

Availability and utilisation of information and communication technologies for service delivery: a South African case study

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This study is based on a Master's thesis that investigated whether the availability of information and communication technologies (ICTs) in government offices within the boundaries of uMhlatuze Municipality improved their ability to deliver effective e-services. The South African government has initiated several ICT initiatives to enable its departments to improve and speed up service delivery to the public. Government departments have been endowed with a number of ICT tools to assist in this process. Despite these efforts, complaints about the lack of service delivery still abound. Three government departments were targeted using questionnaires and interviews. The major findings suggest that various ICTs are available and are used by the staff, but not necessarily for service delivery. Lack of computers and Internet access was identified as a major challenge. The study also found that there is an urgent need for basic training on all the ICT tools available in the offices. It is recommended that a resource and capacity survey is necessary in all the offices to identify shortcomings in the system in order to improve service delivery. Failing this, e-government service delivery will not meet its potential. Additionally, governmental databases should be made available in all the offices so that the services can be delivered locally and not have to be re-routed through either regional or head offices.

Keywords: E-government, service delivery, information and communication technology applications, public services, uMhlatuze City

1 Introduction

The Republic of South Africa (RSA) is a constitutional democracy that is overseen by three structures of government, namely the National, Provincial and Local governments. It is divided into nine provinces, each with its own provincial legislature. All these governmental structures derive their powers and functions from the Constitution of the RSA (Cape Gateway, 2009).

According to Visser and Twinomurinzi (n.d.), the release of the White Paper on the Transformation of Public Services in 1995 heralded service delivery transformation in South Africa. Over the last two decades, the South African government has instituted several e-government initiatives in order to try to improve service delivery and the overall efficiency of government. According to Backus (2003), e-governance encapsulates a set of technology-mediated processes that are changing both the delivery of public services, and the broader interactions between citizens and government. The aims of e-governance include "simplifying bureaucratic procedures; enhancing efficiency and transparency; improving information; and increasing the level of citizen empowerment" (Mutula and Mostert, 2010).

According to the South African Education and Environmental Project (n.d.), service delivery is defined as an activity or action that satisfies the needs of a person. In other words, it is the manner in which a customer's needs are met. In order to promote integrated and seamless service delivery, the South African government published the *Batho Pele* White Paper in 1997 (Visser and Twinomurinzi, n.d.). *Batho Pele* is a mechanism that encourages citizens to hold public servants accountable for the level of service delivery that they receive. Using the 8 principles of *Batho Pele*, i.e. consultation with citizens, setting service standards, increasing access to information, ensuring courtesy, providing information, openness and transparency, redress, and value for money, the government aims to introduce an improved service delivery agenda (*Batho Pele*, n.d.). Undoubtedly, Information and Communication Technology (ICT) needs to play a major role, especially with respect to access to information and creating openness and transparency.

In addition to *Batho Pele*, Vision 2014 was instituted to improve service delivery (Health Summit, 2000). Although not all the Vision 2014 principles are directly ICT related, the principles, "to provide a compassionate government service to the people" and "to ensure that all South Africans are able to fully exercise their constitutional rights and enjoy the full

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dignity of freedom", require a civil service geared to disseminate information to the people and provide fast, efficient and effective service delivery, thus pushing the use of ICTs as far as practically possible.

2 Contextual setting

E-governance has the potential to provide a platform for innovative approaches and solutions to the promotion of human development and information transfer (United Nations Development Programme, 2008). In a study to determine the readiness globally to implement e-governance, the United Nations (2004) revealed that the United States and most European countries were already at advanced stages in the implementation and utilisation of e-governance as a vehicle to provide information and improve service delivery. The United Nations' (2004) study also noted an increase in the number of government services portals or one-stop-shops as well as a marked increase in the amount and types of information provided by governments worldwide.

However, the study also showed that while higher income countries were advanced in terms of the provision of on-line information services, communications and outreach to their citizens, the African region was still far behind the world in almost all aspects of access to ICT for development. Despite some progress being made, the most serious barriers to the expansion of e-governance were identified as lack of infrastructure and education. Many countries also appear to be hampered by irregular or non-existent electricity supplies, lack of telephones, and challenges related to access to and the cost of Internet access. Overall, Africa came last in the readiness rankings. The average e-government readiness index of 0.253 for Africa was only 61% of the world average and 29% of North America in 2004. In 2003, South Africa was the only country in sub-Saharan Africa to feature in the top 100 countries as measured by the United Nations E-government Readiness Programme. This was still the case in 2006 (Ngulube, 2007).

uMhlatuze City is a metropolitan area situated on the North Eastern coast of the KwaZulu-Natal province in South Africa, and includes the towns of Richards Bay, Empangeni, Esikhaleni, Ngwelezane, Nseleni, Vulindlela, Felixton, and the surrounding rural area under the leadership of traditional leaders. With a population of 345 776 people, the municipality has sound physical infrastructure such as roads, educational institutions, medical care and so on, and also efficient ICT infrastructure - all the major ICT and network providers and services are present within the municipality's boundaries.

Shouldering the responsibility of providing services to the general public, several government offices are also situated within the municipality to deliver various services. Among the most commonly visited departments are the Departments of Health, Education, Home Affairs and Social Development. The Department of Education oversees issues concerning teachers, such as employment opportunities and salary related problems, school fees, and any other school-related problems, while the Department of Social Development is responsible for allocating a number of grants, child adoption, early childhood development, the registration of non-profit organisations, and the treatment of substance abuse. The Department of Health is responsible for providing health and healthcare services to local municipalities to ensure the appropriate use of health resources, coordinate information systems, monitor health goals, and to ensure access to cost-effective and appropriate health commodities (Burger, 2010). The department is thus concerned with servicing the needs of the clinics, hospitals, and the staff affiliated to these institutions. It also supplies the public with health-related information (Burger, 2010). The Department of Home Affairs oversees services such as the issuing of identity documents, passports, travel documents, birth, marriage and death certificates, and providing records of adoptions (Burger, 2010).

