strategic objectives of public services.	0.958	0.449	.022*	0.777	0.203
Information systems	0.411	0.843	0.194	0.77	0.284

implemented are aligned to KZN Local government objectives.					
Applications system deployed are measured against strategic objectives.	0.726	0.946	0.603	0.986	0.479
Applications system should have Management reporting capability on strategic decision making for Senior Management.	0.912	0.485	0.313	0.549	0.724
The IT systems are user-friendly and easy to operate	0.532	0.454	.003*	0.939	0.174
IT Users are trained to use application systems provided for KZN Public service.	0.685	.055	0.078	0.565	0.202
End-users are involved at the early stages of technology implementation.	0.799	.133	0.547	0.31	0.429
The KZN Local Government has enough technical support to manage implemented applications system.	.014*	.577	.004*	0.856	0.192
The KZN Local Government recruits qualified IT personnel.	0.23	0.691	.016*	0.91	0.067

Table 19 : Chi square test

As can be seen in Table 19, the chi-square test was performed for the column variables (demographics) and all of the remaining statements.

For example, there was a significant relationship between "Gender" and "Value for money", as the p-value is less than the level of significance of 0.05 (0.015). This means that gender did play a role in terms of how respondents answered the statement.

The argument can be extended to the remaining significant values. All values with p-values greater than 0.05 are not significant. Also there is a significant relationship between the number of years employed by KZN local government and government employees that are adequately trained to manage and control operational systems. The p-value is less than the level of significance of 0.05, therefore there is statistical evidence of a relationship between the two statements, and the p-value is equal to 0.008.

4.7. Correlations

Bivariate Spearman's correlation was also performed on the (ordinal) data. The results are found in the appendix (see excel sheet). Positive values indicate a directly proportional relationship between the variables and a negative value indicates an inverse relationship. The correlation table looks at the relationships between individual statements. As the table is too large to incorporate here, some of the significant relations are identified and explained.

The table below shows that the correlation is significant at the 0.01 level (2-tailed). For example, the correlation coefficient value between "Importance of integrated systems" and "Service Delivery Impact" is 0.603. This is a directly related proportionality. Respondents agree that better service delivery leads to a more effective integrated system. Integration saves time, cost and improves the level of service. According to McNurlin and Sprague (2003) the classical objective of information management is the accurate transfer of information to the correct person on time. Information systems integration eliminates the duplication IT systems and infrastructure and breaks down the barriers between and among inter-departmental functions (Palaniswamy & Frank, 2000). The results indicate the following patterns.

Table 20 below indicates the relationship patterns for each category.

		Batho Pele Principles	Service Delivery Impact	Importance of integrated systems	Strategic alignment	Problem Associated with Implementing IS&T
Batho Pele Principles	Correlation Coefficient	1				
	Sig. (2-tailed)	.				
	N	144				
Service Delivery Impact	Correlation Coefficient	-0.151	1			
	Sig. (2-tailed)	0.071	.			
	N	144	144			
Importance of integrated systems	Correlation Coefficient	-0.145	.603	1		
	Sig. (2-tailed)	0.082	0			
	N	144	144	144		
Strategic alignment	Correlation Coefficient	-0.041	.504**	.601**	1	
	Sig. (2-tailed)	0.627	0	0	.	
	N	144	144	144	144	
Problem Associated with Implementing IS&T	Correlation Coefficient	-0.075	.419**	.481**	.590**	1
	Sig. (2-tailed)	0.375	0	0	0	.
	N	144	144	144	144	144

Table 20 : Correlation Coefficient

Again, the correlation coefficient for strategic alignment is 0.504 and 0.601 for service delivery impact and importance of integrated information systems respectively. The direct relationship between the two statements has been explained above. As the correlation is positive, this suggests that information technology strategy should be aligned to KZN local government strategy. This could be also written as r = 0.504; p = .000 for service delivery impact and r = 0.601; p = .000 for importance of integrated systems. The correlation coefficient between "Value for money" and "Access" is 0.713. The results suggest that increased access result in better value for money.

4.8. Conclusion

In this chapter, the results of the study were presented using quantitative techniques. The results of the survey were analysed using SPSS that presented the results in tables and graphs. The analysis also involved mathematical procedures and statistical test of significance. The demographic data as well as research objectives and Batho Pele principles were subject to descriptive statistics, frequency distribution, correlation, Chi-square test and Cronbach Alpha. Inferential statistics employed the chi-square test performed for the column variables and factor analysis. The analysis involved the production of tables, figures and graphs.

The following chapter highlights the discussion and interpretation of the results of the study that were obtainable in this chapter. The main trend and patterns in the data are discussed with reference to the research questions outlined in Section 1.3 of Chapter one.

5. Discussion of Findings

5.1. Introduction

In this chapter, findings are discussed in detail based on the analysis of data from Chapter 4. The findings presented in Chapter four will be analysed with the intention of answering the research objective. The aim of this study is to establish whether information systems (IS) integration can enhance the levels of service at KZN Provincial government. Figure 24 presents the Chapter outline for Discussion of Findings.
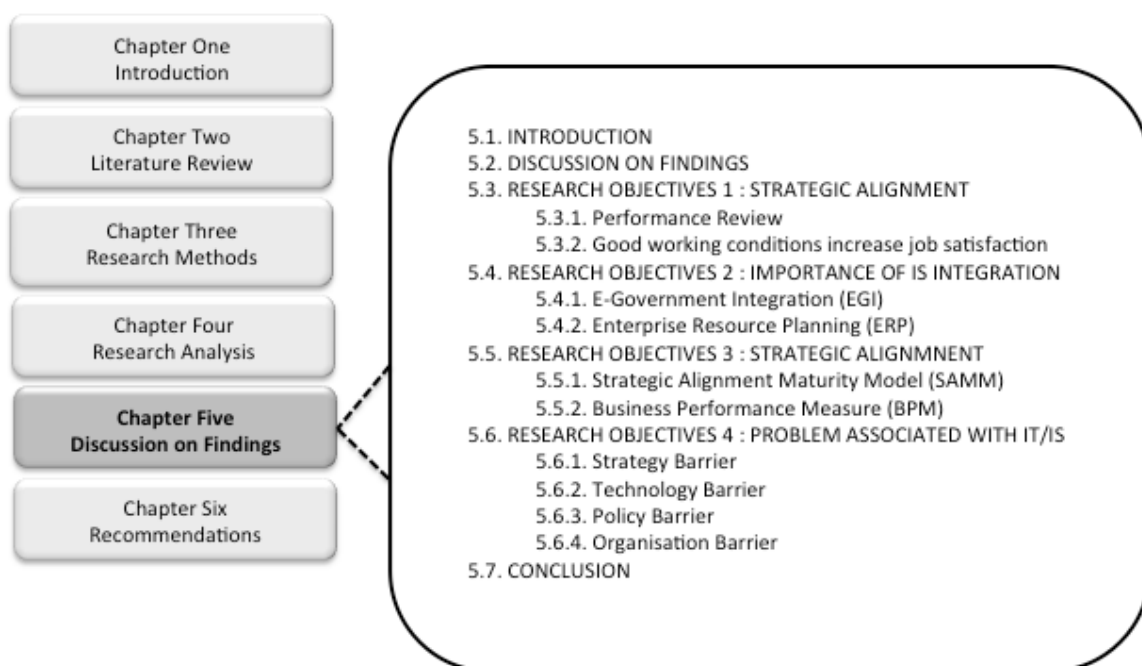
Figure 23 : Discussion of Findings Chapter Outline

5.2. Discussion of Findings

The research showed that a majority of respondents are confident of adhering to the principles of Batho Pele. The study also reflects that 82.5% of respondents agree that integrated IT systems increase KZN Public Service organizational performance and efficiency. As stated by the findings of the study in Table 18, the majority of the respondents agree that applications system should have Management reporting capability on strategic decision making for Senior Management. This would help KZN Local government to prioritise according to the need of our communities.

This section of the research seeks to address the research objectives and answer the questions mentioned in Chapter one. The following are research objectives: -

- To examine factors impacting on the service delivery at Provincial local government.
- To determine the importance of integrated systems in improving the service delivery at Provincial local government.
- To establish how strategic alignment between integrated information systems and Provincial local government strategic objectives can improve service delivery.
- To establish the problems associated with IT/IS in improving service delivery.
- To make recommendations to improve service delivery through integrated technology.

5.3. Research Objective 1: Service Delivery Impact

According to Section 4.5.2, Service delivery impact, there was high level of agreement with the statements that comprise this section with an average value of 82%. The highest ranking was amongst performance review on employees and good working conditions, which increases job satisfaction. Factor analyses in Table 10 of Section 4.4.2 revealed that there were two components in service delivery impact highlighted in yellow and green, with yellow representing the Batho Pele, and green representing service delivery. Results also show that there was strong relationship between service delivery impact and good working condition that increases job satisfaction. Disgruntled employees are likely to be bad performers in their duties.

Summons (2000) maintains that a typical performance measurement helps businesses to periodically set business goals and provide feedback to managers on progress towards those goals.

5.3.1. Performance Review

According to results, 92.8% of respondents agreed that performance review could improve service delivery. Understanding one's own performance is a crucial concern for any employee, and understanding the performance of employees in one's division is an important concern for supervisors. More recently, government

agencies are using balance scorecards as the foundation for their strategic management systems (Kaplan & Norton, 1996). Government agencies are using balance scorecard for clarify and communicating throughout the organisation; align employees individual goals with government strategy, linking strategic objectives with long-term goals and conduct intermittent performance reviews (Boyle, 2000).

There are performance measures already designed for KZN Provincial government to measure output against key performance areas (KPA). These measures are not utilised optimally to derive the desired results. A good performance measurement system is important for the utilisation of policies and the attainment of developmental objectives by strategic distribution of both human and IT/IS resources and efficient service delivery (Canadian Transport Agency, 2001).

The objective of Performance Measurement Framework is to deliver a consistent methodology for analytically collecting, analysing, utilizing and reporting on the performance of KZNPGs' initiatives and activities. Performance Measurement framework is a management instrument that will improve the management and reporting of the KZNPGs' initiatives and activities by assessing the organisation's level of achievement of results (Boyle, 2000).

The introduction of the Batho Pele initiative by government was earmarked at accelerating the delivery of service. To ensure that KZN Provincial government employees adhere to Batho Pele principles, balance scorecard with key performance areas should incorporate these principles. Batho Pele Principles are envisioned to direct the transformation of services in the public sector, from being a rules-bound, results driven government, dedicated to delivering acceptable services to citizens (CoGTA, 2009). Performance measures should drive employee behavior to achieve KZNPG objectives.

However, a behavior is generally a result of three corresponding attributes: attitude, intentions and subjective norms (Ajzen, Albaraccin, & Hornik, 2007). They suggest that actions are projected by intentions and that intentions in return are manipulated by attitudes and subjective norms (Arnold, Cooper, & Robertson). According to

Ajzen *et al.* (2007) employee's behavior is reliant on his attitude concerning that behavior.

Borman and Motiwidlo (2009) state that task performance includes employee behaviors that are directly involved in the transformation of organisational resources into goods and services that organisations produce. Put differently task performance is a set of explicit obligations that an employee must fulfill to receive compensation and continued employment. Public service employees are employed to deliver community-based and citizen-orientation services to receive remuneration in line with Batho Pele principles.

In ensuring improved level of service delivery, job and task performance should be measure timeously with feedback to employees.

5.3.2. Good working conditions increase job satisfaction

According to the analysis of results, 94.4% of respondents agreed that "good working conditions increase job satisfaction". Given how important enjoyable work tasks are to overall job satisfaction, it's worth spending more time describing the kinds that most people find enjoyable. Countless forces affect job satisfaction in different work situations and working conditions. Satisfaction is a self-motivated sensation and an employee's attitudes and behaviors that assess his/her job function at work is referred as job satisfaction (Ahmed, Irum, Mehwood, & Sultana, 2012).

Satisfaction and performance are both the end-result of an employee's three psychological states: (1) meaningfulness – job is apparently important, worthy, and valuable; (2) responsibility – job is apparently given empowerment; (3) knowledge of results –feedback concerning usefulness of work (Messersmith, 2007).

The outcome of the research suggested three critical psychological states that make-work satisfying. The first state believes in the meaningfulness of work, which reflects the degree to which tasks are viewed as something meaningful for the employees. The second state perceives responsibility for outcomes, which captured the degree to which employees feel that they are key drivers for the achievement of overall organisational objectives. Lastly, the third psychological state is knowledge of results, which reflects the extent to which employees know how well they are doing (Ahmed, Irum, Mehwood, & Sultana, 2012).

5.4. Research Objective 2: The Importance of Integrated Information Systems in Improving Service Delivery

According to Chapter four on data analysis, the average response to the statements on the importance of integration information systems was 78%, split as highlighted in Table 21.

Statement	Percentage (%)
Integrated IT systems increase KZN Public Service organizational performance and efficiency.	82.5%
Integrated systems save time and money.	84.5%
Integrating IT Systems will provide for a higher quality working life within KZN Public Service.	81.9%

Table 21 : Importance of integrated systems

For KZN Provincial government to be successful, it needs to integrate information from all aspect of the organisation. In the literature review we stated that for KZN Provincial government to accelerate service delivery and improve customer relation; all departments must work together towards a harmonious congruent goal. For years, the public sector business and administration process have been dogged with myriad problems due to lack of acceptable information coordination. The absence of a centralised information databases for valuable personal information on citizens constantly results in ineffective usage of manpower and duplications (Dept of Public Service & Administration, 2003).

Each department was responsible for developing and implementing its own database for which they assigned its own personnel for managing that database. The decentralization of databases has negatively affected service delivery progress. During August 2000, the Presidential Review Commission recommended the establishment of Government Information Technology Officer Council (GITOC, 2009). The responsibility of GITO Council was to expedite transformation in government by the coordination and collaboration of information management strategy that would be available across all government departments.

5.4.1. E-Government Integration

A total of 82.5% of respondents agree that IS integration enhances operational efficiency and has a positive influence on service delivery. E-government is a strategy for implementing IS integration across the three sphere of the government (national, provincial and local) for positive influence and improvement of service delivery to all citizens. E-government can progress the strategic connections between KZN Provincial departments and their municipalities, and enable communication between the three spheres of government (i.e. national, provincial and local) (Ebrahim & Irani, 2005). These connections and communications improve the cooperation between them through facilitating the provision and implementation of the government strategies, transactions, and policies, and also better use and running of government processes, information, and resources (Heeks, 2001).

E-Government Strategy pursues to put citizen at the forefront, in line with the "Batho Pele" principles with the following benefits in mind:

a) Enhance KZN Provincial Government operations to minimise cost and time of delivery of services;

b) Improve access to public service information with a view of empowering citizens and improve accountability; and

c) Provision of specific electronic services to citizen, be it through the Internet, telephone, TV and other electronic ways (Dept of Public Service & Administration, 2003).

These three business principles constitute a value proposition for KZN Provincial Government's investment in IT/IS related services. IS integration must bring value to KZN Provincial Government's service delivery programmes, and inter-governmental agencies should have a common understanding of IT value. The Public Service, via the GITOC and the DPSA, also adopted certain ICT values and key focus areas that should be achieved as contained in the ICT House of Value shown below (Smith, 2012). The IT value proposition should be regarded as the collective socio-economic benefits that are originated by all participants from utilising application software and services. IS integration should be assessed only if they support end-users in achieving the following benefits:-

- Enhance service delivery
- Improve productivity; and
- Cost effectiveness.

The concept of "Government's House of IT value" is presented in Figure 24 below.

Figure 24 : ICT House of Values (Dept of Public Service & Administration, 2003)

The key focus areas that strengthen the success of any e-Government initiatives, (the pillars of the House of IT value) are:

- **Interoperability** - the capacity for different computers, using different operating systems and on different platforms, to work together, exchanging information in standard ways without any changes in functionality and without physical intervention (McNurlin & Sprague, 2003).

- **IT security** – KZN Provincial government functions in a sphere where both electronic information and IT/IS must be protected against vulnerabilities, unauthorized access and viruses. ISO/IEC 27001 formally defines the mandatory requirements for an Information Security Management System (ISMS). It uses ISO/IEC 27002 to indicate suitable information security controls within the ISMS, but since ISO/IEC 27002 is merely a code of

practice/guideline rather than a certification standard, organizations are free to select and implement other controls (ISO/IEC, 2013).

- **Economies of scale** - currently the KZN Provincial Government's economic power is decentralised and leads to unnecessary misuse by some IT vendors. Growth of local IT skills that are significant to e-Government initiatives should be persuaded through the government's IT economic power.