3 Aim and objectives

Since 1994, the South African government has been pledging effective service delivery to its people. In order to attain these goals, a wide range of ICTs has been introduced and extensive ICT infrastructure has been put in place. Despite this, constant complaints are heard from the public who are supposed to be benefiting from the investment in ICTs and e-governance initiatives.

The aim of this study was therefore to examine the availability, interaction and utilisation of ICTs in a selection of government departments within the uMhlatuze Municipality. The objectives of the study were: (a) To establish the availability and utilisation of ICTs among civil servants in the region, (b) To establish the availability and utilisation of the Internet, and (c) To determine the challenges faced by civil servants when using ICTs for service delivery purposes. The study was informed by the following research questions:

- What ICTs are found and utilised in the public sector in the uMhlatuze region?
- What challenges are experienced by uMhlatuze civil servants with respect to using ICTs for service delivery?
- What is the level of Internet access and use of ICTs for service delivery?
- What are the training needs of civil servants with respect to ICT utilisation?

4 Global overview on e-readiness for e-governance

When using ICTs to conduct more of its activities, a country's government and economy become more transparent and efficient. Over the last ten years, governments have invested heavily in network infrastructure, skills/ the training of human capital, and regulatory frameworks. In its annual overview of the e-readiness of governments and people to deliver and use e-services, the Economist Intelligence Unit (2010) estimated that every month, over 40 million more people become mobile-phone users, while the capacity of the world's international fibre-optic cables doubles every 18 months. Global monthly Internet traffic in 2010 was also two-thirds higher than the year before.

The United Nations E-Government Survey in 2010 (United Nations 2010) found that: "Citizens are benefiting from more advanced e-service delivery, better access to information, more efficient government management and improved interactions with governments, primarily as a result of increasing use by the public sector of information and communications technology." The survey also found out that a large majority of the countries surveyed made huge amounts of information available not only by using websites, but also by providing national portals as a point of entry for users to connect to the government services delivered by different ministries. Of note was also the report's assertion that some developing countries are in the process of catching up with high-income countries in the developed world (United Nations, 2010).

In its overview of e-government activities on the African continent, the 2010 United Nations E-Government Survey (United Nations, 2010) found that huge strides forward have been made by African governments, especially in Northern Africa. Interestingly South Africa, always seen as the leader in the Southern African region, has been sliding backwards in terms of global ranking, dropping from 61st on the global list to 97th. This trend is likely to continue because of the ability of developed countries to constantly leapfrog ahead of developing nations through technological innovations.

Despite the drop in rank, the South African government has invested heavily in the establishment of effective e-governance strategies for the past few years to enhance service delivery.

5 Information and communication technology infrastructure in South Africa

According to Mutula and Mostert (2010), the South African government has put in place several policies, regulatory frameworks and ICT infrastructure projects in order to enhance service delivery. The South African government's policies in relation to ICT are founded on two major pillars: i) ICTs are there to make sure that services to all the citizens of South Africa are delivered faster, cheaper, better and in a sustainable manner; and ii) ICT tools and information are key drivers of economic and social development. In other words, ICTs should create a better life for the people of South Africa (Polity.org.za, 2007).

Several policies, among them the Freedom of Information policy, ICT policy, Universal Access policy, Universal Services and Access policy, as well as the already mentioned *Batho Pele* and Vision 2014 policies, are all aiming to create a regulated environment for the delivery of e-government.

The government has also established various agencies, such as the State Information Technology Agency (SITA), Govtech, Universal Service Agency, Savant and Infracore, to assist with issues such as capacity building, providing the required broadband capacity, promoting the attainment of universal services, providing effective and efficient ICT products and services, and promoting dialogue between stakeholders with a common interest in improving government service delivery (Nthetha, 2010).

In terms of telecommunications infrastructure, South Africa is the leader in ICT development in Africa and the 20th largest consumer of information technology (IT) products and services in the world. The country has a network that is 99% digital, and includes the latest in fixed-line, wireless and satellite communications. As such, it has the most developed telecommunications network on the continent. Several international corporations, recognised as leaders in the IT sector, operate subsidiaries from South Africa (Burger, 2010).

South Africa also has a strong mobile phone industry, 15 public broadcast-service radio stations and three commercial radio stations broadcasting in 11 languages, as well as an external radio service in four languages that reach an average daily adult audience of 19 million. SABC News provides news and current affairs services to South African Broadcasting (SABC) radio and television. There is a public broadcasting-service radio station for each language group (Burger, 2010). The SABC television network consists of three full-spectrum, free-to-air channels, and one satellite pay-television (TV) channel aimed at audiences in Africa. A daily adult audience of almost 20 million people is reached via the terrestrial signal distribution network and a satellite signal (Burger, 2010).

In 2010, a study by World Wide Worx reported that South Africa had 5.2 million Internet users (SouthAfrica.info, 2010), with this number expected to double by 2014 (SouthAfrica.info, 2009). Wireless broadband subscribers also grew by 88% during 2009, mainly due to the deployment of 3G cards (IT News Africa, 2010).

In an effort to narrow the “digital divide” in remote, rural and disadvantaged communities, a large number of tele-centers, more commonly known as multi purpose community centres (MPCCs), have been introduced and implemented by the government (Snyman, 2007; Cole and Roman, 2001). According to Farelo and Morris (2006), MPCCs provide users with access to computers, the Internet, fax machines and copy machines. The aim of MPCCs is to empower the poorest and most disadvantaged communities with access to information and government services. They are described as “one-stop shops” through which communities can access government services, information technology, and training (Safraica in Snyman, 2007). In conjunction with the MPCCs, the government has also introduced mobile Public information Terminals (PiTs) to under-serviced areas which provide access to government information via the Internet.

6 Challenges in the delivery of e-government services

Several challenges have been identified in the delivery of e-government services to the general public, including lack of skills, specifically computer literacy skills, among ordinary citizens and departmental staff members and managers (Benton, 2007; Mkhize, 2007); high bandwidth costs; limited public access to the Internet and other ICT technologies; and resistance to change – the desire to cling to old service delivery methods by staff (United Nations Department of Economic and Social Affairs, Inter-Parliamentary Union, Association of Secretaries General of Parliaments, 2007).

In addition to these challenges, Gosebo (2008) outlines a few additional challenges that prevent the proper implementation of e-governance within the context of government as follows:

- **A fragmented government service.** For example, if a person wishes to register a company but does not know which department to go to because two or three different departments are allegedly involved. Once located, lack of knowledge about the processes and procedures of the department make it very difficult to quickly complete the process.
- **Poor turnaround times.** Theoretically, many documents can and should be ready in a short space of time, but instead it takes weeks or months for the documents to be processed. The process of applying for an identity document, for example, should theoretically be completed in a few hours, but takes 1-3 months in practice.
- **Access.** Not all citizens or government officials have access to ICT tools or know how to operate them efficiently.
- **Power failures.** Disruptions to the electricity supply create huge problems for businesses and individuals reliant on ICTs for service delivery and communication. Large communities in South Africa also simply do not have access to electricity and cannot therefore utilise many ICT tools (Gosebo, 2008).

7 Research methodology

In order to study the departments, a survey method was used following both quantitative and qualitative research approaches. The qualitative method was used to extract as much detailed information as possible from the civil servants as this could provide an insight into each department’s own weaknesses and strengths in terms of ICT utilisation. The quantitative method represented information in quantities which served as an indicator of the availability and use of ICTs in each department.

The researcher in his own dealings with government departments, often encountered long queues and frustrating hours waiting to be served, and therefore chose as the population for this study, three departments providing services that are essential to the daily existence of the majority of the population. The population of the study therefore consisted of three departments, i.e. the Departments of Health, Education and Social Development. The assumption was that these specific departments would be at the forefront of ICT utilisation to streamline service delivery to the public, and the study endeavored to establish if this was the case. Non-probability sampling, specifically convenience sampling, was used to sample the civil servants. For the Department of Education, a sample size of 25% was selected because it was assumed that this number would provide enough information to make generalisations about their ability to deliver e-services. Access to staff in the Department of Health proved to be a major challenge because the majority of the department’s staff are deployed throughout the district and are very difficult to pin-point to a specific office at a specific time - many offer services from mobile service points, e.g. mobile clinics. The decision was made to sample only 12% of the workforce, specifically those who were more office bound in the head offices.

Because civil servants in the Department of Social Development were office-bound and small in number, the decision was made to distribute the research instrument to all the staff members working in the offices. A total of 266 civil servants were employed in these three departments and 84 were sampled. Table 1 shows the sampling frame and size.

Two research instruments, i.e. a questionnaire and an interview, were used for data collection. The questionnaires were distributed to departmental staff members and gathered information about the availability of ICTs for service delivery, and the utilisation of and challenges faced when using ICTs. The interviews were used to solicit views from departmental managers on their experiences with using ICTs for service delivery in their respective departments, as well as the challenges that they as managers identified in terms of ICT utilisation. Informal interviews were also held with the

customers at the offices in order to solicit their views on service delivery in general and whether they thought that ICTs could enhance service provision.

Table 1 Sampling frame and sampling size

Departments	Total of Employees	Sample size
Education	132	33
Health	103	20
Social Development, Esikhaleni	12	12
Social Development, Ngwelezane	13	13
Social Development, Richards Bay	06	06
Total	266	84

Permission to distribute the questionnaires was obtained by physically visiting and requesting permission from each department's headquarters in Pietermaritzburg and each office in uMhlatuze. This was a lengthy process that took approximately two months to conclude. Once permission was obtained, the questionnaires were manually distributed by the researcher, and appointments were made with contact persons in each department to collect and keep the questionnaires until the pre-arranged pick-up date. Several problems were experienced while retrieving the questionnaires. Some staff members did not hand in the questionnaires or did not honour the appointments made for collection; in one case the questionnaires were misplaced, and the researcher had to make several visits and follow-up calls to retrieve as many questionnaires as possible. Subsequently, a total of 48 (57%) questionnaires were retrieved. The following completed questionnaires were retrieved per department: Education, 21; Health, 9; and Social Development, 18. The results were analysed using the Statistical Package of Social Sciences (SPSS) and are reported in narratives, tables and figures.

8 Results and discussions

8.1 Access to ICTs

The first question sought to establish the level of access to ICTs within each department. The assumption was that if ICTs are accessible, they should also be available for utilisation, either for office use or in order to serve the public directly. From the results in Table 2, it is clear that the ICTs associated with normal office duties, such as telephones, photocopy and fax machines, printers and computers, are common and accessible in all the offices. Notably, the mobile phone was not common within the Departments of Health and Social Development, which is surprising because both these departments offer services to a client base that is sometimes serviced offsite, e.g. clinics in outlying areas or house visits in remote rural areas. Many of the rural areas in this region do not have landline infrastructure available, and therefore mobile phones would be the most obvious choice for communication between outlying service points and the main departmental offices.

Limited access to certain ICT tools such as laptops, mobile phones and scanners suggests that some of the services offered may be slow and/or poor. This was corroborated by the interviewed staff. A few respondents from the Social Development Department also indicated that because they serviced a large geographical area, it was very difficult to service the population properly because of lack of access to certain ICT tools. According to them, should tools such as computers and the Internet become more accessible, especially in more remote areas, better service delivery would take place. However, they also pointed out that lack of electricity in many of the areas would hamper the use of ICTs, even if they were accessible.