- **Elimination of duplication** - KZN Provincial Government must avoid pointless duplication of similar IT functions, projects and resources.

5.4.2. Enterprise Resource Planning (ERP)

Enterprise Integration (EI) and enterprise architecture (EA) are both fundamental enablers for IS integration. According to Cherrington, Dunn and Hollende (2005), enterprise Resources Planning (ERP) systems are groups of applications integrated to form enterprise-wide information systems.

Currently, third party vendors or external service providers in KZN have no access to front-office systems, such as INTENDO (supply chain solution or e-procurement), which KZN Provincial government under KZN Treasury can integrate to enhance supply chain management (SCM) activities. Results also revealed that 84.5% of respondents agreed that integrated information systems save time, and 82.5% agreed that it would improve organisational performance and operational efficiency for KZN Provincial government. Accredited Vendors can go online to prepare, submit online tender responses and even submit invoices for payment that can be tracked and archived in the ERP system.

Again, the findings were in line with the literature review that suggested that integrated information systems save time and money; and also enhance organisational performance and operational efficiencies.

5.5. Research Objective 3: Strategic Alignment

A correlation analysis was conducted using Spearman's correlation. Spearman's correlation coefficient is a statistical measure of the strength of a monotonic relationship between paired data.

Its interpretation is similar to that of Pearson's, e.g. the closer it is to 1, the stronger the monotonic relationship. Correlation is an effect size and describes the strength of the correlation using the following guide for the absolute value of:

- .00-.19   "very weak"
- .20-.39   "weak"
- .40-.59   "moderate"
- .60-.79   "strong"
- .80-1.0   "very strong"

The calculation of Spearman's correlation coefficient and subsequent significance testing of it requires the following data assumptions to hold:

- Interval or ratio level or ordinal;
- Monotonically related.

There is a direct proportionality between strategic alignment and service delivery impact. The correlation coefficient value between the two variables is 0.504. The correlation coefficient shows that there is a moderate relationship between the two variables. According to the results, 71.5% of respondents agreed that application systems used by KZN Local government addressed the business requirement in line with strategic objectives.

The results also indicated strong correlation between strategic alignment with integrated information systems. The correlation coefficient value between the two variables is 0.601. Information technology strategy should be aligned to KZN Provincial government strategy. Without the strategic alignment, the benefits from information technology will not be realised.

Averweg, Erwin, & Petkov (2005) state that in order for KZN Provincial government to succeed, it needs to set strategic directions, establish goals, execute decisions and monitor their state and behavior as they move towards their goal. KZNPG should measure the output of any information systems and technology deployed against government objectives to realise the benefit output. In Section 2.6 of the literature review, benefits management was defined as "process techniques focused on the association between process modifications, supporting technology, structure

and functioning practices to identify the finest approach of understanding the optimal benefits from investment" (Ward & Daniel, 2006).

5.5.1. Strategic Alignment Maturity Model

According to the research results, there is a strong correlation between IS integration and strategic alignment with a coefficient value of 0.601. Luftmam (2000) suggested a method to assess the maturity of an enterprise strategic alignment and called it SAMM (Strategic Alignment Maturity Model). SAMM is founded on the components of SAM (Strategic Alignment Model). The maturity of SAMM is characterized by six components and each has its own qualities. The following Table 22 describes the components of SAMM:-

COMPONENT	ATTRIBUTES
Communication	Continuous information sharing across KZN Provincial government. Important attributes for communication are: intergovernmental learning, business understanding IT and IT understanding business, information sharing and communication effectiveness.
Value Measurement	Showing IS integration benefits in business. The attributes for value measurement are: SLA (service level agreement); business performance measure (BPM) highlighted in Section 5.4.4 and Benefits Management highlighted in Section 2.8 of Literature Review, business and information technology matrix.
IT Governance	Ensure the prioritization and allocation of information technology resources is discussed, reviewed and monitored. This component is made of the following attributes:- Strategic IT/IS planning, IT steering committee, IT/IS investment planning and management.
Partnership	The synergy that exists between KZN Provincial government and IT/IS. The attributes for partnership are:- the strategic role of integrated IS in KZN Provincial government planning; government perception of integrates IS value, shared objectives, risk and reward .
Scope and Architecture	The manner in which IT/IS support scalable infrastructure, deliver IT/IS systems that meet citizen needs. The attributes for this components are:- architectural IS integration, competencies, flexibility and architectural transparency.
Skills	The component ensures human resources factors are considered. The attribures for this component are:-

	recruitment and retention, strategic human resources planning, socio-political consideration, training and development.

<div align="center">**Table 22 : SAMM Components (Luftman, 2000)**</div>

5.5.2. Business Performance Measurement

According to the results in Section 4.5.4 of Strategic Alignment, 59% of respondents agreed that implemented information systems are measured against strategic objectives, with 27.8% of respondent uncertain about the statement. In any business investment it is always important to measure benefits realised from investment. Kellen (2003) states that business performance measurement (BPM) and control systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities. Measurement systems included multiple measures.

Summons (2000) further states that a measure (or metric) is a quantitative value that can be used for purposes of comparison. Bititci, Carrie and Turner (2002) list the following reasons organisations measure business performance:

- To monitor and control;
- To drive improvement;
- To maximize the effectiveness of the improvement effort;
- To realise alignment with objectives and KZN Provincial government.

PURPOSE FOR BPM	KZN PROVINCIAL GOVERNMENT OBJECTIVES
To monitor and control	IT Governance (GITOC, 2009) (CoGTA, 2009)
To drive improvement	Accelerate service delivery (Section 2.6) Achieve Batho Pele principles (Section 2.7)
To achieve alignment with organizational goals and objectives	SAM, SAMM and Benefits Management (Section 2.8)

<div align="center">**Table 23 : Business Performance Measure vs. KZN Local Government**</div>

The above-mentioned Table 23 aligns the purpose for business performance measurement (BPM) to the research objectives.

With the majority of respondent suggesting the need for management reporting in KZN Local Government, in term of the Auditor General (AG) it is a prerequisite that provincial government comply with these requirements for governance purposes (CoGTA, 2009). Management reporting assists executives in making informed decisions. To achieve Batho Pele principles, KZN Local government should make informed decisions that will support the acceleration of service delivery.

The results yielded by this research indicated that 81.9% of respondents agreed that applications systems should have management reporting capabilities with only 4.2% disagreeing with the statement and 13.9% of respondents uncertain.

5.6. Research Objective 4: Problem Associated with Implementing Information Systems

A score from the five question-probing problem associated with implementing information systems was calculated by simple summation. This score was statistically correlated with other variables in the questionnaire by using zero-order analysis. The correlation analysis was conducted using Spearman Correlation. The results suggest that the Spearman correlation coefficient value between problem associated with IT/IS and service delivery impact is 0.419 or r = 0.419. The result simply suggests any problem associated with implementation of IT will have a direct impact on service delivery. An information system is a tool used to automate business process for any organisation and therefore there is a direct relationship between the two statements.

Currently, KZN Provincial government has an inadequate pool of technical resources to support the implemented information systems. The results of the study reflect that the majority, 54.1% disagreed that KZN local government has enough technical resources. Numerous studies have made findings suggesting that it is critical to have skilled human resources to assure the success of any IT/IS project (Davenport, 2000). The lack of technical support has been regarded as a major contributing

factor to inefficiencies in provincial government. The purpose of technical support is to assist KZN Provincial government users in terms of IS utilisation. Technical support comprises of design planning, end-user and helpdesk support, user training, IS response time, development support and hardware and software standard (Shaw, Delone, & Niederman, 2002). Technical skills relate a set of measures of technical abilities such as programming, knowledge of software development process and experience of operating systems.

The subject of skills shortage is rather broad and is covered by a vast academic and policy-based research, especially at national level. According to National Skills Tasks Force (1998), the skills shortage is a lack of adequate skilled individuals available when accessing the labour market. A skills shortage is defined as the situation where employers are unable to recruit staff with skills they are looking for at a reasonable rate (EEO, 2001).

According to the European Employment Observatory (EEO, 2001), the term "skill shortage" denotes the situation of an overall shortage of skills at national level across sectorial and occupational level, often used to refer the quantitative lack of skills.

According to Strietska-Ilina (2007), the following are reasons for skills shortage in KZN Provincial government: -

- *Small labour reserve*– Firstly, labour market tension within adequate labour reserve linked to high employment levels and unfavourable demographics factor.