What was disconcerting was the lack of access to online databases, especially because virtually all governmental information is nowadays stored in databases. This is especially worrying in the case of the Departments of Health and Social Development. It would be assumed that information in these departments, for example concerning the prevalence of certain diseases, the number of hospital beds available, names and addresses of people receiving grants or foster care and so on, would be on hand to assist with service delivery. Even in the Department of Education, information on school enrolment rates, teachers, learner details, etc., should be readily available in databases. The results are shown in Table 2. If no response was received to an option, it was assumed that that tool or service was not accessible.

Table 2 Access to ICT tools (N=48) A=Accessible NA=Not Accessible NR = no response

ICT tools and	Education (N=21)						Health (N=9)					Social Development (N=18)						
	A	%	NA	%	NR	%	A	%	NA	%	NR	%	A	%	NA	%	NR	%
Telephones	19	90	2	10	0	0	7	78	0	0	2	22	18	100	0	0	0	0
Fax machines	19	90	2	10	0	0	8	89	0	0	1	11	18	100	0	0	0	0
Copy machines	19	90	2	10	0	0	8	89	0	0	1	11	18	100	0	0	0	0
Personal computers	18	86	3	14	0	0	8	89	0	0	1	11	17	94	1	6	0	0
Printers	17	81	3	14	1	5	8	89	0	0	1	11	17	100	1	6	0	0
Overhead projectors	15	71	4	19	2	10	4	44	4	44	1	11	0	0	12	67	6	33
Mobile phones	14	67	5	24	2	10	3	33	3	33	3	33	2	12	12	67	4	22
Laptop computers	8	38	11	52	2	10	2	22	5	56	2	22	4	22	9	50	6	33
Scanners	5	24	13	61	3	14	3	33	4	44	2	22	3	17	7	39	8	44
Television	5	24	13	61	3	14	3	33	4	44	2	22	0	0	12	67	6	33
Data projectors	4	19	14	67	4	19	7	78	1	11	1	11	0	0	11	61	7	39
Radio	3	14	15	71	3	14	1	11	5	56	3	33	0	0	12	67	7	39
Video cameras	3	14	16	76	2	10	3	33	4	44	2	22	0	0	12	67	7	39
Sound/ tape recorders	3	14	14	67	4	19	1	11	5	56	3	33	0	0	12	67	7	39
Digital cameras	2	10	14	67	5	24	4	44	3	33	2	22	0	0	12	67	7	39
Video recorders	1	5	18	86	2	10	1	11	4	44	4	44	0	0	12	67	7	39
Applications																		
Intranet	11	52	9	43	1	5	7	78	1	11	1	11	4	22	9	50	5	28
Internet	3	14	18	86	0	0	3	33	4	44	2	22	2	12	10	56	6	33
Databases (online)	2	10	15	71	4	19	3	33	5	56	1	11	3	17	9	50	6	33

8.2 Frequency of utilisation of ICTs

The fact that ICTs are available and accessible does not necessarily translate into their use for various purposes. The respondents were therefore asked to indicate how often they used the available ICTs. The results are shown in Table 3.

Table 3 Level of use of ICT Applications (N=48) O=Often S=Seldom N=Never

ICT tools and services	Education (N=21)						Health (N=9)					Social Development (N=18)							
	O	%	S	%	N	%	O	%	S	%	N	%	O	%	S	%	N	%	
Tools																			
Telephones	18	86	2	10	0	0	7	78	1	11	0	0	14	78	1	6	1	6	
Printers	17	81	1	5	1	5	2	22	1	11	3	33	18	100	0	0	0	0	
PC	17	81	2	10	2	10	6	67	2	22	0	0	17	94	1	6	0	0	
Fax machines	17	81	3	14	0	0	1	11	1	11	4	44	17	94	1	6	0	0	
Copy machines	15	71	5	24	1	5	7	78	0	0	0	0	15	83	1	6	1	6	
Mobile phones	14	67	0	0	3	14	4	44	0	0	3	33	6	33	1	6	5	28	
Overhead projectors	7	33	8	38	5	24	7	78	1	11	0	0	0	0	1	6	6	33	
Television	6	29	4	19	10	48	2	22	2	22	4	44	6	33	0	0	3	17	
Laptop computers	6	29	5	24	10	48	1	11	2	22	4	44	1	6	3	17	5	28	
Radios	5	24	4	19	11	52	2	22	1	11	4	44	6	33	0	0	3	17	
Digital cameras	2	10	7	33	11	52	7	78	1	11	0	0	1	6	3	17	4	22	
Video cameras	1	5	6	29	12	57	1	11	1	11	6	67	0	0	2	11	6	33	
Scanners	1	5	10	48	9	43	1	11	4	44	2	22	1	6	2	11	5	28	
Video recorders	0	0	6	29	11	52	1	11	1	11	6	67	1	6	2	11	6	33	
Sound/ tape recorders	0	0	11	52	7	33	1	11	3	33	4	44	1	6	3	17	4	22	
Data projectors	0	0	9	43	8	38	2	22	3	33	2	22	0	0	1	6	6	33	
Applications																			
Intranet	5	24	9	43	7	33	6	67	1	11	1	11	1	6	2	11	5	28	
Internet	3	14	8	38	10	48	2	22	1	11	4	44	2	11	3	17	6	33	
Databases (online)	0	0	4	19	12	57	1	11	2	22	4	44	1	6	0	0	5	28	

As in the previous table, the most accessible tools were also those used within each department, with virtually all the respondents indicating that telephones, personal computers (PCs), fax machines, photocopy machines, and to an extent, mobile phones, were used very frequently. This is in line with the suggestion made by the Ghana Resource Centre (2008) that all government employees should be skilled enough to use a variety of ICTs in order to reflect the government's drive to enhance service delivery.

8.3 Work purposes of ICTs

The respondents were asked to indicate the work purposes that required the use of ICTs. The results are shown in Table 4.

Table 4 ICT tools and services used for work related purposes (N=48)

Work purpose	Education	Health	Social development
To collaborate with other civil servants	Internet (e-mail) Telephone Mobile phone	Telephone Mobile phone Fax E-mail PC	Fax Telephone Mobile phone
For global communication with colleagues	Internet (e-mail) Fax Mobile phone Telephone	Telephone Mobile phone Fax E-mail PC	Internet (e-mail) Telephone Fax
To disseminate departmental information	Fax Internet (e-mail)	Telephone Mobile phone Fax E-mail PC	Fax, Telephone E-mail
For research purposes	Intranet Internet PC Telephone	Telephone Mobile phone Fax E-mail	Internet
For educational purposes	Fax PC Intranets Internet Telephone	Overhead projector Video recorder Telephone Mobile phone Fax E-mail	Radio TV Video recorder
For word processing	PC	PC	PC
For Internet access	Mobile phone PC	PC	Laptop PC
To create/ access a spreadsheet	PC	PC	PC
For records management	Telephone PC Electronic filing	PC	Electronic filing, PC
For presentations	PC Data projector Overhead projector	Laptop PC Data projector	PC
For database searching	Mobile phone PC	PC	Internet Online databases
For information retrieval	Disks PC	Internet PC	Disks PC Internet
For printing	Printer	Photocopier Printer	Photocopier Printer
To assist the general public	Telephone PC Fax	Telephone PC Fax	TV Radio PC Telephone Fax

From the above table, it can be deduced that ICTs were mainly used for internal departmental activities and not so much for service delivery. Notably, a lot of communication between civil servants and colleagues was facilitated using PCs, the Internet, telephones and faxes. Despite this, the local public is not offered the opportunity to use the same tools for communication purposes. The lack of online communication is especially of note here.

While the mobile phone appears to be used for a number of activities such as collaboration with colleagues, communication, research purposes and to disseminate information, and because the mobile phone is the one technology that is available to the majority of citizens in the country, it is interesting to note that it was not used more often for service delivery purposes (Africa calling: Cellphone usage sees record rise, 2009). From the interviews with the departmental managers, it became clear that traditional communications tools, such as telephones and fax machines, are not always feasible in areas where they have to deliver services - lack of landlines and electricity poses severe constraints on the ability to use them. However, the findings of this study are in line with current world trends where governments use a variety of channels to interact with their citizens instead of concentrating on one preferred medium. In the near future, it is clear that governments will have to provide universal access and equal care through all channels, including the Internet, if they are to efficiently deliver services to all their citizens (Mitel, 2007).

8.4 Utilisation of ICTs for serving delivery

Despite heavy ICT investment in most government structures, complaints about poor service delivery abound. This question sought to determine how many staff members had access to and actually utilised ICTs and their associated services for public service delivery. The results are illustrated in Table 5.

Table 5 Utilisation of ICT applications for public service (N=48)

ICT tools and Applications	Education (N=21)		Health (N=9)		Social Development (N=18)	
Telephone	3	14	3	33	5	28
Fax machines	2	10	2	22	4	22
Copy machines	3	14	2	22	5	28
Personal computers	3	14	1	11	4	22
Printers	1	5	2	22	4	22
Overhead projectors	4	19	3	33	1	6
Mobile phones	2	10	3	33	1	6
Laptop computers	3	14	3	33	0	0
Scanners	0	0	3	33	1	6
Television	0	0	2	22	1	6
Data projectors	0	0	2	22	1	6
Radio	0	0	1	11	1	6
Video cameras	3	14	4	44	1	6
Sound/ tape recorders	1	5	2	22	1	6
Digital cameras	1	5	4	44	1	6
Video recorders	3	14	3	33	1	6
Applications						
Intranet	0	0	1	11	2	11
Internet	0	0	1	11	1	6
Databases (online)	1	5	1	11	0	0

Only a small portion of the ICTs available and accessible within each department were dedicated to public service use, while the majority of the respondents indicated that they mainly used them for office-related tasks, which presumably does not directly impact on service delivery. The only department that seemed to use a wide variety of ICTs was the Department of Health.

It is noted that even ICTs that are commonly used in most offices that deal with the public, such as computers, telephones and copy machines, were not used abundantly. The lack of utilisation of the Internet indicates that this

valuable communication tool is not at all operational and can thus not be used by the public to enquire or comment on issues that concern them. By narrowing down the communication opportunities, the public is left to rely on either telecommunications tools such as telephones, mobile phones or fax machines, or physically visiting the departmental offices. This is often detrimental to rural populations, which sometimes rely on neither.

8.5 Availability of the Internet for service delivery and communication

Building on the findings of the previous question, this question aimed to determine where Internet access was available within each of these departments. The availability of the Internet in offices has changed the face of communication between office staff and the individuals or groups that they serve. It has also enhanced service delivery and information dissemination, thus supporting the *Batho Pele* principles of providing information and encouraging openness and transparency. The respondents were asked to indicate the availability of the Internet and their ability to access it in order to perform their duties. The results are shown in Table 6.

Table 6 Access to Internet services (N=48)

Education (N=21)			Health (N=9)			Social Development (N=18)		
Description	Number	%	Description	Number	%	Description	Number	%
No access	11	52	No access	3	33	No access	14	78
Share in Office	1	5	Via Laptop and Mobile phone	2	22	At PC where I assist public	1	6
Via Laptop	5	24	In Office	2	22	Share in Office	3	17
In the office	4	19	Share in Office	2	22			

From the results, it is clear that while Internet facilities were available in each department, they were only available to a few selected individuals. Interviews with the management staff in each department confirmed that it was mainly managers who had access to the Internet and not necessarily the staff members who were in daily contact with the general public.

Kuye and Naidoo (2003) and the Data Protection Staff Handbook (2003:1) suggest that the Internet improves the way people access government services and that it offers enhanced business opportunities and advantages when utilised properly and responsibly. Departments can, for example, improve the way they service the public by communicating via email with clients and colleagues who have access to email and with computer literate citizens who cannot physically visit their nearest offices because of their age, disability, illness or lack of time. Through the Internet, citizens can send emails to ask for services and have the opportunity to download useful news from the government's website without visiting any office, allowing them to make faster and more informed decisions.