- *Economic, social and institutional conditions* – IT skills in KwaZulu-Natal are scarce as most qualified resources migrate to Gauteng where there are vast IT opportunities and the remuneration is competitive and high.

- *Skills mismatch* - the third type of technical skills shortage is whereby the level/field of qualification and/or specific skill and competency (skills gap) is not aligned to KZN Local government skills requirements.

- *Deficiencies in selection and hiring practices, conditions of employment and salary and wage policies* – it is significant to acknowledge that this reason plays a major role in selection and hiring difficulties in local government. This

is another indication of the market failure to solve the problem of recruiting the personnel pertinent to the specific business strategies (Strietska-Ilina, 2007).

After analyzing the results of the study, the research identified four information systems barriers for effectively implement IS integration solution namely: (1) strategic barrier, (2) technology barrier, (3) policy barrier, and (4) organisation barrier (Lam, 2005).

5.6.1. Strategy Barriers

- ***Lack of shared IT/IS goals and objectives.*** Without a government wide approach of KZN Provincial departments into IS integration planning, different government departments become impeded by absence of transparency, overlapping and conflict in the description of roles and responsibilities (Lam, 2005). Since IS integration is government-wide and cross-functional, it is important to get support from all divisional segments of KZN government (Hanafizadeh & Ravasan, 2011).

- ***Lack of Information Technology (IT) Governance.*** Where there is information systems integration between different government departments, there need to be some collaboration and governance to ensure that the desired outcomes are achieved (Lam, 2005). IT governance signifies the structure for decision rights and responsibility to support appropriate behavior in the usage of IT resources (Weill, 2004). Without ownership and governance, common set of IT objectives cannot be achieved since they will be lack of transparency and accountability. IT governance instruments describe how the assignment of responsibilities and decision-making components are structured (Weill & Ross, 2004)

5.6.2. Technology Barriers

- ***Lack of architectural interoperability.*** The use of a variety of topologies and architectures by government department are major cause for failure in IS integration (Weill & Ross, 2004). The State Information Technology Agency (SITA) developed the Government Wide Enterprise Architecture (GWEA) framework to standardize on enterprise architecture (EA) approach. GWEA applies to all South African government organisations that engage in IS integration and EA planning (GITOC, 2009).

- ***Incompatible Data Standards.*** A basic requirement for IS integration is the capability for KZN Provincial Government systems to be able to exchange information seamlessly. Lack of data standards is another technology barrier to IS integration.

- ***Inflexibility of Legacy systems.*** The KZN Provincial government relies on legacy systems developed decades ago to support their core business needs. Presently all government departments and municipalities in KZNPG utilise BAS (Basic Accounting Systems) for financial management and PERSAL (Personal Salary System) for human resources management and payroll system. The inherent design and modeling of legacy systems was mainframe based and standalone rather than network integrated systems. Lack of file formats, restriction to network connectivity and lack of documentation act as barriers for IS integration.

5.6.3. Policy Barriers

- ***Citizen Privacy.*** Citizen privacy continues to be a major issue in e-government (Tillman, 2003). While e-government involves the sharing and exchanging of sensitive citizen data, protection of citizen information is crucial. KZNPG should ensure that clear policies are available with respect to citizen privacy.

- ***Data ownership.*** Different KZNPG distinguish themselves as owners of specific set of data, and therefore obviously protective about data sharing with government departments. Reluctance to share data acts as a hindrance in the implementation of IS integration. To overcome this impediment, the description of access rights to information becomes significant to ascertain what institutes legal access to information.

5.6.4. Organisation Barriers

- ***Lack of Government readiness.*** The fact that IS integration and e-government integration are fairly new concepts in government indicates that the departments are still in a learning process.

- ***Lack of relevant technical resources.*** The majority of the respondents (54.1%) disagreed that KZN Provincial government has technical resources; 20.8% were uncertain; and finally 30.6% agreed that there are adequate

technical resources.   This suggests that KZN Provincial government lacks the state of readiness to deploy and support IS integration.

5.7.   Conclusion

This chapter presented the discussions and interpretation of the results of the study. This chapter also linked the results in Chapter four with the information in Chapters one and two. The findings presented in Chapter four were analysed with the intention of answering the research objective outlined in Section 1.3 of Chapter one.

The findings of the study showed that IS integration enhances operational efficiency and has a positive influence on service delivery. The analysis of the research also revealed that KZNPG was lacking technical resources and that Management reporting is important in decision-making processes since the KZNPG is mandated to service the need of the communities. Hence, it is recommended that performance measures should be adapted to measure whether public sector personnel subscribe to Batho Pele principles. The findings identified four barriers that are associated with implementation of IS integration namely: strategy, technology, policy and organisation.

The next chapter provides conclusion and recommendations to be made regarding the role of information systems (IS) integration in achieving Batho Pele principles within KZNPG.

6. Recommendations and Conclusion

6.1. Introduction

The study reveals that various factors support the use of information systems integration to achieve Batho Pele principles. These factors are clarified in Chapter two of the literature review. There are only a few factors that are explained in chapter four. The results of the study included the sample of demographics. These responses were then subjected to factor analysis to validate a concept of a latent construct that is being researched. The objective of this chapter is to suggest recommendations for future research and highlights recommendations, to assist KZN Provincial government and the public sector on how information systems can accelerate service delivery with Batho Pele principles. Figure 25 presents the Chapter outline for Recommendations and Conclusion.
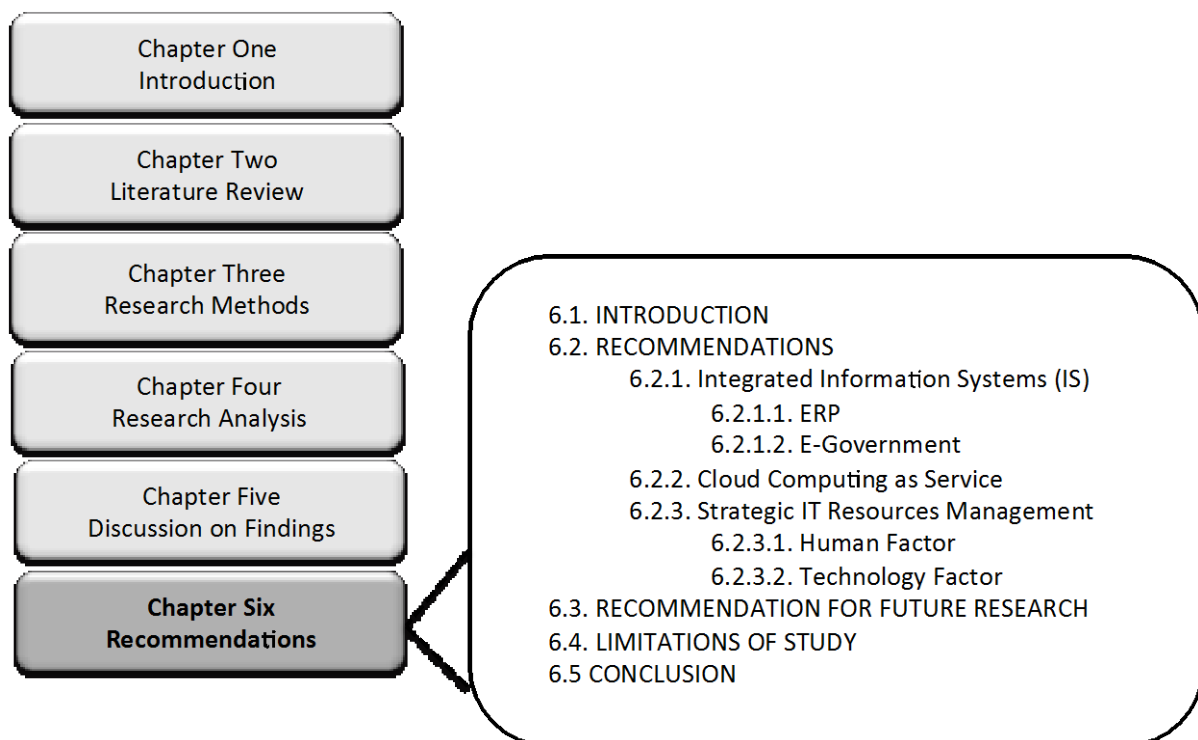
Figure 25 : Chapter Outline for Recommendation and Conclusion

6.2. Recommendations

6.2.1. Integrated Information Systems (IS)

According to Barki and Pansonneault (2005), integration involves a great degree of responsiveness between interrelated functional components, suggesting fast access to and interpretation of messages for components that are observed to be highly integrated. IDC (2002) conducted a research on the significance of IS integration based on 1350 interviews, with more that 80% of CTO and CIO's agreed that integration was either compulsory for critical IT/IS activities or a major enabler for meeting critical business objectives. It should be noted that enterprise integration (EI) varies from enterprise resource planning (ERP). Enterprise Integration deals with the integration of existing information systems whereas ERP deals with the replacement of existing information systems with an integrated suite of application from one service provider (Lam, 2005).