Despite all the obvious advantages of the Internet and its associated services, these services were in most cases not available and/or accessible to the majority of the respondents in the departments in question.

From the interviews with clients, it also became clear that lack of access to available Internet-based governmental services contributed to clients having to waste a lot of time in queues or trying to locate where the services are rendered (Snyman, 2007). It was suggested by the clients that all the staff responsible for service delivery should be provided with Internet and email access and properly trained in the handling and use of these applications. Additionally, they recommended the introduction of Internet stations within the departments that would allow the computer literate public to access the information or services they may be looking for. This would save a lot of time, effectively doing away with the long queues in government offices.

8.6 Challenges experienced when using ICTs

According to Agboh (2000), information systems' users and managers worldwide face similar challenges when using these systems. But in less developed countries in Africa, it can be more difficult to cope with these challenges. Coping mechanisms include capital, technical know-how, and modernised telecommunications infrastructure. Unfortunately, these are mostly lacking in most African countries. Despite the fact that South Africa has well-developed telecommunications infrastructure, skills and capital remain significant challenges (Burger, 2010). To test this, respondents were asked to indicate what challenges they experienced when using ICTs. Table 7 shows their answers.

Table 7 Problems experienced when using ICT tools and services (N=48)

Problems	Education (N=21)		Health (N=9)		Social Development (N=18)	
		%		%		%
Do not know how to connect the network to the PC	8	38	4	44	6	33
Cannot solve troubleshooting problems	8	38	4	44	8	44
Cannot set up the PC	7	33	2	22	7	39
Cannot operate the video camera	7	33	6	67	6	33
Cannot operate the scanner	7	33	5	56	5	28
Cannot use the PC for accounting in a spreadsheet	6	29	5	56	5	28
Cannot use databases	6	29	3	33	5	28
Cannot use the file management facility on the PC	5	24	0	0	3	17
Cannot maintain the PC	4	19	5	56	4	22
No ICT support team in the department	4	19	4	44	1	6
Do not have effective keyboarding skills	3	14	0	0	3	17
Cannot use Windows Operating System effectively	2	10	0	0	1	6
Cannot use the word processing facility in the PC	2	10	2	22	0	0
Cannot use presentation programmes such as PowerPoint	2	10	1	11	7	39
Do not know how to use the Internet	2	10	1	11	6	33
Cannot operate the data projector	2	10	3	33	7	39
Cannot send an e-mail	1	5	1	11	7	39
Cannot operate printer	0	0	0	0	0	0

The sharing of resources was cited as a challenge because it can be extremely time consuming. Civil servants don't have the same abilities when it comes to using ICT tools, meaning it may take a while for one staff member to retrieve a document from the computer while others have to wait. It may also happen that some staff members may want to work on a different programme altogether, which depending on the number and size of applications, may slow the computer down. This problem is compounded when there is a lack of skills.

From the table, it is clear that the major challenges, according to the staff, revolve around issues of a more technical nature, i.e. networking and troubleshooting, which are normally the ambit of technicians specifically trained to handle these issues. However, in most cases regional departments do not have technical staff on hand, meaning that some know-how is necessary on the part of staff to at least be able to solve simple recurring problems. Training on the use of different ICTs, such as digital cameras, might not be essential if the ICT has no use within a department, but this completely changes if the tool could be used effectively if the skills were available. Serious thought should then be given to the issue of training.

Challenges specific to each department were elicited from the managers. At the Department of Education, the lack of human and physical resources was an issue because it hampered the department's ability to deliver services. The Department of Health also highlighted the problem of resource scarcity, mentioning how computers were in short supply. One of the problems was that the period from applying for additional computers to the approval and delivery stage was long because the application had to be routed via Head Office to SITA (State Information Technology Agency) for finalisation. The lack of space to house the necessary computers was also cited as a problem.

The Department of Social Development's manager reported several problems, including the lack of a managing information system, and not enough e-mail accounts available for internal communication. According to the manager, whenever the server was down, a lot of interruptions followed because emails were used extensively within the department. The network in general seemed to be unreliable. The limited access to the Internet was also a problem because access to the Internet could lead to changes within the national department happening sooner; the necessary documentation informing them about the changes could just be downloaded and implemented immediately. IT support was also an issue because there wasn't enough to support the number of offices in the department. Troubleshooting and

repairs are exacerbated because IT staff have to be outsourced from the regional offices in the bigger cities such as Pietermaritzburg, wasting a lot of unnecessary time. IT staff from the regional offices also have to be called in to remove viruses or update anti-virus programmes in order to prevent significant damage to the department's documents.

Lack of cell phones and laptops to communicate with fieldwork staff was also mentioned as a challenge, since most of the department's staff work in remote areas. It was felt that if laptops and cellphones were available, work could be done onsite.

Many of these challenges are not directly related to servicing the public, but rather concentrate more on efficient office practices. Lack of Internet access and databases were not really identified as challenges, which does make one wonder how services are rendered in these offices.

The challenges can be addressed by dedicated office managers and by a government that is serious in its quest to deliver efficient services to the public. This, however, also requires open-minded employees with a positive attitude towards change and customer care. As suggested by the civil servants, more resources, such as computers, telephones, photocopy machines and scanners, would improve their efficiency. Furthermore, services such as the Internet and Intranet should become common place in their workspaces and not just be allocated to senior management. A strong sentiment was expressed by the respondents for the acquisition of the latest available technology as this would help civil servants bridge the digital divide. Kitaw (2006).supported this call for the use of the latest technology for enhanced service delivery.

8.7 Training required to optimally utilise ICTs

Lack of skills is widely acknowledged as one of the main obstacles to e-governance and service delivery through ICTs in South Africa (The Presidential National Commission on Information Society and Development, 2008). This study tried to establish the training needs of the respondents. The results are reflected in Table 8.

Table 8 ICT applications or areas where training is required (N=48)

Areas	Education (N=21)		Health (N=9)			Social Development (N=18)			
	Training needed	%	Training required	Training needed	%	Training required	Training needed	%	Training required
To use computer applications to serve the public effectively	10	48	Advanced training	2	22	Not specified	4	22	Not specified
Publishing	11	52	Basic training	1	11	Basic training	3	17	Basic training
Word processing	9	42	Basic training	1	11	Basic training	4	22	Not specified
Internet access	8	38	Basic training	0	0	Basic training	11	61	Basic training
Creating spreadsheets	8	38	Basic training	2	22	Basic training	6	33	Advanced training
Files or records for management	14	67	Basic training	3	33	Basic training	7	38	Advanced training
Compiling bibliographies	7	33	Basic training	3	33	Basic training	1	6	Not specified
Preparing presentations using PowerPoint	12	57	Basic training	2	22	Basic training	12	67	Basic training
Database searching	9	42	Basic training	3	33	Basic training	5	28	Not specified
Information retrieval	8	38	Basic training	2	22	Basic training	4	22	Advanced training
E-mailing	5	24	Basic training	0	0	Basic training	8	44	Basic training
To use the fax machine efficiently	3	14	Basic training	0	0	Basic training	0	0	Not specified
To use the copy machine efficiently	4	19	Basic training	0	0	Basic training	0	0	Not specified
Delivery of presentations	9	42	Basic training	2	22	Basic training	4	22	Not specified

The fact that so many respondents from all the departments indicated that basic training was required in virtually all the different options provided to them, shows that lack of skills is indeed a major problem among the civil servants.

From the interviews with the managers from the respective departments, it became clear that some of the problems have their origins in the fact that most of the current employees were employed before modern ICT tools were introduced to government offices. Many had never attended any training that could empower them and ensure that they would be ready for the changes in service delivery that would occur. Some also described the staff as mainly computer illiterate and therefore unable to deliver the service levels expected from them when using ICTs such as computers. Furthermore, staff members were believed to have a poor understanding of how a computer works and how it can be used to improve service delivery. This finding corresponds with Mphidi's, (n.d) findings. Petty (2007) argues that because of governments' continuous move towards e-governance, civil servants should be subject to ICDL (International

Computer Driving License) training programmes that would endow them with the IT skills they need to be able to assist the public effectively using ICT-related services.

9 Conclusion and recommendations

Despite the fact that the South African government has committed itself to introducing effective, ICT-driven services to the public, and despite heavy investment in both physical resources and modern ICT infrastructure, the public is still not convinced that they have benefited to the extent envisioned by the government. This is evident in long queues that continue to snake around most government offices as well as regular reports of service delivery-related strikes.

Many of the problems are blamed on the perceived inefficiency of front office staff, essentially the 'first line of defense'. Although many of the problems in using available ICTs can be ascribed to lack of skills, other problems include lack of resources and the inability to change and adapt. Often the managers of the offices are also not ICT literate and can therefore not provide the necessary guidance and leadership in terms of adopting and utilising ICTs optimally. The government should therefore institute a resource and capacity audit in all its offices to accurately assess the status of ICT tools and the skills of all the staff who are expected to utilise these tools. Once this information is received, the identified resources need to be provided using a priority list.

Lastly with respect to training, the target should not only be front office staff, but also the managers who need to be informed about the value gained through ICTs when making decisions about the ICTs that they require in their offices.