6.2.1.1. Enterprise Resource Planning (ERP)

In the 1990s, enterprise resource planning (ERP) appeared as organisational tool for business computing. ERP systems can be classified as IS based solutions that seeks to integrate core enterprise processes (Badwa, Garcia, & Mooney, 2004). ERP solutions are modular in nature. KZN Provincial Government can choose to implement one or selected few modules at a time. According to Khosrow-Pour (2006), enterprise resource planning failure or success is decided in major part by how well and willing an enterprise is to undertake an essential organisational transformation process. At the dawn of the new century, ERP models are starting to permeate public sector businesses.

ERP systems originally focused on back-end or backoffice application such as personnel, accounting and supply chain management. Currently, ERP solutions have progressed and the new generation of ERP systems extends to provide back-end technology modules for Supply Chain Management (SCM) and (CRM) Customer Relationship Management that boost citizen relationship (Davenport, 2000). According to Cherrington, Dunn, & Hollender (2005), backoffice is a term that is frequently used in business to determine systems that are internally used by personnel in the organisation; external stakeholders like consumers and vendors are

blocked access to the systems. The systems that external stakeholders usually access are called front-office systems. There are several Enterprise Resources Planning (ERP) readiness assessment frameworks recommended either by other researchers.

The BEST (Better Enterprise System implementation) framework, utilised for evaluating CEAO (cause–event–action–outcome) chain, is based on a process-based model of enterprise. The BEST assessment method is designed to evaluate the preparedness of an enterprise at the start of an enterprise system implementation project (Wognum, Krabbendam, Buhl, Ma, & Kenett, 2004). The BEST framework has three dimensions of enterprise process, design and tuning of the new business applications, and project management. Moreover, there are six characteristics in the framework, namely strategy and goals, management, structure, process, knowledge and skills, and social dynamics (Hanafizadeh & Ravasan, 2011).

6.2.1.2. E-government

In Section 2.4 of the Literature Review, it was mentioned that e-government results in better access to government resources, decreases transactional and service-processing costs, and supports the KZN Provincial government to provide better public services of higher quality. While e-government has made progress in other countries, the evidence suggests that e-government implementation globally remains at an informational phase. Numerous authors have suggested e-government maturity is hampered by considerable challenges in e-government integration (EGI) (Golden, Hughes, & Scott, 2003). Researchers have attempted enterprise integration (EI) from different overlapping perspective as highlighted in Figure 26. Four e-government perspectives were highlighted namely: (1) enterprise integration; (2) application integration; (3) business Integration; and e-government integration (EGI).

E-government process	E-government roadmap
• **_Enterprise Architecture (EA)_** Develop government-wide models of the KZN Provincial government from information, network and function to identify application overlap and data sharing between applications. • **_Application Integration (AI)_** Integration tools comprising middleware, messaging, and components used to integrate applications. • **_Business Integration (BI)_** Business Process modeling that establishes the manner in which application should be integrated. • **_e-government/ EGI (B2C or B2B)_** Common government process and data standards that enable KZNPG to readily transact.	

Figure 26 : Perspective of e-government integration

6.2.2. Cloud Computing as Service

Currently, KZN Provincial government invests enormous capital expenditure (CAPEX) in the procurement of IT/IS infrastructure. This results in high total cost of ownership (TCO). With new innovative approach of procuring IT/IS as service, cloud computing plays a significant part. The implementation of cloud computing can vary depending on business requirements. According to Dailogic (2010), the primary service models used are as follows: -

- **Software as a Service (SaaS**) — In this model, KZN local government could procure the capability to have application or software access on cloud service. An example of this is INTENDO, an SCM solution from KZN Treasury as discussed previously, where INTENDO could be accessed on cloud with a specific number of license subscriptions for communication as part of the service in the cloud.

- **Platform as a Service (PaaS)** — In this model, KZN local government could procure platform capabilities that enable local government to implement their own software on cloud. The network access and operating systems are not controlled by the local government, but managed by State Information Technology Agency (SITA).
- **Infrastructure as a Service (IaaS)** — In this model, KZN Provincial government could save millions on the procurement of IT infrastructure such as server, storage devises, switched and routers. This model results in less TCO (total cost of ownership) with high availability of service.

Cloud computing implementations vary depending on business requirements. The deployment models are categorised into specific characteristics that support organisational requirements (see Figure 27).
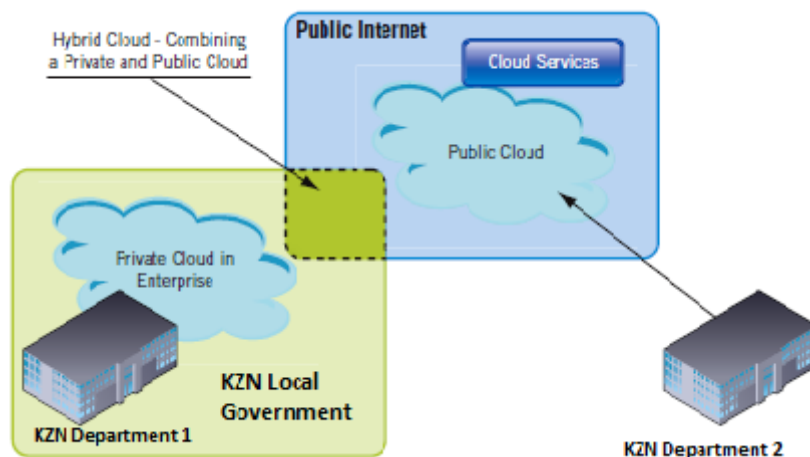
Figure 27 : Types of Cloud Computing (Dialogic, 2010)

- **Private Cloud** — The private cloud is restricted for a specific organisation. Only users of a specific organisation have access to private cloud. The cloud operation may be with third party vendors or based in-house. Currently, KZN local government hosts transversal systems, i.e. PERSAL-the Human Resources and Payroll systems; and BAS – Financial Management system through State Information Technology Agency (SITA).
- **Community Cloud** — This type of cloud computing refers to the cloud infrastructure that is shared by business with common interest and business requirements. This type can assist KZN local government to reduce IT capital expenditure (CAPEX) as the costs are distributed and shared among the

departments. The operation may be in-house or with a third party on the premises.

- **Public Cloud** — This type of cloud computing is offered to public users on a commercial basis by a cloud service provider. This allows public cloud users to develop cloud services with minimal IT investment.

- **Hybrid Cloud** — This type of cloud computing is a combination of both private and public cloud. This type has interfaces that allows for application and data to be moved across cloud types.

6.2.3. Strategic IT Resource Management

In Chapter four of data analysis, it was highlighted that less than 40% of respondents suggested KZN Local Government has inadequate technical support to manage implemented information system. The results mean that there is no alignment between information systems implemented by KZNPG and IT human resources available to support IT systems. The capability of KZN Provincial government to deploy an ERP solution is basically reliant on its capability to hire, select, place, appraise and develop suitable technical skills. Meaning, it's essential for KZN Provincial government to exploit appropriate methods to recruit and retain qualified staff, cultivate and preserve a high level of employees' morale and motivation among personnel (Kim, Lee, & Gosain, 2005).

6.2.3.1. Human Resources Factors

The study indicates that KZN Provincial government has not successfully aligned human resources management with the provincial government's mission. Several studies have shown that it is essential to have skilled people to assure the success of a project. According Raschke (2010), the "knowledge revolution", combined with economic globalization, has created conditions in which countries that have focused on knowledge-based industries have been able to reap significant rewards. Essentially, it comes down to showing the value of human resources management to the local government. According to Baltzan & Phillips (2010), strategic human resources management means the management and mobilisation of a unified workforce, and aligns workforce contribution with business objectives. Knowledge-based enterprises require an educated labour force of computer-literate individuals who themselves understand and can harness the power of ICT.

Both the private and public sector have acknowledged that it is not only the technology that provides business with the competitive edge, but human capital. The US Office of Personnel Management (1999) states that without attracting and retaining the right people, in the right jobs, with the right skills and training, an organization cannot succeed. Consequently, human capital has been acknowledged as organisations' important asset.

Obviously, recruitment, development, employee relations and retention are significant HR factors that contribute to KZN local government goal accomplishment. Nevertheless, the following also contribute to and align with goal achievement: -

- **Workforce Planning**: With aging public sector workforce, human resources planning including the succession and retention planning become exceedingly important to increasing government overall ability to accelerate service delivery.
- **Linking Performance Management to Mission Accomplishment**: The majority of respondent suggested that performance reviews improve service delivery. The data analysis suggests that the performance management system as a tool that can link performance and mission accomplishment with Batho Pele principles.
- **HR Self-Assessment:** HR activities should comply with laws and these HR assessments establish how effectively human resources programs are attaining their objectives in support of goal achievement.

6.2.3.2. Technology Factors

This study investigated the impact of IS integration in achieving Batho Pele principles. Since their inception, electronic information systems have developed considerably and their roles and functions have expanded to support enterprise strategies, organisational processes, structures and cultures of an organisation (Masrek, Jamaludin, & Hashim, 2009). The development of IT strategy is crucial to ensure there is alignment between business process and IT/IS implementation in meeting the KZN Provincial government objectives. The KZNPG must be aware of why IS integration should be implemented and what critical KZNPG goals the integration will address. The IT strategy reveals a *gap analysis* that will harness the

alignment of IT with the departmental and organisational strategy. The development and design of IT strategy is significant in addressing the transformation of input to output or state as highlighted in Figure 28 of KZNPG IS integration overview. The *inputs* relate to activities that are required which are people, process and infrastructure, while the *process* phase refers to "interventions" required to achieve the desired outputs. The *outputs* depicted in Figure 28 are objectives of this research that have been discussed in previous sections.
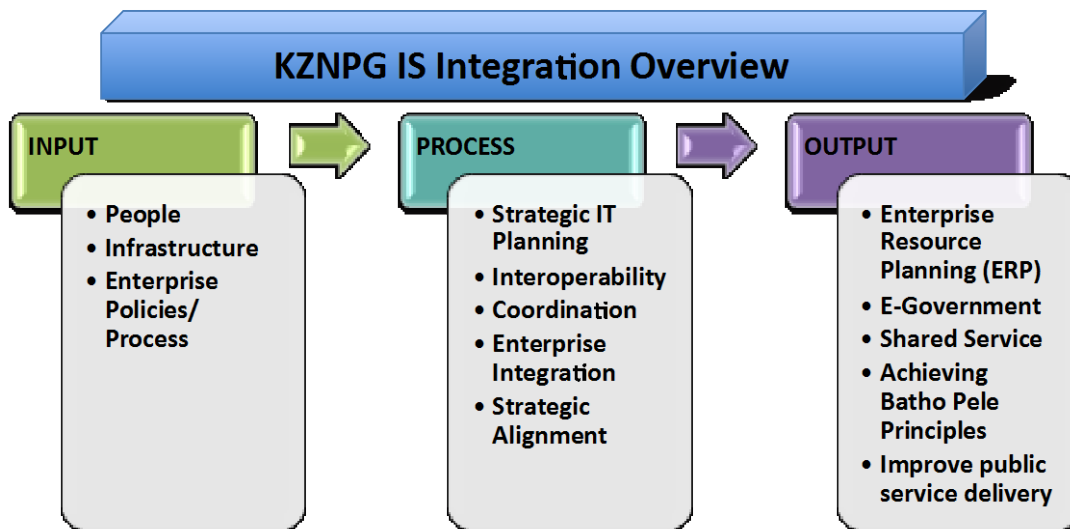
Figure 28 : KZN Provincial Government IS Integration Overview

6.3.   Recommendations from this Study

6.3.1. Inter-Governmental Relations

It is further recommended that KZN Provincial Government works together with KZN Departments and Municipalities at local level (both District and Local Council) in order to enhance the delivery of services.

6.3.2. Management Reporting

IT/IS used by KZN Provincial Government should integrate and interface with other departments and Municipalities and be able to do management reporting that will assist in decision-making processes.

6.3.3. Service Delivery Initiatives

Programmes and initiatives earmarked for service delivery in KwaZulu-Natal should be driven by both KZN Provincial Government and Municipalities.

6.4. Limitations Of The Study

The limitation of the research will be examined with regards to the following:-

6.4.1. Population and Sample

In this research the population was IT end-users for the KZN Provincial government or KZN Co-operative Governance and Traditional Affairs (CoGTA). KZN CoGTA is delegated to assist and support KZN Provincial government departments. In terms of the research, this study was limited to only KZN CoGTA IT end-users. Therefore the questionnaires were not distributed to all government departments in KwaZulu-Natal.

6.4.2. Identifying and Targeting Respondents

Research designs can be selected by the approach chosen to collect primary data. There are two approaches to do this namely the observation and communication approach (Coopers & Schindler, 2003). This research followed the communication approach as it yield large number of data that cannot be access through observation approach. There was challenge in communicating the questionnaire to certain respondents.

6.4.3. The Size and Scope of Study

The study was based on the information integration in achieving Batho Pele principles in KZN Provincial Government. The study investigates only information integration legacy systems deployed by KZN Provincial government and not the integration of individual department core application systems. Therefore data results collected from respondents represent a broad view of information and process integration thus limiting the information credibility.

6.4.4. Time

The time constraint encountered in this research prevented the investigation of actual IT/IS overview of all departments and Municipalities in KwaZulu-Natal since

this require the researcher to investigate 11 District Municipalities including one Metropolitan (Ethekwini Municipality) and 51 Local Municipalities.

6.4.5. Accuracy of results

Information systems integration was the concept not fully understood by some of the respondents, which suggested that some respondents were not sure of their responses. This limits the validity and reliability of results.

6.5. Conclusion

The objective of the study was to examine the impact of IS integration in achieving Batho Pele principles within the KNPG. The literature review presented IS integration and e-government integration frameworks as theoretical concepts for the research. Numerous integration components for both IS and business integration were discussed that have the possibility to impact service delivery: IT/IS integration, alignment between KZNPG planning systems and IT/IS, link between business or operational processes and IT/IS processes, and benefits management which measures the performance of IT/IS investment.

The results were analysed using descriptive statistics to describe the demographic makeup of the sample and their perceptions towards importance of information systems integration in improving service delivery. Other recommendations made include implementation of ERP (enterprise resources planning) and use of cloud computing for continuous improvement while improving service delivery with Batho Pele principles. Cloud computing was recommended because it offers a significant value proposition for government that correctly understand how to leverage their existing infrastructure and securely enable their information systems. The study concluded that KZNPG can realise IT/IS value by addressing the lack of unified IS integration and e-government frameworks that will bind together disparate applications and systems within KZNPG. The challenge for KZNPG is to come up with the most economically and technically sound IT strategy and approach for protecting integrated activities, understanding that today's most secure technology environment will be vulnerable in the future.

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Appendix 1: Ethical Clearance

UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
YAKWAZULU-NATALI

Research Office, Govan Mbeki Centre
Westville Campus
Private Bag x54001
DURBAN, 4000
Tel No: +27 31 260 8350
Fax No: +27 31 260 4609
snymanm@ukzn.ac.za

16 November 2011

Mr V Mhlongo (210555758)
School of Information Systems & Technologies

Dear Mr Mhlongo

PROTOCOL REFERENCE NUMBER: HSS/1185/011M
PROJECT TITLE: The role of information systems integration in achieving Batho Pele within the KZN Provincial Public Service

In response to your application dated 24 October 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.
PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

....
Professor Steven Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

cc. Supervisor – Prof M Maharaj
cc. Ms C Haddon

1910 - 2010
100 YEARS OF ACADEMIC EXCELLENCE
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Appendix 2: Questionnaire

UNIVERSITY OF KWAZULU-NATAL

SCHOOL OF INFORMATION SYSTEMS AND TECHNOLOGY

MComm (Information Systems & Technology) Research Project

Researcher   :   Vusi Mhlongo (084 236 5034)

Supervisor   :   Prof Manoj Maharaj (031 260 8023)

The role of information systems integration in achieving Batho Pele within the KZN Provincial Public Service

The objective of this questionnaire is to gather information that will be used to establish the impact of Integrated Information Technologies in achieving Batho Pele within the KZN Provincial Public Service. Simply stated, Batho Pele is an initiative to get public servants to be service orientated, to strive for excellence in service delivery and to commit to continuous service delivery improvement. It is a simple, transparent mechanism, which allows customers to hold public servants accountable for the type of services they deliver.