References

- Agboh, D.K. 2000. Coping with rapidly changing information technology: challenges facing Africa's less-developed countries. *International Journal of Computer Applications in Technology*, 13(3/4/5): 107 -112.
- Africa calling: Cellphone usage sees record rise. 2009. *Mail and Guardian online*, 23 October 2009. [Online]. <http://www.mg.co.za/article/2009-10-23-africa-calling-cellphone-usage-sees-record-rise>. (Accessed 24 November 2010).
- Bakus, M. 2003. *E-governance capacity building*. [Online]. http://portal.unesco.org/ci/en/ev.php-URL_ID=12951&URL_DO_TOPIC&URL_SECTION=201.HTML. (Accessed 13 November 2008).
- Batho Pele (n.d.). *Principles*. [Online]. <http://www.dpsa.gov.za/batho-pele/principles.asp>. (Accessed 13 January 2010).
- Benton, S. 2007. *Government must embrace ICT*. [Online]. <http://www.southafrica.info/news/conference/govtech-210807.htm>. (Accessed 5 November 2008).
- Burger, D. ed. 2010. *South African yearbook 2009/10*. [Online]. http://www.gcis.gov.za/resource_centre/sa_info/yearbook/2009-10/Communications.pdf. (Accessed 23 September 2010).
- Cape Gateway. 2009. *Overview of South Africa*. [Online]. http://www.capegateway.gov.za/eng/your_gov/595. (Accessed 12 January 2010).
- Cole, R.D. & Roman, R. 2001. *Modules for training telecentre staffs: an interim report with sample modules*. [Online]. http://www.itu.int/ITUUD/univ_access/telecentres/documents/ModTrainingTelecStaff.pdf. (Accessed 6 November 2008).
- Data Protection Staff Handbook. 2003. *Northern Ireland civil service Internet and e-mail usage policy*. [Online] http://www.dfpni.gov.uk/appendix_d_nics_internet_and_email_usage_policy_csc_02-03.pdf. (Accessed 10 November 2008).
- Department of City Development. 2009. *Key statistics and information on the Umhlatuze Municipality area 2009*. [Online] <http://www.richemp.org.za/TulipuMhlathuzeInternet/repository/Downloads/VPN/Linux/SLED10/Readme/2009%20Demographic%20Data.pdf>. (Accessed on 24 November 2010).
- Economist Intelligence Unit. 2010. *Digital Economy rankings 2010: Beyond e-readiness*. [Online] http://graphics.eiu.com/upload/EIU_Digital_economy_rankings_2010_FINAL_WEB.pdf. (Accessed 17 August 2011).
- South African Education and Environmental Project. n.d.. *How are government services delivered in South Africa?* [Online] http://www.saep.org/EnvSusDev/EnvDebate/ServiceDeliveryinSA_Ackoff.pdf. (Accessed 14 November 2008).
- Farello, M. & Morris, C. 2006. *The status of e-government in South Africa*. [Online]. http://researchspace.csir.co.za/dspace/bitstream/10204/966/1/Farello_2006_D.pdf. (Accessed 13 November 2008).
- Ghana Resources Centre. 2008. *ICT project managers attend workshop in Ghana*. [Online]. <http://www.iicd.org/articles/ict-project-managers-attend-workshop-in-ghana>. (Accessed 10 November 2008).
- Gosebo, N. 2008. *Service delivery innovation, including e-government and information management. response and comments: South African Public Service and Administration Department*. [Online]. <http://www.dpsa.gov.za/documents/networks/Conversion/challenge2ngosebo.pdf>. (Accessed 12 June 2008).
- Health Summit. 2000. *Vision 2014 goals*. [Online]. <http://www.doh.gov.za/docs/misc/hsummit4/presentation/social/Slid004.Htm>. (Accessed 4 may 2010).
- IT News Africa. 2010. *Wireless broadband overtakes ASDL in South Africa*. [Online]. <http://www.itnewsafrika.com/?p=6240>. (Accessed 19 September 2010).
- Kitaw, Y. 2006. *E-government in @frica: prospects challenges and practices*. [Online]. http://people.itu.int/~kitaw/egov/paper/E-Government_in_Africa.pdf. (Accessed 18 August 2011).
- Kuye, J.O. & Naidoo, G. 2003. *Electronic technology and service delivery in the South African Public Service*. [Online]. <http://repository.up.ac.za/upspace/bitstream/2263/5480/1/kuye-electronic%282003%29.pdf>. (Accessed 13 January 2010).
- Mitel. 2007. *Whitepaper on simplifying and transforming service delivery in government: citizen interaction centers*. [Online]. http://www.mitel.com/resources/152_473-NA_Govt_WhitePaper_FINAL.pdf. (Accessed 42 November 2010).
- Mkhize, Z. 2007. *Public sector human resources convention*. Durban, South Africa. [Online]. <http://www.kwazulunatal.gov.za/premier/speeches/other/19-09-2007.pdf>. (Accessed 5 November 2007).

- Mphidi, H. n.d. Digital divide and e-governance in South Africa. [Online]. http://www.ais.up.ac.za/digi/docs/mphidi_paper.pdf. (Accessed 18 August 2011).
- Mutula, S.M. & Mostert, J. 2010. Challenges and opportunities of e-government in South Africa. *The Electronic Library*, 28(1): 38-53.
- Ngulube, P. The nature and accessibility of e-government in Sub Saharan Africa. 2007. *International Review of Information Ethics*, 7. [Online]. <http://www.i-r-i-e.net/inhalt/007/16-ngulube.pdf>. (Accessed 12 August 2011).
- Nthetha, M.A. 2010. *The access, interaction, use and impact of information and communication technologies among civil servants in the Umhlatuze area: a social informatics study*. Unpublished thesis. KwaDlangezwa: University of Zululand.
- Petty, O. 2007. *IT Training targets 1200 persons*. [Online]. http://www.icdl.org.za/press_detail.php?id=18&cat=2. (Accessed 12 November 2008).
- Polity.org.za. 2007. SA: Mlambo-Ngcuka: Govtech 2007 conference. Online: <http://www.polity.org.za/article/sa-mlambongcuka-govtech-2007-conference-20082007-2007-08-20>. Accessed 12 June 2008.
- Presidential National Commission on Information Society and Development. 2008. *South Africa's efforts to address the e-skills challenge*. Online: http://www.pnc.gov.za/emzanzi_issue3_07/index2.php?option=com_content&do_pdf=1&id=93. (Accessed 21 November 2008).
- Snyman, M. 2007. Information resource centres in South Africa. In Bothma, T, Underwood, P, and Ngulube, P. eds. *Libraries for the future: Progress and development of South African libraries*. Pretoria: Library and Information Association of South Africa (LIASA), pp. 121-131.
- SouthAfrica.info. 2009. *Internet access to double by 2014*. 2009. [Online]. <http://www.southafrica.info/business/trends/newbusiness/internet-260309.htm>. (Accessed 19 September 2010).
- SouthAfrica.info. 2010. SA internet users pass five million. 2010. Online: <http://www.southafrica.info/business/trends/newbusiness/internet-140110.htm>. (Accessed 19 September 2010).
- United Nations Department of Economic and Social Affairs, Inter-Parliamentary Union, Association of Secretaries General of Parliaments. 2007. *Leadership and vision for ICT in parliament*. [Online]. <http://www.ictparliament.org/worldparliamentconference2007>. (Accessed 6 November 2008).
- United Nations. 2008 United Nations Development Programme. 2008. *Democratic governance; e-governance and access to information*. [Online]. <http://www.undp.org.za/democratic-governance-news/273-e-government-to-improve-service-delivery>. (Accessed 1 August 2011).
- United Nations. 2010. *E-government survey 2010: leveraging e-government in a time of financial and economic crises*. [Online]. http://www2.unpan.org/egovkb/global_reports/10report.htm. (Accessed 18 August 2010).
- Visser, W. & Twinomurizi, H. n.d. *E-government & Public service delivery: Enabling ICT to put "People First" – a case study from South Africa*. [Online]. [http://www.iiisci.org/journal/CV\\$/sci/pdfs/QP476DK.pdf](http://www.iiisci.org/journal/CV$/sci/pdfs/QP476DK.pdf). (Accessed 11 August 2011).