The aim of this study is to establish whether integrated systems can enhance the levels of service at local government. The study attempts to address the following research objectives:

- To examine factors impacting on the delivery of service at Provincial local government.
- To determine the importance of integrated systems in improving the delivery of service at Provincial local government.
- To establish how strategic alignment between integrated systems and Provincial local government strategic objectives can improve service delivery.
- To establish the problems associated with IT/IS in improving service delivery.
- To make recommendations to improve service delivery through integrated technology.

There is no right or wrong answer, and answers will remain confidential. I thank you for your valuable time and effort.

INSTRUCTION: Mark with [√] on the appropriate box.

SECTION 1: PERSONAL PARTICULARS

1.1.   In which KZN Local Government office do you belong to?

Provincial KZN CoGTA (Head Office)	
Regional Office (s)	

1.2.   Gender

Male	
Female	

1.3.   Which race do you belong to?

African	
Asian	
Indian	
Coloured	
Other….(Specify)	

1.4.   Which of the following age brackets do you belong?

1. Under 21 years	
2. 21 – 34 years	
3. 35 – 44 years	
4. 45 – 54 years	
5. 55 and above	

1.5.   How long have you been employed by the KZN Provincial Local Government?

1. Less than 1 year	
2. Between 1 – 5 years	
3. More than 5 years and above	

SECTION 2: BATHO PELE

Batho Pele Principles

The below-mentioned grid represents principles of Batho Pele. Please tick in the appropriate box on how important is the Batho Pele principle, with **five (5)** *very important* *while* one (1) *least important.*

Batho Pele Principles	5	4	3	2	1
1. Consultation Citizens should be consulted about the level and quality of the public services they receive and, wherever possible, should be given a choice about the services that are offered.					
2. Service Standards Citizens should be told what level and quality of public services they would receive so that they are aware of what to expect.					
3. Value for money Public services should be provided economically and efficiently in order to give citizens the best possible value for money.					
4. Information Citizens should be given full, accurate information about the public services they are entitled to receive.					
5. Access All citizens should have equal access to the services to which they are entitled.					

SECTION 3: SERVICE DELIVERY IMPACT

The following values have been provided for you to mark with [√] next to the appropriate answer. **Please tick in the appropriate box.**

	Service Delivery Impact	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	Employees understand "Batho Pele" principles to improve the level of service KZN Public Service.					
2.	KZN Public service employees are committed to perform their duties and responsibilities.					
3.	Performance Review on employees can improve Service Delivery.					
4.	KZN Public service employees are working according to standard operating procedures (SOP).					
5.	Good working condition increases job satisfaction thus improving service delivery.					

SECTION 4: IMPORTANCE OF INTEGRATED SYSTEMS

The following values have been provided for you to mark with [√] next to the appropriate answer. **Please tick in the appropriate box.**

	Importance of integrated systems	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	The applications system can communicate with other Administration systems within KZN Public Service.					
2.	Integrated IT systems increase KZN Public Service organizational performance and efficiency.					
3.	KZN Public service employees are adequately trained to manage and control operational systems.					
4.	Integrated systems save time and money.					
5.	Integrating IT Systems will provide for a higher quality working life within KZN Public Service					

SECTION 5: STRATEGIC ALIGNMENT

The following values have been provided for you to mark with [√] next to the appropriate answer. **Please tick in the appropriate box.**

	Strategic alignment	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	The IT systems are adequate and address all local government requirements for KZN Public Service.					
2.	KZN Public service employees are aware of strategic objectives of public services.					
3.	Information systems implemented are aligned to KZN Local government objectives					
4.	Applications system deployed are measured against strategic objectives.					
5.	Applications system should have Management reporting capability on strategic decision making for Senior Management					

SECTION 6: PROBLEM ASSOCIATED WITH IMPLEMENTING IS&T

The following values have been provided for you to mark with [√] next to the appropriate answer. **Please tick in the appropriate box.**

	Problem Associated with Implementing IS&T	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	The IT systems are user-friendly and easy to operate					
2.	IT Users are trained to use application systems provided for KZN Public service.					
3.	End-users are involved at the early stages of technology implementation.					
4.	The KZN Local Government has enough technical support to manage implemented applications system.					
5.	The KZN Local Government recruits qualified IT personnel.					

Appendix 3: Descriptive Statistics

A. Batho Pele

Consultation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not as important	1	.7	.7	.7
	Uncertain	13	9.0	9.0	9.7
	Important	41	28.5	28.5	38.2
	Very important	89	61.8	61.8	100.0
	Total	144	100.0	100.0	

Service Standards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least Important	1	.7	.7	.7
	Not as important	1	.7	.7	1.4
	Uncertain	15	10.4	10.4	11.8
	Important	41	28.5	28.5	40.3
	Very important	86	59.7	59.7	100.0
	Total	144	100.0	100.0	

Value for money

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least Important	1	.7	.7	.7
	Not as important	3	2.1	2.1	2.8
	Uncertain	11	7.6	7.6	10.4
	Important	39	27.1	27.1	37.5
	Very important	90	62.5	62.5	100.0
	Total	144	100.0	100.0	

Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not as important	4	2.8	2.8	2.8
	Uncertain	7	4.9	4.9	7.6
	Important	43	29.9	29.9	37.5
	Very important	90	62.5	62.5	100.0
	Total	144	100.0	100.0	

Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Least Important	3	2.1	2.1	2.1
	Not as important	3	2.1	2.1	4.2
	Uncertain	8	5.6	5.6	9.7
	Important	35	24.3	24.3	34.0
	Very important	95	66.0	66.0	100.0
	Total	144	100.0	100.0	

B. Service Delivery Impact

**Employees understand "Batho Pele" principles to improve the
Level of service KZN Public Service.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	59	41.0	41.0	41.0
	Agree	51	35.4	35.4	76.4
	Uncertain	16	11.1	11.1	87.5
	Disagree	12	8.3	8.3	95.8
	Strongly Disagree	6	4.2	4.2	100.0
	Total	144	100.0	100.0	

**KZN Public service employees are committed to perform
their duties and responsibilities.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	45	31.3	31.3	31.3
	Agree	67	46.5	46.5	77.8
	Uncertain	14	9.7	9.7	87.5
	Disagree	12	8.3	8.3	95.8
	Strongly Disagree	6	4.2	4.2	100.0
	Total	144	100.0	100.0	

Performance Review on employees can improve Service Delivery.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	61	42.4	43.9	43.9
	Agree	68	47.2	48.9	92.8
	Uncertain	6	4.2	4.3	97.1
	Disagree	4	2.8	2.9	100.0
	Total	139	96.5	100.0	
Missing	System	5	3.5		
Total		144	100.0		

KZN Public service employees are working according to standard operating procedures (SOP).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	42	29.2	29.2	29.2
	Agree	56	38.9	38.9	68.1
	Uncertain	25	17.4	17.4	85.4
	Disagree	19	13.2	13.2	98.6
	Strongly Disagree	2	1.4	1.4	100.0
	Total	144	100.0	100.0	

Good working condition increases job satisfaction thus improving service delivery.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	72	50.0	50.0	50.0
	Agree	64	44.4	44.4	94.4
	Uncertain	3	2.1	2.1	96.5
	Disagree	5	3.5	3.5	100.0
	Total	144	100.0	100.0	

C. Integrated Systems

The applications system can communicate with other Administration systems within KZN Public Service.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	45	31.3	31.5	31.5
	Agree	66	45.8	46.2	77.6
	Uncertain	16	11.1	11.2	88.8
	Disagree	10	6.9	7.0	95.8
	Strongly Disagree	6	4.2	4.2	100.0
	Total	143	99.3	100.0	
Missing	System	1	.7		
Total		144	100.0		

Integrated IT systems increase KZN Public Service organizational performance and efficiency.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	43	29.9	30.1	30.1
	Agree	75	52.1	52.4	82.5
	Uncertain	19	13.2	13.3	95.8
	Disagree	6	4.2	4.2	100.0
	Total	143	99.3	100.0	
Missing	System	1	.7		
Total		144	100.0		

KZN Public service employees are adequately trained to manage and control operational systems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	33	22.9	22.9	22.9
	Agree	57	39.6	39.6	62.5
	Uncertain	28	19.4	19.4	81.9
	Disagree	11	7.6	7.6	89.6
	Strongly Disagree	15	10.4	10.4	100.0
	Total	144	100.0	100.0	

Integrated systems save time and money.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	46	31.9	32.4	32.4
	Agree	74	51.4	52.1	84.5
	Uncertain	18	12.5	12.7	97.2
	Disagree	4	2.8	2.8	100.0
	Total	142	98.6	100.0	
Missing	System	2	1.4		
Total		144	100.0		

Integrating IT Systems will provide for a higher quality working life within KZN Public Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	46	31.9	31.9	31.9
	Agree	72	50.0	50.0	81.9
	Uncertain	20	13.9	13.9	95.8
	Disagree	4	2.8	2.8	98.6
	Strongly Disagree	2	1.4	1.4	100.0
	Total	144	100.0	100.0	

D. Strategic Alignment

The IT systems are adequate and address all local government requirements for KZN Public Service.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	40	27.8	27.8	27.8
	Agree	63	43.8	43.8	71.5
	Uncertain	21	14.6	14.6	86.1
	Disagree	10	6.9	6.9	93.1
	Strongly Disagree	10	6.9	6.9	100.0
	Total	144	100.0	100.0	

KZN Public service employees are aware of strategic

objectives of public services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	18.8	19.0	19.0
	Agree	65	45.1	45.8	64.8
	Uncertain	26	18.1	18.3	83.1
	Disagree	11	7.6	7.7	90.8
	Strongly Disagree	13	9.0	9.2	100.0
	Total	142	98.6	100.0	
Missing	System	2	1.4		
Total		144	100.0		

Information systems implemented are aligned to KZN
Local government objectives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	18.8	18.9	18.9
	Agree	63	43.8	44.1	62.9
	Uncertain	32	22.2	22.4	85.3
	Disagree	12	8.3	8.4	93.7
	Strongly Disagree	9	6.3	6.3	100.0
	Total	143	99.3	100.0	
Missing	System	1	.7		
Total		144	100.0		

Applications system deployed are measured against strategic objectives.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	25	17.4	17.4	17.4
	Agree	60	41.7	41.7	59.0
	Uncertain	40	27.8	27.8	86.8
	Disagree	6	4.2	4.2	91.0
	Strongly Disagree	13	9.0	9.0	100.0
	Total	144	100.0	100.0	

Applications system should have Management reporting
capability on strategic decision making for Senior Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	46	31.9	31.9	31.9
	Agree	72	50.0	50.0	81.9
	Uncertain	20	13.9	13.9	95.8
	Disagree	6	4.2	4.2	100.0
	Total	144	100.0	100.0	

E. Problems Associated With IT

The IT systems are user-friendly and easy to operate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	47	32.6	32.6	32.6
	Agree	64	44.4	44.4	77.1
	Uncertain	12	8.3	8.3	85.4
	Disagree	9	6.3	6.3	91.7
	Strongly Disagree	12	8.3	8.3	100.0
	Total	144	100.0	100.0	

IT Users are trained to use application systems provided for KZN Public service.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	34	23.6	23.6	23.6
	Agree	61	42.4	42.4	66.0
	Uncertain	22	15.3	15.3	81.3
	Disagree	11	7.6	7.6	88.9
	Strongly Disagree	16	11.1	11.1	100.0
	Total	144	100.0	100.0	

End-users are involved at the early stages of technology implementation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	26	18.1	18.1	18.1
	Agree	56	38.9	38.9	56.9
	Uncertain	30	20.8	20.8	77.8
	Disagree	16	11.1	11.1	88.9
	Strongly Disagree	16	11.1	11.1	100.0
	Total	144	100.0	100.0	

The KZN Local Government has enough technical support to manage implemented applications system.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	30	20.8	20.8	20.8
	Agree	58	40.3	40.3	61.1
	Uncertain	22	15.3	15.3	76.4
	Disagree	19	13.2	13.2	89.6
	Strongly Disagree	15	10.4	10.4	100.0
	Total	144	100.0	100.0	

The KZN Local Government recruits qualified IT personnel.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	29	20.1	20.1	20.1
	Agree	68	47.2	47.2	67.4
	Uncertain	25	17.4	17.4	84.7
	Disagree	12	8.3	8.3	93.1
	Strongly Disagree	10	6.9	6.9	100.0
	Total	144	100.0	100.0	

Appendix 4: Correlation Summary

		Batho Pele Principles	Service Delivery Impact	Importance of integrated systems	Strategic alignment	Problem Associated with Implementing IS&T
Batho Pele Principles	Correlation Coefficient	1				
	Sig. (2-tailed)	.				
	N	144				
Service Delivery Impact	Correlation Coefficient	-0.151	1			
	Sig. (2-tailed)	0.071	.			
	N	144	144			
Importance of integrated systems	Correlation Coefficient	-0.145	.603**	1		
	Sig. (2-tailed)	0.082	0	.		
	N	144	144	144		
Strategic alignment	Correlation Coefficient	-0.041	.504**	.601**	1	
	Sig. (2-tailed)	0.627	0	0	.	
	N	144	144	144	144	
Problem Associated with Implementing IS&T	Correlation Coefficient	-0.075	.419**	.481**	.590**	1
	Sig. (2-tailed)	0.375	0	0	0	.
	N	144	144	144	144	144

Correlations

			Batho Pele Principles	Service Delivery Impact	Importance of integrated systems	Strategic alignment	Problem Associated with Implementing IS&T
Spearman's rho	Batho Pele Principles	Correlation Coefficient	1.000	-.151	-.145	-.041	-.075
		Sig. (2-tailed)		.071	.082	.627	.375
		N	144	144	144	144	144
	Service Delivery Impact	Correlation Coefficient	-.151	1.000	.603**	.504**	.419**
		Sig. (2-tailed)	.071		.000	.000	.000
		N	144	144	144	144	144
	Importance of integrated systems	Correlation Coefficient	-.145	.603**	1.000	.601**	.481**
		Sig. (2-tailed)	.082	.000		.000	.000
		N	144	144	144	144	144
	Strategic alignment	Correlation Coefficient	-.041	.504**	.601**	1.000	.590**
		Sig. (2-tailed)	.627	.000	.000		.000
		N	144	144	144	144	144
	Problem Associated with Implementing IS&T	Correlation Coefficient	-.075	.419**	.481**	.590**	1.000
		Sig. (2-tailed)	.375	.000	.000	.000	
		N	144	144	144	144	144

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 5: Letter of Permission to Conduct the Study

Ministry of Co-operative Governance & Traditional Affairs

KwaZulu-Natal Provincial Government

INFORMATION & COMMUNICATION TECHNOLOGY

Enquiries : Mr. KS Zuma Imibuzo : Navrae :	Telephone: 033 – 395 3117 Ucingo : Telefoon :	Private Bag: Isikhwama Seposi: Privaat Sak:	X9078 Pietermaritzburg 3200
Reference: Informatics Letters Inkomba : Verwysing:	Fax : 033 – 395 2943 iFeksi : Faks :	Date:	16 September 2011

Dear Sir,

Re: <u>Letter of Authority to conduct Research at KZN CoGTA</u>

This letter serves to confirm that **Mr Vusi BB Mhlongo**, Student Number : **210555758**, registered for **Master in Commerce (MComm)**, has been duly authorised to conduct a research on **The role of information systems integration in achieving Batho Pele within the KZN Provincial Public Service.**

For any further queries and assistance in this regard, please do not hesitate to contact myself on the contacts below:

Contact numbers: 033 395 3117
Email address: khanyisa.zuma@kzncogta.gov.za

Yours Sincerely,

MR. KS ZUMA
MANAGER: INFORMATION & COMMUNICATION TECHNOLOGY

DATE: 16/09/2011

Private Bag X 9155, Pietermaritzburg, 3200. | 1st Floor, FNB House, Redlands Estate, Wembly, Pietermaritzburg 3201
Tel: +27(0) 33 264 5500 | Fax: +27(0) 33 392 0027 | www.kznlgta.gov.za